

# Manufacturing Profiles

1998

Issued December 2000

MP/98

**Current  
Industrial  
Reports**



U S C E N S U S B U R E A U

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U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU



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# Introduction

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## GENERAL

This publication presents all the data compiled in the Current Industrial Reports (CIR) program for data year 1998. These data were originally released electronically from March 1999 through April 2000. This publication replaces all of the individual reports issued in the CIR series for 1998.

Current data are released electronically on Internet for all individual surveys as they become available. Use <http://www.census.gov/econ/www/manumenu.html>. Individual reports can be accessed by choosing "Current Industrial Reports (CIRs)," clicking on "Report Number Index"; from the "Industrial Products by Numeric Index," choose the survey of interest. Follow the menu to view the text (ASCII) file or Portable Data File (PDF) or to download the worksheet file (WK format) to your personal computer. Several years of data are presented for each individual survey.

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and

reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The economic census, manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

## ALL-NEW INDUSTRY CLASSIFICATIONS

For most of the reports shown in this publication, data are published on the new North American Industry Classification (NAICS) basis, replacing the previous Standard Industrial Classification (SIC) system. This is due to timing conflicts which affected data dissemination release schedules. NAICS is in the process of being adopted in the United States, Canada, and Mexico.

Listed below are the NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)



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(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for manufacturing, where sector titles are used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries.

## FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

## RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These non-sampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual

yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

## DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

## DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

## EXPLANATION OF GENERAL TERMS

**Capacity.** The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

**Consumption.** Materials used in producing or processing a product or otherwise removing the product from the inventory.

**Exports.** Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

**Gross shipments.** The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

**Interplant transfers.** Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

**Inventories.** The quantity or value of finished goods, work in progress, and materials on hand.

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**Machinery in place.** The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

**Net receipts.** Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

**Production.** The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

**Quantities produced and consumed.** Quantities of each type of product produced by a company for internal consumption within that same company.

**Quantity and value of new orders.** The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of

contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

**Quantity and value of shipments.** The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

**Stocks.** Total quantity of ending finished inventory.

**Unfilled orders (backlog).** Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

# Chapter 1. Food Products

## FLOUR MILLING PRODUCTS—MQ311A (FORMERLY MQ20A)

### INTRODUCTION

The data on flour milling products are from a survey that covers all firms in the United States operating wheat and rye flour mills. Some very small specialty mills are only canvassed annually.

### EXPLANATION OF TERMS

**Wheat ground for flour.** Represents the purchased weight of wheat ground, including the weight of foreign material (dockage). Includes the milling of Canadian wheat in bond. Measured in bushels of 60 pounds.

**Rye ground for flour.** Represents the purchased weight of rye ground, including the weight of foreign materials (dockage). Measured in bushels of 56 pounds.

**Millfeed.** Includes bran, middlings, shorts, and other milling byproducts intended principally for use as feed materials.

**Cwt. sacks.** Represents 100-pound sacks of flour. The actual average weight of the "100-pound sacks" is published below.

**Capacity.** Represents maximum quantity of flour that can be produced in a mill in 1 day if operating for 24 hours. Includes the capacity of idle mills until the mills are reported to be destroyed, dismantled, or abandoned.

**Stocks of flour.** Represents mill stocks in all positions, sold and unsold.

Table 1. **Summary of Commercial Wheat Milling Production: 1988 to 1998**

Year	Wheat flour production (1,000 cwt sacks)	Wheat ground for flour (1,000 bushels)	Millfeed production (1,000 tons)	Average pounds per cwt sacks of flour	
				Wheat	Millfeed
1998 .....	398,914	895,369	6,955	134.7	34.9
1997 .....	404,143	885,843	6,886	131.5	34.1
1996 .....	397,776	878,070	7,042	132.4	35.4
1995 .....	388,689	869,296	7,144	134.2	36.8
1994 .....	392,519	884,707	7,186	135.2	36.6
1993 .....	387,419	871,408	6,963	135.0	35.9
1992 .....	370,829	833,339	6,707	134.8	36.2
1991 .....	362,311	808,966	6,436	134.0	35.5
1990 .....	354,348	788,186	6,109	133.5	34.5
1989 .....	342,762	761,021	6,072	133.2	35.4
1988 .....	344,154	769,699	6,163	134.2	35.8

**Table 2. Commercial Wheat Milling Production by Quarter: 1998 and 1997**

Quarter	Wheat flour production (1,000 cwt sacks)	Wheat ground for flour (1,000 bushels)	Millfeed production (tons)	Daily (24-hour) capacity in wheat flour (1,000 cwt sacks)	Wheat flour mill stocks (1,000 cwt sacks)	Average pounds per cwt sack of flour	
						Wheat	Millfeed
<b>1998</b>							
<b>Total</b> .....	<b>398,914</b>	<b>895,369</b>	<b>6,954,947</b>	<b>(X)</b>	<b>(X)</b>	<b>134.7</b>	<b>34.9</b>
Fourth quarter .....	106,525	238,580	1,871,779	1,470	7,544	134.4	35.1
Third quarter .....	100,187	224,713	1,750,298	1,461	7,345	134.6	34.9
Second quarter .....	96,233	216,591	1,668,693	1,453	6,210	135.0	34.7
First quarter .....	95,969	215,485	1,664,177	1,450	6,245	134.7	34.7
<b>1997</b>							
<b>Total</b> .....	<b>404,143</b>	<b>885,843</b>	<b>6,886,228</b>	<b>(X)</b>	<b>(X)</b>	<b>131.5</b>	<b>34.1</b>
Fourth quarter .....	106,119	232,068	1,814,214	1,449	6,343	131.2	34.2
Third quarter .....	104,698	229,808	1,785,812	1,433	6,330	131.7	34.1
Second quarter .....	99,558	217,429	1,679,403	1,434	5,820	131.0	33.7
First quarter .....	93,768	206,538	1,606,799	1,432	6,040	132.2	34.3

<sup>†</sup>Revised by 5 percent or more from previously published data. X Not applicable.

**Table 3. Commercial Rye Milling Production by Quarter: 1998 and 1997**

Quarter	Rye flour production (1,000 cwt sacks)	Rye ground for flour (1,000 bushels)	Millfeed production (tons)	Daily (24-hour) capacity (1,000 cwt sacks)	Stocks of rye flour (1,000 cwt sacks)	Average pounds ground per cwt sack of flour	
						Rye	Millfeed
<b>1998</b>							
<b>Total</b> .....	<b><sup>†</sup>1,617</b>	<b><sup>†</sup>3,670</b>	<b>(D)</b>	<b>(X)</b>	<b>(X)</b>	<b>124.8</b>	<b>18.9</b>
Fourth quarter .....	<sup>†</sup> 447	1,109	(D)	11	21	136.2	20.3
Third quarter .....	<sup>†</sup> 427	<sup>†</sup> 956	(D)	11	<sup>†</sup> 20	122.2	21.0
Second quarter .....	381	<sup>†</sup> 835	(D)	11	19	121.3	18.1
First quarter .....	<sup>†</sup> 362	<sup>†</sup> 770	(D)	11	17	117.4	15.6
<b>1997</b>							
<b>Total</b> .....	<b>1,396</b>	<b>3,291</b>	<b>12,384</b>	<b>(X)</b>	<b>(X)</b>	<b>132.0</b>	<b>17.7</b>
Fourth quarter .....	387	888	3,243	12	21	128.5	16.8
Third quarter .....	345	827	3,293	12	26	134.2	19.1
Second quarter .....	337	786	2,868	12	27	130.6	17.0
First quarter .....	327	790	2,980	12	(D)	135.3	18.2

D Withheld to avoid disclosing data for individual companies. <sup>†</sup>Revised by 5 percent or more from previously published data.  
X Not applicable.

**Table 4. Summary of Commercial Wheat Milling Production by Geographic Area: 1998 and 1997**

Geographic area	1998			1997		
	Total (1,000 cwt sacks)	Wheat flour production		Total (1,000 cwt sacks)	Wheat flour production	
		Wheat ground for flour (1,000 bushels)	Daily (24-hour) capacity (cwt sacks)		Wheat ground for flour (1,000 bushels)	Daily (24-hour) capacity (cwt sacks)
<b>United States .....</b>	<b>398,914</b>	<b>895,369</b>	<b>1,469,668</b>	<b>404,143</b>	<b>885,843</b>	<b>1,448,878</b>
California and Hawaii .....	30,527	68,407	104,980	30,105	66,783	103,280
Florida .....	9,508	21,134	31,800	9,264	20,629	31,800
Georgia .....	(D)	(D)	(D)	(D)	(D)	(D)
Illinois .....	20,619	46,880	67,718	19,510	44,789	67,218
Indiana .....	(D)	(D)	(D)	(D)	(D)	(D)
Iowa .....	(D)	(D)	(D)	(D)	(D)	(D)
Kansas .....	40,278	88,831	160,844	39,175	85,809	154,560
Michigan .....	7,739	17,404	32,000	7,856	17,702	32,000
Minnesota .....	33,999	73,940	120,480	34,410	76,196	120,480
Missouri .....	26,336	58,740	98,095	27,697	60,558	98,250
New York .....	27,508	61,995	107,874	28,198	62,636	105,874
North Carolina .....	11,508	25,492	40,075	12,155	25,817	40,075
Ohio .....	24,310	55,186	88,868	23,791	53,192	84,868
Oklahoma .....	8,113	18,489	30,500	8,312	19,590	30,500
Oregon and Washington .....	13,150	29,398	52,233	13,473	29,895	51,472
Pennsylvania .....	17,354	38,351	59,262	16,178	36,074	58,622
Tennessee .....	15,580	36,673	55,429	15,597	35,731	54,859
Texas .....	14,649	32,849	49,500	15,073	33,510	50,060
All other states .....	71,575	162,967	282,610	78,137	160,386	282,285

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 5. Quantity of Wheat Flour Produced by Geographic Area: 1998 and 1997**

[1,000 cwt sacks]

Geographic area	Total	First quarter	Second quarter	Third quarter	Fourth quarter
<b>1998</b>					
<b>United States</b> .....	<b>398,914</b>	<b>95,969</b>	<b>96,233</b>	<b>100,187</b>	<b>106,525</b>
California and Hawaii .....	30,527	7,594	7,576	7,443	7,914
Florida .....	9,508	2,299	2,131	2,392	2,686
Georgia .....	(D)	(D)	(D)	(D)	(D)
Illinois .....	20,619	4,730	4,848	5,201	5,840
Indiana .....	(D)	(D)	(D)	(D)	(D)
Iowa .....	(D)	(D)	(D)	(D)	(D)
Kansas .....	40,278	9,395	9,487	10,336	11,060
Michigan .....	7,739	1,845	1,927	2,000	1,967
Minnesota .....	33,999	7,959	7,785	8,855	9,400
Missouri .....	26,336	6,297	6,568	6,552	6,919
New York .....	27,508	7,038	7,120	6,613	6,737
North Carolina .....	11,508	2,677	2,850	2,984	2,997
Ohio .....	24,310	6,464	5,670	5,826	6,350
Oklahoma .....	8,113	<sup>1</sup> 1,993	2,130	<sup>1</sup> 1,945	<sup>1</sup> 2,045
Oregon and Washington .....	13,150	3,226	3,156	3,296	3,472
Pennsylvania .....	17,354	<sup>1</sup> 4,183	<sup>1</sup> 4,115	<sup>1</sup> 4,209	<sup>1</sup> 4,847
Tennessee .....	15,580	3,674	3,873	3,979	4,054
Texas .....	14,649	3,505	3,532	3,716	3,896
All other states .....	71,575	16,728	17,093	18,255	19,499
<b>1997</b>					
<b>United States</b> .....	<b>404,143</b>	<b>93,768</b>	<b>99,558</b>	<b>104,698</b>	<b>106,119</b>
California and Hawaii .....	30,105	7,110	7,417	7,688	7,890
Florida .....	9,264	2,286	2,245	2,350	2,383
Georgia .....	(D)	(D)	(D)	(D)	(D)
Illinois .....	19,510	4,492	4,715	4,957	5,346
Indiana .....	(D)	(D)	(D)	(D)	(D)
Iowa .....	(D)	(D)	(D)	(D)	(D)
Kansas .....	39,175	9,378	9,398	10,252	10,147
Michigan .....	7,856	1,768	1,919	2,037	2,132
Minnesota .....	34,410	8,118	8,309	8,680	9,203
Missouri .....	27,697	6,225	6,748	7,252	7,472
New York .....	28,198	6,433	6,926	7,431	7,408
North Carolina .....	12,155	2,767	3,097	3,169	3,122
Ohio .....	23,791	5,155	5,743	6,375	6,518
Oklahoma .....	8,312	1,921	2,059	2,114	2,218
Oregon and Washington .....	13,473	3,205	3,358	3,477	3,433
Pennsylvania .....	16,178	3,773	4,081	4,119	4,205
Tennessee .....	15,597	3,597	3,749	4,103	4,148
Texas .....	15,073	3,630	3,777	3,834	3,832
All other states .....	78,137	18,538	19,692	20,038	19,869

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

Note: Detail may not add to total because of independent rounding.

Table 6. **Quantity of Wheat Ground for Flour by Geographic Area: 1998 and 1997**

[1,000 cwt sacks]

Geographic area	Total	First quarter	Second quarter	Third quarter	Fourth quarter
<b>1998</b>					
<b>United States</b> .....	<b>895,369</b>	<b>215,485</b>	<b>216,591</b>	<b>224,713</b>	<b>238,580</b>
California and Hawaii .....	68,407	17,019	16,922	16,873	17,593
Florida .....	21,134	5,116	4,715	5,288	6,015
Georgia .....	(D)	(D)	(D)	(D)	(D)
Illinois .....	46,880	10,783	11,008	11,797	13,292
Indiana .....	(D)	(D)	(D)	(D)	(D)
Iowa .....	(D)	(D)	(D)	(D)	(D)
Kansas .....	88,831	20,747	20,878	22,832	24,374
Michigan .....	17,404	4,131	4,287	4,505	4,481
Minnesota .....	73,940	17,258	16,928	19,302	20,452
Missouri .....	58,740	14,091	14,658	14,696	15,295
New York .....	61,995	15,901	16,036	15,134	14,924
North Carolina .....	25,492	5,909	6,242	6,667	6,674
Ohio .....	55,186	14,729	12,965	13,146	14,346
Oklahoma .....	18,489	4,552	4,890	4,381	4,666
Oregon and Washington .....	29,398	7,203	7,053	7,365	7,777
Pennsylvania .....	38,351	9,126	9,223	9,308	10,694
Tennessee .....	36,673	8,694	9,112	9,272	9,595
Texas .....	32,849	7,839	7,883	8,375	8,752
All other states .....	162,967	38,266	39,595	41,010	44,096
<b>1997</b>					
<b>United States</b> .....	<b>885,843</b>	<b>206,538</b>	<b>217,429</b>	<b>229,808</b>	<b>232,068</b>
California and Hawaii .....	66,783	15,777	16,304	17,046	17,656
Florida .....	20,629	5,039	5,013	5,254	5,323
Georgia .....	(D)	(D)	(D)	(D)	(D)
Illinois .....	44,789	10,308	10,734	11,604	12,143
Indiana .....	(D)	(D)	(D)	(D)	(D)
Iowa .....	(D)	(D)	(D)	(D)	(D)
Kansas .....	85,809	20,563	20,688	22,472	22,086
Michigan .....	17,702	3,979	4,334	4,632	4,757
Minnesota .....	76,196	18,360	18,225	19,383	20,228
Missouri .....	60,558	13,578	14,728	15,933	16,319
New York .....	62,636	14,325	15,388	16,482	16,441
North Carolina .....	25,817	5,860	6,491	6,822	6,644
Ohio .....	53,192	11,644	12,863	14,183	14,502
Oklahoma .....	19,590	4,532	4,766	4,997	5,295
Oregon and Washington .....	29,895	7,146	7,533	7,647	7,569
Pennsylvania .....	36,074	8,398	9,121	9,221	9,334
Tennessee .....	35,731	8,288	8,585	9,448	9,410
Texas .....	33,510	8,013	8,280	8,568	8,649
All other states .....	160,386	37,520	40,542	41,385	40,939

D Withheld to avoid disclosing data for individual companies.

†Revised by 5 percent or more from previously published data.

Table 7. **Durum Wheat Products by Quarter: 1998 and 1997**

Product description	Unit of measure	Total	First quarter	Second quarter	Third quarter	Fourth quarter
<b>1998</b>						
Durum wheat ground .....	1,000 bushels.	58,395	'15,426	'13,733	'14,414	'14,822
Straight semolina.....	1,000 cwt.....	27,056	'7,008	'6,358	'6,729	'6,961
Blended semolina .....	1,000 cwt.....	(D)	(D)	(D)	(D)	(D)
<b>1997</b>						
Durum wheat ground .....	1,000 bushels.	64,663	16,217	15,577	15,756	17,113
Straight semolina.....	1,000 cwt.....	29,476	7,510	7,125	7,266	7,575
Blended semolina .....	1,000 cwt.....	(D)	-	-	(D)	(D)

- Represents zero.      D Withheld to avoid disclosing data for individual companies.      'Revised by 5 percent or more from previously published data.

**HISTORICAL NOTE**

The current MQ20A series of quarterly reports, with annual summaries of wheat ground and wheat milling products, originated in May 1923. Data, by states, have been published monthly since 1927. Beginning in 1931 and ending with the June 1947 report, monthly wheat flour production by capacity groups was published. The annual summary report during the years 1931 to 1964 also contained a table showing production by capacity groups. Historical data may be obtained from the Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**FUNDING**

Since 1990, part of the cost of this survey has been paid by "Milling and Baking News" published by Sosland Publishing Company.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Nancy Higgins, 301-457-4626.



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## CONFECTIONERY—MA311D (FORMERLY MA20D)

### INTRODUCTION

The data on confectionery are from a survey that covers all manufacturers in the United States producing consumer type confectionery and chocolate products. Manufacturers of cough drops, medicated candy, roasted peanuts, unsweetened popcorn, and fountain syrup are excluded from the survey. Small firms that manufacture confectionery for sale at retail on the premises are classified in retail trade and are also excluded from this survey. Data for chewing gum were included for the first time in the 1993 survey, but were excluded from all data prior to that time.

Table 9 summarizes the quantity and value of manufacturers' shipments of total confectionery products over the last decade. It also shows the average quantity and value of confectionery consumed, on a per capita basis, in the United States. Table 10 shows the quantity and value of shipments of confectionery and nonconfectionery by the type of product. Table 11 shows the quantity and value of the materials that were consumed in the manufacturing process. Apparent consumption figures are derived in table 12 by subtracting the exports from the total manufacturers' shipments plus the imports.

### SUMMARY OF FINDINGS

Total quantity of shipments of confectionery products (excluding chewing gum, bubble gum, and chewing gum base) for 1998 was 6,504.4 million pounds, compared to 6,593.1 million pounds in 1997, a decrease of 1.3 percent. Total value of shipments of confectionery products (excluding chewing gum, bubble gum, and chewing gum base) for 1998 was \$13,492.3 million compared to \$13,565.0 million in 1997, a decrease of 0.5 percent.

The quantity of chocolate and chocolate-type confectionery products shipped increased 1.1 percent, while the quantity of nonchocolate-type confectionery products decreased by 3.8 percent. The value of chocolate-type confectionery products shipped increased 0.8 percent, while the value of nonchocolate-type confectionery products decreased 2.9 percent.

### EXPLANATION OF TERMS

**Chocolate type products.** Products that contain, as an ingredient, either real chocolate or a chocolate compound containing substitute raw material ingredients such as cocoa butter extenders. Products that include a mixture of chocolate type and nonchocolate type pieces (such as certain boxed assortments) are included in chocolate type assortments.

**Solid.** Includes hollow molded and contains no additional foods of any kind. Examples are chocolate stars, Easter bunnies, hollow chocolate Santas, and solid chocolate candy bars.

**Solid with inclusions.** Solid chocolate mixed with other foods such as dried fruits, nuts, and rice.

**Enrobed or molded with bakery product center.** Molded or enrobed chocolate exterior with a baked cookie or wafer center. May or may not have additional confectionery layers or ingredients.

**Enrobed or molded with candy, nuts, or fruit center.** Examples are chocolate covered cherries, and candy bars covered in chocolate with centers of nougat, caramel, and peanuts.

**Panned.** Products manufactured using the panning process. Examples are bridge mix, sugar panned chocolate centers, chocolate covered nuts, and dried fruit made by the panning process.

**Assortments and others.** Products comprising an assortment of two or more of the above subcategories, and/or products that do not fall into any of the above subcategories. Examples are packages or boxes containing combinations of product types.

**Nonchocolate type products.** All other confectionery products that do not contain either real chocolate or chocolate compound as an ingredient.

**Hard candy.** Comprising a sugar mass that is processed to be nongrained, a sugar mass that is grained through serratation, and brittles that frequently contain nuts. Examples are pops, lemon drops, pressed mints, dessert mints, candy canes, and sour balls.

**Chewy candy.** Comprising a plastic-textured grained or nongrained caramel that is sometimes mixed with corn or other foods, toffee that is less plastic than caramel, taffies that vary from hard chewy to soft chewy, and grained and nongrained nougats. Examples are caramel covered popcorn and caramels.

**Soft candy.** Comprising crystallized and noncrystallized creams, fudges, grained and nongrained marshmallows, soft jellies, and gums. Examples are candy corn and orange slices.

**Iced coated.** Enrobed, formed, or deposited nonchocolate confectioner's coated candies. Examples are bark, "white chocolate," and coconut bonbons.

**Panned.** Products manufactured using the panning process. Examples are jelly beans and Boston baked beans.

**Licorice and licorice-type.** Sugar and starch based (products) flavored with licorice extract and colored black. Other flavors and colors may be substituted in licorice-type. Examples are licorice twists, licorice shoelaces, and nuggets.

**Other chocolate products.** Comprised of coatings, both chocolate and compound, including baking chocolate sold in bars and chips through retail outlets; chocolate chips and other chocolate coatings sold to bakers, ice cream manufacturers, biscuit and cracker manufacturers, and other outlets; chocolate liquor, cocoa butter melted, and cocoa cake and powder.

**Chewing gum.** An emulsion consisting of a polymer base, bulk fillers, and flavors. Includes chewing gum, bubble gum, and chewing gum base.

**Milk products.** Includes all milk products such as fluid milk and cream; condensed, evaporated, and dried milk; and creamery butter.

**Fats and oils.** Includes margarine, hydrogenated shortenings, corn, cottonseed, coconut, soybean and peanut oils, etc; excludes slab oils.

**Table 8. Summary of Manufacturers' Shipments of Confectionery Products: 1987 to 1998**

[Quantity in millions of pounds. Value in millions of dollars]

Year	Total				Excluding chewing gum			
	Pounds	Value	Per capita consumption <sup>1</sup> (pounds)	Per capita consumption <sup>1</sup> (dollars)	Pounds	Value	Per capita consumption <sup>1</sup> (pounds)	Per capita consumption <sup>1</sup> (dollars)
1998.....	6,906	14,817	26.9	56.4	6,504	13,492	25.2	51.3
1997.....	<sup>1</sup> 7,018	<sup>1</sup> 14,929	<sup>1</sup> 27.2	<sup>1</sup> 56.6	<sup>1</sup> 6,593	<sup>1</sup> 13,565	<sup>1</sup> 25.4	<sup>1</sup> 51.4
1996.....	6,813	13,635	26.5	52.0	6,365	12,211	24.6	46.6
1995.....	6,572	12,918	25.7	50.0	6,065	11,535	23.8	44.7
1994.....	6,253	12,208	24.5	47.1	5,750	10,837	22.5	41.8
1993.....	5,988	11,894	23.6	46.4	5,572	10,670	21.9	41.5
1992.....	(NA)	(NA)	(NA)	(NA)	5,387	10,428	21.5	41.1
1991.....	(NA)	(NA)	(NA)	(NA)	4,989	9,710	20.3	38.9
1990.....	(NA)	(NA)	(NA)	(NA)	4,840	9,004	20.1	36.7
1989.....	(NA)	(NA)	(NA)	(NA)	4,852	8,682	20.4	35.8
1988.....	(NA)	(NA)	(NA)	(NA)	4,570	8,278	19.2	34.4
1987.....	(NA)	(NA)	(NA)	(NA)	4,231	7,678	18.3	32.3

NA Not applicable. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Production plus imports minus exports divided by population, including armed forces abroad, as of July 1, 1998.

Source of population data: U.S. Census Bureau, U.S. Population Estimates, Series PPL-41 (July 1, 1998, population was 270,298,524).

**Table 9. Quantity and Value of Shipments of Confectionery and Nonconfectionery by Type of Product: 1998 and 1997**

[Quantity in thousands of pounds. Value in thousands of dollars]

Product description	1998		1997	
	Quantity	Value	Quantity	Value
<b>CONFECTIONERY</b>				
<b>Shipments</b> .....	<b>6,504,439</b>	<b>13,492,254</b>	<b>6,593,092</b>	<b>13,565,033</b>
Chocolate and chocolate-type confectionery .....	3,260,968	8,454,689	3,226,974	'8,387,321
Solid .....	427,371	980,129	'438,788	'1,004,259
Solid with inclusions .....	301,661	845,491	'321,826	'906,064
Enrobed or molded:				
With candy, fruit, nut, or granola center .....	1,365,931	3,426,261	1,373,549	3,460,967
With bakery product center .....	201,188	539,645	189,976	496,770
Panned .....	635,201	1,518,338	580,226	1,390,742
Assortments and other .....	329,616	1,144,825	322,609	1,128,519
Chocolate type, n.s.k. ....	-	-	-	-
Nonchocolate-type confectionery .....	3,023,823	4,589,544	3,142,899	4,726,305
Hard candy .....	852,560	1,460,735	'798,158	'1,333,446
Chewy candy, including granola bars .....	738,469	1,318,472	'839,105	1,521,146
Soft candy .....	705,787	762,218	'737,668	'788,989
Iced/coated .....	21,511	48,350	'19,360	'42,668
Panned .....	440,722	728,908	'461,075	724,147
Licorice and licorice type .....	264,774	270,861	'287,533	'315,909
Nonchocolate type, n.s.k. ....	-	-	-	-
Chewing gum, bubble gum, and chewing gum base .....	401,796	1,325,047	425,208	1,363,540
Confectionery, n.s.k. <sup>1</sup> .....	219,648	448,021	223,219	451,407
<b>NONCONFECTIONERY</b>				
<b>Shipments</b> .....	<b>1,437,142</b>	<b>1,472,621</b>	<b>1,540,358</b>	<b>'1,570,210</b>
Chocolate products other than confectionery:				
Baking chocolate (bars or blocks) .....	11,173	15,390	'13,823	'19,507
Chocolate coatings (blocks, wafers, liquid) .....	344,543	407,180	'374,176	'440,309
Chocolate liquor .....	61,075	64,498	64,109	72,916
Cocoa butter .....	36,938	53,231	'38,247	'55,838
Compound coatings (blocks, wafers, liquid) .....	198,308	160,342	'214,675	'174,222
Chocolate chips and baking pieces .....	317,314	420,422	343,173	450,512
Cocoa powder, syrup/toppings, and other .....	467,791	351,558	492,155	356,906
Nonconfectionery chocolate, n.s.k. ....	-	-	-	-

- Represents zero. n.s.k. Not specified by kind. 'Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents estimated data for small companies, typically those with fewer than five employees, that were not included on the mailing panel.

**Table 10. Consumption of Selected Ingredients by the U.S. Confectionery Industry: 1998 and 1997**

[Quantity in thousands of pounds. Value in thousands of dollars]

Materials	1998		1997	
	Quantity	Value	Quantity	Value
<b>Materials consumed</b> .....	<b>(X)</b>	<b>3,807,572</b>	<b>(X)</b>	<b>3,747,328</b>
Sugar (cane-beet) .....	2,789,837	771,908	2,797,232	800,747
Cocoa beans .....	597,762	478,445	594,351	431,753
Corn syrup, including HFCS and dextrose .....	1,738,215	221,424	1,801,928	238,545
Chocolate liquor, imported .....	13,485	11,012	'22,873	'19,717
Chocolate liquor, domestic .....	47,295	56,629	47,123	48,886
Cocoa powder composition coatings .....	25,120	14,594	31,200	'16,775
Cocoa cake or powder .....	135,686	56,645	132,374	48,842
Cocoa butter .....	342,898	438,854	365,520	417,445
Chocolate coatings, milk .....	254,682	277,558	'261,845	'280,092
Chocolate coatings, other than milk .....	92,416	93,367	98,192	93,061
Fats and oils .....	371,608	157,335	'366,387	'149,789
Gum base .....	64,409	70,570	'67,352	'77,190
Milk and milk products .....	497,258	417,146	549,040	371,106
Peanuts, shelled basis .....	320,304	215,081	341,868	227,142
Almond kernels .....	41,588	78,585	'43,828	92,052
Other nuts and nut meats (kernels) .....	19,449	49,835	'21,848	'55,024
Coconut meat .....	20,926	15,761	20,040	18,394
Other edible materials <sup>1</sup> .....	499,600	381,941	'513,230	'359,910
Materials, n.s.k. ....	(X)	882	(X)	858

n.s.k. Not specified by kind. 'Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Includes corn starch, essential oils, eggs and egg products, fruits, jams, and other materials on which specific data were not collected.

Note: Materials such as parts and containers consumed in the manufacturing process are not reported in this survey. This information will be available in the 1997 Economic Census, Manufacturing sector report for industries 311320, 311330, and 311340. Specifically excluded in this report are freight charges and other direct charges incurred by the establishment, fuels consumed, parts, containers, scrap, electric energy purchases, work done by others on materials or parts furnished by other establishments (contract work), and cost of products bought and resold in the same condition.

**Table 11. Shipments, Exports, Imports, and Apparent Consumption of Confectionery Products: 1998 and 1997**

[Quantity in thousands of kilograms. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>2</sup>		Percent exports to manufacturers' shipments		Imports for consumption <sup>3</sup>		Apparent consumption <sup>5</sup>		Percent imports to apparent consumption		
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value <sup>4</sup>	Quantity	Value	Quantity	Value	
3113301, 3113204	Confectionery: Chocolate-type confectionery . . . . .	1998 . . . . .	1,479,765	8,454,689	76,785	249,230	5.2	2.9	92,514	371,235	1,495,494	8,576,694	6.2	4.3
		1997 . . . . .	1,463,746	8,387,321	85,456	297,744	5.8	3.5	87,798	341,605	1,466,088	8,431,182	6.0	4.1
3113401	Nonchocolate-type confectionery . . . . .	1998 . . . . .	1,371,597	4,589,544	82,001	212,545	6.0	4.6	207,777	472,394	1,497,373	4,849,393	13.9	9.7
		1997 . . . . .	1,425,610	4,726,305	82,973	227,792	5.8	4.8	177,119	388,887	1,519,756	4,887,400	11.7	8.0
3113404	Chewing gum, sugar, and nonsugar . . . . .	1998 . . . . .	182,254	1,325,047	16,206	52,686	8.9	4.0	41,044	102,568	207,092	1,374,929	19.8	7.5
		1997 . . . . .	192,873	1,363,540	20,185	65,592	10.5	4.8	41,081	97,732	213,769	1,395,680	19.2	7.0
3113201241	Nonconfectionery: Cocoa butter . . . . .	1998 . . . . .	16,755	53,231	5,606	21,557	33.5	40.5	65,307	273,138	76,456	304,812	85.4	89.6
		1997 . . . . .	17,349	55,838	3,886	15,590	22.4	27.9	87,689	349,511	101,152	389,759	86.7	89.7
31132014A1, 31132015C1	Chocolate coatings, blocks, wafers, or liquid confectionery . . . . .	1998 . . . . .	246,236	567,522	5,604	6,429	2.3	1.1	7,796	11,953	248,428	573,046	3.1	2.1
		1997 . . . . .	267,101	614,531	2,757	3,619	1.0	0.6	7,932	11,740	272,276	622,652	2.9	1.9
3113207471, 3113201231, 31132075G1, 31132076H1	Other chocolate and cocoa products . . . . .	1998 . . . . .	388,893	851,868	49,301	109,908	12.7	12.9	272,501	391,157	612,093	1,133,117	44.5	34.5
		1997 . . . . .	414,252	899,841	50,497	114,242	12.2	12.7	241,227	340,966	604,982	1,126,565	39.9	30.3

<sup>1</sup>For comparison of North American Industry Classification System codes (domestic output) with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 146, *U.S. Imports for Consumption*.

<sup>4</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>5</sup>Apparent consumption is derived by subtracting exports from the total manufacturers' shipments plus imports.

Note: "Confectionery, n.s.k." is excluded from this table.

**HISTORICAL NOTE**

Data on confectionery products have been collected by the Census Bureau since 1926. In 1989, data tables showing the quantity and value of shipments of chocolate and nonchocolate-type confectionery, by type of product and package, were discontinued. Also discontinued in 1989 were data showing the sales and resales of confectionery by type of customer.

Starting with the 1990 report, data showing the quantity and value of shipments by type of product of other chocolate products (nonconfectionery) were added. Starting with the 1993 report, data for chewing gum were added.

Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**FUNDING**

Since 1990, this survey has been conducted under the sponsorship of the National Confectioners Association and the Chocolate Manufacturers Association.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Ronanne Vinson, 301-457-4647.

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## FATS AND OILSEED CRUSHINGS—M311J (FORMERLY M20J)

### INTRODUCTION

Data on the fats and oilseed crushings were collected by mail on Census Bureau monthly form M20J, Oilseeds, Beans, and Nuts (Primary Processors) from a sample of about 183 establishments. Approximately 168 of these establishments are included in the monthly panel. An additional 15 small crushers report data annually. Monthly data for these small crushers are estimated based on their annual reports and trends reported by those in the monthly panel.

Statistics from the M20J forms show the amount of selected raw materials crushed along with the production and stocks of the byproducts extracted (crude oil and cake and meal) during the crushing process. The crushing facilities are referred to as the Primary Processors. The data are published monthly. Data on soybeans and cottonseeds are shown for selected states.

### SUMMARY OF FINDINGS

For the 1998 calendar year, soybean crushings were 48,060.6 thousand short tons. This showed an increase of 7.8 percent, from the 1997 figure of 44,571.2 thousand short tons. The production of crude soybean oil was 18,090.2 million pounds. This showed an increase of 10.9 percent from the 1997 figure of 16,308.8 million pounds for crude oil.

At the same time, cottonseed crushings were 3,590.7 thousand short tons. This represented a 7.9-percent decrease from the 1997 figure of 3,875.2 thousand

pounds. The production of crude cottonseed oil was 1,125.3 million pounds. This represented an 8.8-percent decrease from the 1997 figure of 1,224.0 million pounds for crude cottonseed oil.

The production of crude corn oil was 2,323.8 million pounds. This represented a 3.1-percent increase from the 1997 figure of 2,253.9 million pounds for crude corn oil.

### EXPLANATION OF TERMS

**Net receipts at mills (current month).** Figures under this heading are derived by subtracting stocks held at the end of the previous month from the sum of materials crushed during the current month and stocks held at the end of the current month.

**Shipments and transfers (current month).** Figures under this heading are derived by subtracting stocks held at the end of the current month from the sum of stocks held at the end of the previous month and production during the current month.

**Linters.** The fuzz or short fibers that adhere to cottonseed after ginning.

**Hulls.** The outer covering of cottonseeds or soybeans.

**Cake and meal.** The residue left after the oil is extracted from a seed, nut, or kernel.

**Crude vegetable oils.** Oil until it has been processed by an alkali or caustic wash or by some equivalent operation.

**Lecithin.** A mixed phosphatide product obtained from soybean oil in the degumming process.

**Table 12. Receipts, Crushings, and Stocks of Major Raw Materials at Oil Mills: 1998**

[Thousands of short tons]

Product code	Product description	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
00116 11	Soybeans: Receipts at mills .....	48,681.2	3,637.9	3,689.3	7,506.0	4,725.0	3,021.9	3,763.6	3,576.7	3,233.7	3,564.3	3,768.0	3,934.9	4,259.8
	Crushed or used .....	48,060.6	4,338.5	4,290.7	4,271.0	3,717.2	3,358.3	3,713.8	3,524.4	3,718.0	4,018.7	4,409.4	4,147.6	4,552.9
	Stocks <sup>1</sup> .....	3,928.7	3,928.7	4,629.4	5,230.8	1,995.7	987.9	1,324.3	1,274.6	1,222.3	1,706.5	2,160.9	2,802.3	3,015.0
00131 01	Cottonseed: Receipts at mills .....	2,966.2	375.6	662.4	1,037.5	284.4	133.7	88.5	6.4	8.9	57.6	10.3	130.2	170.5
	Crushed or used .....	3,590.7	262.7	254.3	272.7	174.9	246.0	277.6	278.8	309.1	359.1	374.8	352.3	428.4
	Stocks <sup>1</sup> .....	1,846.1	1,846.1	1,733.1	1,325.0	560.2	450.7	563.0	752.1	1,024.5	1,324.7	1,626.1	1,990.6	2,212.7
00139 23	Peanuts: Receipts at mills .....	174.8	19.5	17.1	12.3	5.7	6.3	10.3	14.6	14.4	17.8	20.2	16.8	19.6
	Crushed or used .....	170.3	17.2	17.6	8.9	7.5	8.7	12.4	12.9	13.8	16.4	17.9	17.6	19.4
	Stocks <sup>1</sup> .....	8.5	8.5	6.2	6.7	3.3	5.0	7.5	9.6	7.9	7.3	5.8	3.4	4.3
00119 11	Linseed: Receipts at mills .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Crushed or used .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
00119 22	Sunflower: Receipts at mills .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Crushed or used .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
00119 33	Safflower: Receipts at mills .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Crushed or used .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
00119 18	Rapeseed: Receipts at mills .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Crushed or used .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Calculated at end of the period.

**Table 13. Production and Stocks of Major Crude Vegetable Oils at Mills: 1998**

[Millions of pounds]

Product code	Product description	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
20751 11	Soybean:													
	Production ...	18,090.2	1,610.6	1,598.0	1,598.4	1,410.3	1,285.6	1,409.5	1,337.2	1,417.9	1,525.8	1,654.7	1,557.7	1,684.3
	Stocks <sup>1</sup> .....	600.3	600.3	607.7	658.1	665.1	779.9	954.6	937.6	999.3	965.4	933.6	907.9	934.3
20741 11	Cottonseed:													
	Production ...	1,125.3	80.6	80.0	78.3	59.6	77.8	88.8	87.3	96.1	112.7	116.7	111.1	136.4
	Stocks <sup>1</sup> .....	14.6	14.6	23.0	14.0	15.2	19.5	23.8	31.1	35.8	29.7	26.4	29.2	23.1
20762 52	Peanut:													
	Production ...	134.5	13.9	13.6	6.9	5.8	6.3	9.5	10.0	10.8	13.0	14.3	14.5	16.0
	Stocks <sup>1</sup> .....	2.2	2.2	3.1	3.2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
20460 61	Corn:													
	Production ...	2,323.8	189.2	199.4	209.2	188.9	202.8	192.8	201.4	201.2	203.9	201.0	162.7	171.4
	Stocks <sup>1</sup> .....	20.6	20.6	21.9	28.5	32.6	29.0	27.8	27.1	31.3	30.2	31.2	28.3	32.9
20761 11	Linseed:													
	Production ...	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
20762 35	Sunflower:													
	Production ...	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
20762 99	Safflower:													
	Production ...	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
20762 71	Rapeseed:													
	Production ...	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Calculated at end of the period.

**Table 14. Production, Shipments, Transfers, and Stocks of Primary Products (Except Crude Oil at Crude Mills): 1998**

Product code	Product description	Unit of measure	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
20751 11	Soybean:														
	Cake and meal:														
	Production	Thou s tons	35,354.0	3,193.0	3,142.5	3,143.1	2,721.9	2,477.4	2,730.5	2,601.8	2,746.3	2,948.3	3,240.8	3,058.3	3,350.1
	Shipments and transfers	do	35,301.1	3,227.5	3,065.2	3,086.4	2,694.7	2,494.4	2,720.7	2,695.1	2,678.0	2,980.3	3,271.8	3,048.8	3,338.2
	Stocks <sup>1</sup>	do	276.4	276.4	311.0	233.7	177.0	149.8	166.9	157.0	250.2	181.9	213.9	244.9	235.4
20751 42	Lecithin:														
	Production	do	94.9	9.8	9.8	8.0	7.7	7.0	7.1	6.4	7.5	7.9	8.0	7.4	8.3
20752 61	Mill feed (hull meal):														
	Production	do	2,619.6	229.4	225.9	222.0	208.8	188.2	211.0	193.4	210.4	224.2	243.2	220.9	242.0
	Shipments and transfers	do	2,620.6	233.3	222.7	224.9	203.1	191.4	208.7	197.2	198.9	219.9	254.9	218.7	247.0
	Stocks <sup>1</sup>	do	37.4	37.4	41.3	38.1	41.1	35.4	38.5	36.2	39.9	28.4	24.1	35.8	33.5
20744 11	Cottonseed:														
	Cake and meal:														
	Production	do	1,631.5	122.5	115.9	118.7	77.1	114.7	124.0	128.8	141.8	162.3	172.7	158.5	194.4
	Shipments and transfers	do	1,583.8	120.1	125.3	114.6	99.7	99.5	137.3	158.5	122.1	125.4	157.5	147.3	176.6
	Stocks <sup>1</sup>	do	85.0	85.0	82.6	92.1	87.9	110.5	95.3	108.5	138.1	118.5	81.6	66.3	55.2
20744 51	Hulls:														
	Production	do	940.0	68.1	66.8	67.5	48.2	64.9	71.8	75.6	80.1	91.8	99.8	90.8	114.7
	Shipments and transfers	do	962.1	69.8	71.6	64.8	63.8	67.9	76.2	81.0	83.4	83.8	99.1	95.9	104.7
	Stocks <sup>1</sup>	do	15.7	15.7	17.4	22.2	19.5	35.1	38.2	42.6	48.0	51.4	43.3	42.7	47.8
20743 13	Linters: <sup>2</sup>														
	First cut:														
	Production	Mill lb	115.6	9.2	(D)	(D)	(D)	(D)	(D)	8.1	9.5	(D)	(D)	(D)	(D)
	Shipments and transfers	do	116.2	(D)	(D)	(D)	(D)	(D)	(D)	10.6	8.5	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	5.9	5.9	5.0	4.8	4.2	(D)	(D)	8.2	10.7	9.7	9.0	8.2	6.1
	Production	Thou bales <sup>2</sup>	184.6	14.8	(D)	(D)	(D)	(D)	(D)	13.0	15.2	(D)	(D)	(D)	(D)
	Shipments and transfers	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	16.9	13.6	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	9.4	9.4	7.9	7.6	6.7	(D)	(D)	13.1	17.1	15.5	14.4	13.1	9.7
	Second cut:														
	Production	Mill lb	401.7	28.4	26.6	24.5	19.7	26.5	32.8	32.6	33.7	41.7	42.6	41.1	51.5
	Shipments and transfers	do	413.3	27.4	28.7	27.8	23.9	28.0	40.5	35.1	35.1	38.5	42.4	36.7	49.2
	Stocks <sup>1</sup>	do	5.7	5.7	4.7	6.8	10.1	14.4	15.9	23.7	26.2	27.5	24.3	24.1	19.7
	Production	Thou bales <sup>2</sup>	633.6	44.8	41.9	38.6	31.0	41.8	51.8	51.4	53.2	65.7	67.2	64.9	81.3
	Shipments and transfers	do	624.5	43.3	45.2	43.8	37.8	44.2	63.9	55.4	55.3	60.7	66.8	57.9	50.2
	Stocks <sup>1</sup>	do	9.0	9.0	7.5	10.7	15.9	22.7	25.1	37.3	41.3	43.4	38.4	38.0	31.1
20743 17	Mill run:														
	Production	Mill lb	67.0	9.3	(D)	(D)	(D)	(D)	(D)	3.7	4.2	(D)	(D)	(D)	(D)
	Shipments and transfers	do	67.2	(D)	(D)	(D)	(D)	(D)	(D)	4.7	3.2	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	1.4	1.4	1.2	2.0	2.4	(D)	(D)	1.7	2.7	1.8	2.4	1.9	0.7
	Production	Thou bales <sup>2</sup>	107.8	15.0	(D)	(D)	(D)	(D)	(D)	6.0	6.7	(D)	(D)	(D)	(D)
	Shipments and transfers	do	105.6	(D)	(D)	(D)	(D)	(D)	(D)	7.5	5.2	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	2.2	2.2	1.9	3.2	3.8	(D)	(D)	2.8	4.3	2.8	3.9	3.1	1.2
20763 51	Peanut oil cake and meal:														
	Production	Thou s tons	92.9	9.8	10.1	5.0	3.7	4.0	6.5	6.9	7.1	8.9	9.6	10.0	11.2
	Shipments and transfers	do	86.5	11.4	(D)	(D)	(D)	(D)	(D)	(D)	7.4	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	6.4	6.4	8.0	(D)	(D)	(D)	(D)	(D)	13.2	13.5	(D)	(D)	(D)
20763 11	Linseed oil cake and meal:														
	Production	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Shipments and transfers	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
20763 64	Sunflower oil and cake and meal:														
	Production	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Shipments and transfers	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
20763 99	Safflower oil cake and meal:														
	Production	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Shipments and transfers	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
20763 71	Rapeseed cake and meal:														
	Production	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Shipments and transfers	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Stocks <sup>1</sup>	do	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Calculated at end of the period. <sup>2</sup>Linters vary in weight depending on kind of cut: First cut, 626 lbs; second cut, 634 lbs; and mill run, 622 lbs.



Table 15. **Crushings and Stocks of Cottonseed (00131 11) at Oil Mills by Selected States: 1998**

[Thousands of short tons]

State	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>United States:</b>													
Receipts at mills...	2,966.2	375.6	662.4	1,037.5	284.4	133.7	88.5	6.4	8.9	57.6	110.3	130.2	170.5
Crushed or used...	3,590.7	262.7	254.3	272.7	174.9	246.0	277.6	278.8	309.1	359.1	374.8	352.3	428.4
Stocks <sup>1</sup> .....	1,846.1	1,846.1	1,733.1	1,325.0	560.2	450.7	563.0	752.1	1,024.5	1,324.7	1,626.1	1,990.6	2,212.7
<b>Arkansas:</b>													
Crushed or used.....	460.0	(D)	(D)	(D)	(D)	(D)	38.6	44.2	(D)	47.8	47.7	43.6	52.9
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	33.1	75.5	124.2	159.0	208.7	254.7	289.1
<b>Pacific and Mountain states:</b>													
Crushed or used.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Mississippi:</b>													
Crushed or used.....	612.9	40.1	44.5	51.5	35.2	48.3	(D)	54.4	57.1	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	152.7	152.7	176.4	185.0	69.8	(D)	(D)	72.5	109.9	(D)	(D)	(D)	(D)
<b>Texas:</b>													
Crushed or used.....	(D)	89.4	93.4	88.8	76.2	100.7	106.1	(D)	108.5	121.1	150.3	135.8	168.9
Stocks <sup>1</sup> .....	977.0	977.0	827.5	560.6	331.0	358.9	332.4	(D)	(D)	619.5	740.0	894.4	935.0

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Calculated at the end of period.

**Table 16. Production and Stocks at Oil Mills by Selected States: 1998**

[Thousands of short tons]

State	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>COTTONSEED CRUDE OIL (20741 00)</b>													
<b>United States:</b>													
Production .....	1,125.3	80.6	80.0	78.3	59.6	77.8	88.8	87.3	96.1	112.7	116.7	111.1	136.4
Stocks <sup>1</sup> .....	14.6	14.6	23.0	14.0	15.2	19.5	23.8	31.1	35.8	29.7	26.4	29.2	23.1
<b>Arkansas:</b>													
Production .....	140.1	(D)	(D)	(D)	(D)	(D)	12.1	13.1	(D)	14.6	14.3	13.7	16.0
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>California:</b>													
Production .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Mississippi:</b>													
Production .....	(D)	10.3	12.7	14.6	10.0	13.2	(D)	15.6	16.4	17.3	<sup>1</sup> 17.1	13.9	18.3
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Texas:</b>													
Production .....	448.8	29.9	30.8	29.0	29.4	33.8	37.7	33.7	35.2	39.7	49.1	43.8	56.7
Stocks <sup>1</sup> .....	3.2	3.2	9.1	3.8	4.2	(D)	(D)	5.4	7.2	6.7	4.9	5.3	4.4
<b>COTTONSEED CAKE AND MEAL (20744 14)</b>													
<b>United States:</b>													
Production .....	1,631.5	122.5	115.9	118.7	77.1	114.7	124.0	128.8	141.8	162.3	172.7	158.5	194.4
Stocks <sup>1</sup> .....	85.0	85.0	82.6	92.1	87.9	110.5	95.3	108.5	138.1	118.5	81.6	66.3	55.2
<b>Arkansas:</b>													
Production .....	215.6	(D)	(D)	(D)	8.8	(D)	18.1	20.1	(D)	21.5	22.5	20.4	24.4
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	2.2	4.6	(D)	(D)	(D)	4.3	3.5	3.2	3.9
<b>California:</b>													
Production .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Mississippi:</b>													
Production .....	265.3	17.1	19.3	23.3	12.2	23.7	(D)	22.1	24.3	(D)	<sup>1</sup> 26.3	21.0	27.8
Stocks <sup>1</sup> .....	(D)	(D)	(D)	8.3	3.0	(D)	(D)	7.9	(D)	(D)	(D)	(D)	(D)
<b>Texas:</b>													
Production .....	616.7	44.4	42.4	42.6	33.6	46.2	47.5	49.2	49.4	56.0	70.2	58.4	76.8
Stocks <sup>1</sup> .....	(D)	(D)	(D)	32.9	34.4	33.4	20.7	20.6	36.4	30.8	20.8	14.0	11.0
<b>COTTONSEED HULLS (20744 51)</b>													
<b>United States:</b>													
Production .....	940.0	68.1	66.8	67.5	48.2	64.9	71.8	75.6	80.1	91.8	99.8	90.8	114.7
Stocks <sup>1</sup> .....	15.7	15.7	17.4	22.2	19.5	35.1	38.2	42.6	48.0	51.4	43.3	42.7	47.8
<b>Arkansas:</b>													
Production .....	111.8	(D)	(D)	(D)	4.4	(D)	8.8	11.1	(D)	12.2	11.9	(D)	13.1
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>California:</b>													
Production .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Mississippi:</b>													
Production .....	(D)	11.3	12.7	14.1	11.0	14.1	(D)	16.2	17.4	16.1	<sup>1</sup> 15.9	13.0	19.4
Stocks <sup>1</sup> .....	(D)	(D)	1.1	1.8	(D)	(D)	5.2	8.6	(D)	5.3	4.0	(D)	(D)
<b>Texas:</b>													
Production .....	352.4	22.7	25.1	24.4	21.4	24.9	27.5	27.9	25.1	30.0	43.0	36.0	44.3
Stocks <sup>1</sup> .....	2.8	2.8	3.6	5.9	4.0	8.5	7.6	4.2	5.8	(D)	15.2	13.2	16.6

See footnotes at end of table.

Table 16. **Production and Stocks at Oil Mills by Selected States: 1998**—Con.

[Thousands of short tons]

State	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>COTTONSEED LINTERS FIRST CUT (20743 13), SECOND CUT (20743 15), AND MILL RUN (20743 17)<sup>2</sup></b>													
<b>United States:</b>													
Production .....	925.9	74.6	68.9	<sup>r</sup> 65.7	49.1	60.1	72.8	70.4	75.1	89.5	100.5	88.9	110.4
Stocks <sup>1</sup> .....	20.6	20.6	17.2	21.6	26.4	34.3	37.6	53.2	62.7	61.8	56.6	54.2	42.0
<b>Arkansas:</b>													
Production .....	127.1	(D)	(D)	(D)	(D)	(D)	10.9	11.9	(D)	13.2	13.2	(D)	15.2
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>California:</b>													
Production .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Mississippi:</b>													
Production .....	166.3	12.2	13.3	15.4	10.2	11.7	(D)	14.2	14.8	(D)	<sup>r</sup> 16.3	12.9	16.6
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Texas:</b>													
Production .....	328.1	23.3	22.9	20.0	19.0	23.9	25.4	25.4	26.6	30.3	35.8	32.6	42.8
Stocks <sup>1</sup> .....	(D)	(D)	(D)	6.4	5.4	(D)	(D)	14.4	16.5	(D)	<sup>r</sup> 15.4	18.0	12.3

D Withheld to avoid disclosing data for individual companies. <sup>r</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Calculated at the end of period.

<sup>2</sup>Thousands of bales: Linter bales vary in weight according to kind of cut: First cut, 626 lb; second cut, 635 lb; and mill run, 622 lb.

**Table 17. Net Receipts, Crushings, and Stocks of Soybeans (001161 11) at Oil Mills by Selected States: 1998**

[Thousands of short tons]

State	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>United States:</b>													
Receipts at mills . . . . .	48,681.2	3,637.9	3,689.3	7,506.0	4,725.0	3,021.9	3,763.6	3,576.7	3,233.7	3,564.3	3,768.0	3,934.9	4,259.8
Crushed or used . . . . .	48,060.6	4,338.5	4,290.7	4,271.0	3,717.2	3,358.3	3,713.8	3,524.4	3,718.0	4,018.7	4,409.4	4,147.6	4,552.9
Stocks <sup>1</sup> . . . . .	3,928.7	3,928.7	4,629.4	5,230.8	1,995.7	987.9	1,324.3	1,274.6	1,222.3	1,706.5	2,160.9	2,802.3	3,015.0
<b>Arkansas:</b>													
Receipts at mills . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	153.4
Crushed or used . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	153.9
Stocks <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Georgia:</b>													
Receipts at mills . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Crushed or used . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Illinois:</b>													
Receipts at mills . . . . .	8,858.5	459.2	510.0	1,480.0	984.4	475.5	715.1	731.2	603.2	702.9	729.6	690.9	776.5
Crushed or used . . . . .	8,643.8	766.8	748.3	761.9	681.6	520.2	714.8	675.3	690.9	746.2	780.0	748.3	809.5
Stocks <sup>1</sup> . . . . .	621.6	621.6	929.2	1,167.4	449.3	146.5	191.1	190.8	135.0	222.6	266.0	316.4	373.9
<b>Indiana:</b>													
Receipts at mills . . . . .	3,933.3	304.0	183.1	699.4	589.5	257.9	331.8	304.8	198.2	247.2	231.2	304.4	281.8
Crushed or used . . . . .	4,036.9	371.4	367.5	393.1	296.5	304.1	326.9	279.0	301.8	349.4	334.4	340.4	372.3
Stocks <sup>1</sup> . . . . .	403.6	403.6	471.0	655.4	349.1	56.2	102.4	97.4	71.7	175.2	277.5	380.7	416.7
<b>Iowa:</b>													
Receipts at mills . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Crushed or used . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Kansas:</b>													
Receipts at mills . . . . .	2,082.3	(D)	202.2	239.7	173.7	107.9	(D)	136.0	146.0	162.5	192.8	194.0	186.7
Crushed or used . . . . .	2,020.7	181.5	171.5	183.0	164.4	122.9	156.0	129.3	179.2	178.9	198.4	170.1	185.5
Stocks <sup>1</sup> . . . . .	(D)	(D)	154.8	124.1	67.4	58.0	73.1	(D)	(D)	(D)	(D)	(D)	(D)
<b>Minnesota:</b>													
Receipts at mills . . . . .	3,088.3	255.6	218.2	(D)	(D)	238.2	262.4	(D)	(D)	213.7	240.4	283.7	267.6
Crushed or used . . . . .	3,069.7	282.5	256.8	267.5	214.1	267.3	271.9	249.2	227.7	235.1	264.3	252.2	281.1
Stocks <sup>1</sup> . . . . .	110.3	110.3	137.3	175.8	(D)	45.8	74.8	84.3	(D)	64.4	85.9	109.7	78.2
<b>Missouri:</b>													
Receipts at mills . . . . .	(D)	186.1	195.1	462.6	(D)	(D)	(D)	233.5	234.1	197.8	236.9	231.6	270.2
Crushed or used . . . . .	(D)	245.0	251.7	257.4	218.8	210.4	174.3	227.1	241.1	203.8	263.8	231.7	(D)
Stocks <sup>1</sup> . . . . .	143.4	143.4	202.3	258.9	53.7	(D)	71.2	(D)	(D)	(D)	(D)	(D)	(D)
<b>Ohio:</b>													
Receipts at mills . . . . .	3,386.1	338.6	160.7	439.8	(D)	225.5	264.7	(D)	189.3	249.1	293.2	221.4	337.2
Crushed or used . . . . .	3,360.3	297.2	311.8	310.1	264.0	238.8	253.7	254.0	236.7	280.2	312.4	287.7	313.5
Stocks <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	44.8	58.2	47.2	(D)	(D)	(D)	(D)	(D)
<b>South Carolina:</b>													
Receipts at mills . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Crushed or used . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Calculated at the end of period.

Table 18. **Production and Stocks of Soybean Crude Oil, and Soybean Cake and Meal, Including Millfeed and Lecithin at Oil Mills by Selected States: 1998**

State	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>CRUDE OIL (20751 11) (Million of pounds)</b>													
<b>United States:</b>													
Production.....	18,090.2	1,610.6	1,598.0	1,598.4	1,410.3	1,285.6	1,409.5	1,337.2	1,417.9	1,525.8	1,654.7	1,557.7	1,684.3
Stocks <sup>1</sup> .....	600.3	600.3	607.7	658.1	665.1	779.9	954.6	937.6	999.3	965.4	933.6	907.9	934.3
<b>Arkansas:</b>													
Production.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	54.8
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	13.7
<b>Georgia:</b>													
Production.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Illinois:</b>													
Production.....	3,312.7	288.2	283.0	287.9	261.9	211.5	272.4	260.6	267.2	296.7	296.9	283.4	303.0
Stocks <sup>1</sup> .....	99.1	99.1	111.2	103.8	135.0	144.2	199.7	200.1	196.8	170.1	148.9	158.6	150.6
<b>Indiana:</b>													
Production.....	1,489.5	136.9	134.8	143.4	112.3	112.0	121.8	102.5	112.9	128.9	124.0	125.5	134.5
Stocks <sup>1</sup> .....	34.5	34.5	32.5	36.5	33.2	48.3	77.3	76.2	96.6	116.6	127.6	137.0	129.1
<b>Iowa:</b>													
Production.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Kansas:</b>													
Production.....	780.3	69.2	65.0	69.8	63.7	48.6	62.0	50.5	69.8	69.2	75.7	64.9	71.8
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Minnesota:</b>													
Production.....	1,170.5	106.6	99.6	102.5	81.8	101.8	102.6	96.0	89.1	91.3	99.6	94.0	105.5
Stocks <sup>1</sup> .....	(D)	(D)	30.7	31.0	30.8	50.9	73.8	80.9	69.8	69.7	76.4	73.3	79.9
<b>Missouri:</b>													
Production.....	1,077.6	92.4	95.5	98.1	85.4	80.1	67.6	88.1	95.5	78.7	102.9	90.6	102.6
Stocks <sup>1</sup> .....	51.8	51.8	49.4	36.0	41.0	48.5	(D)	(D)	49.4	(D)	(D)	(D)	(D)
<b>Ohio:</b>													
Production.....	1,199.3	107.3	110.9	113.1	95.4	85.5	91.7	89.4	85.8	98.4	110.1	102.0	109.7
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>South Carolina:</b>													
Production.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>CAKE AND MEAL (20751 11), INCLUDING MILLFEED (20752 61) AND LECITHIN (20751 42) (Thousands of short tons)</b>													
<b>United States:</b>													
Production.....	38,068.4	3,432.2	3,378.2	3,373.1	2,938.4	2,672.6	2,948.7	2,801.5	2,964.2	3,180.4	3,492.0	3,286.7	3,600.4
Stocks <sup>1</sup> .....	313.9	313.9	352.3	271.9	218.1	185.2	205.3	193.1	290.2	210.4	238.0	280.7	268.9
<b>Arkansas:</b>													
Production.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	119.4
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	8.4
<b>Georgia:</b>													
Production.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Illinois:</b>													
Production.....	6,821.6	602.6	589.0	601.0	536.5	410.3	565.2	535.9	547.5	582.6	619.7	594.4	637.1
Stocks <sup>1</sup> .....	(D)	(D)	110.7	65.4	49.8	34.9	28.8	35.7	55.2	45.6	65.0	59.0	52.2
<b>Indiana:</b>													
Production.....	3,201.1	305.1	291.1	310.9	233.0	241.1	257.7	220.6	238.3	274.5	265.3	269.3	294.2
Stocks <sup>1</sup> .....	15.7	15.7	16.8	17.0	9.6	16.0	19.0	29.2	37.0	28.3	22.5	25.2	21.2

See footnotes at end of table.

Table 18. **Production and Stocks of Soybean Crude Oil, and Soybean Cake and Meal, Including Millfeed and Lecithin at Oil Mills by Selected States: 1998—Con.**

State	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>CAKE AND MEAL (20751 11), INCLUDING MILLFEED (20752 61) AND LECITHIN (20751 42) (Thousands of short tons)—Con.</b>													
<b>Iowa:</b>													
Production.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Kansas:</b>													
Production.....	1,594.3	141.9	134.7	143.4	129.7	99.1	122.8	102.6	141.6	141.4	156.8	133.6	146.8
Stocks <sup>1</sup> .....	4.6	4.6	(D)	9.1	5.6	5.6	8.3	6.5	(D)	9.3	11.9	11.1	8.6
<b>Minnesota:</b>													
Production.....	2,466.3	222.1	202.7	212.3	172.5	215.3	218.4	201.4	188.0	191.4	212.1	203.6	226.4
Stocks <sup>1</sup> .....	15.4	15.4	16.4	11.9	14.6	12.5	7.7	9.2	18.3	9.9	8.6	10.0	10.5
<b>Missouri:</b>													
Production.....	(D)	190.3	195.8	199.9	171.3	162.1	137.6	178.9	189.9	160.1	206.5	(D)	208.3
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>Ohio:</b>													
Production.....	2,665.7	234.3	245.8	244.5	208.7	187.8	200.1	200.9	192.0	223.1	248.6	228.3	251.7
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>South Carolina:</b>													
Production.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Calculated at the end of period.

Table 19. **Production, Exports, Imports, and Apparent Consumption of Selected Oils: 1998**

[Quantity in millions of kilograms]

Product code	Product description	Manufacturers' production	Exports of domestic merchandise <sup>1</sup>	Percent exports to manufacturers' production	Imports for consumption <sup>2</sup>	Apparent consumption <sup>3</sup>
20751 11	Soybean:					
20752 13	Crude oil .....	8,205.7	1,039.3	12.7	2.6	7,169.0
	Cake and meal .....	32,073.1	7,637.8	23.8	11.5	24,446.8
20741 11	Cottonseed:					
20744 14	Crude oil .....	510.4	7.5	1.5	-	502.9
20743 13	Cake and meal .....	1,480.1	84.7	5.7	0.1	1,395.5
	Linters .....	265.0	39.5	14.9	8.0	233.5
20762 52	Peanut:					
20763 51	Crude oil .....	61.0	1.1	1.8	30.0	89.9
	Cake and meal .....	84.3	17.4	20.6	-	66.9
20762 67	Sunflower:					
20763 92	Crude oil .....	(D)	310.7	(NA)	2.3	(NA)
	Cake and meal .....	(D)	22.4	(NA)	0.1	(NA)
20463 53	Corn oil, crude .....	1,054.1	200.1	19.0	13.5	867.5

- Represents zero.

D Withheld to avoid disclosing data for individual companies.

NA Not available.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 146, *U.S. Imports for Consumption*.

<sup>3</sup>Apparent consumption is equal to domestic production, plus imports, minus exports.

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**HISTORICAL NOTE**

Previously, the surveys M20J (Fats and Oils—Oilseed Crushings) and M20K (Fats and Oils—Production, Consumption, and Stocks) were published together on an annual basis. Prior to 1991, data were collected on a monthly crop year basis starting from September 1 and ending on August 31. In 1991, data were collected on a quarterly calendar year basis starting on January 1 and ending on December 31. Currently, data are collected on a monthly calendar year basis starting from January 1 and ending on December 31.

Data on fats and oils have been collected by the Census Bureau since 1919. Historical data may be obtained from the Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Ronanne Vinson, 301-457-4643.

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## FATS AND OILS, PRODUCTION, CONSUMPTION, AND STOCKS—M311K (FORMERLY M20K)

### INTRODUCTION

Data shown in this subsection were collected by mail on Census Bureau monthly forms: M20H, Animal and Vegetable Fats and Oils (Warehouse Stocks); M20L, Fats and Oils (Renderers); M20M, Animal and Vegetable Fats and Oils (Consumption and Stocks); and M20N, Animal and Vegetable Fats and Oils (Production, Consumption, and Stocks).

The statistics from the M20H, M20L, M20M, and M20N forms are published in the monthly report series M20K, Fats and Oils, Production, Consumption, and Stocks. This report focuses on the production and stocks of rendered animal fats, along with the production and stocks of specified primary fats and oils and end products produced during the year. Also collected are the quantities of crude oil consumed in the production of once-refined oil.

The universe for this survey was the 1997 Economic Census, Manufacturing sector. Approximately 600 establishments are included in the monthly mail panel. Additionally, approximately 580 small establishments report on an annual basis. Monthly data for these small establishments are estimated based on data reported annually and the trend of other establishments reporting monthly.

### SUMMARY OF FINDINGS

For the 1998 calendar year, the production of refined soybean oil was 13,300.2 million pounds. This showed a 5.4-percent increase from the 1997 figure of 12,619.3 million pounds for refined soybean oil. The consumption of soybean oil in end products was 13,184.9 million pounds, a 2.9-percent increase from the 1997 figure of 12,813.6 million pounds. The production of refined cottonseed oil was 684.3 million pounds in 1998. This represented a 14.1-percent decrease from the 1997 figure of 796.4 million pounds for refined cottonseed oil.

The production of refined corn oil was 1,103.9 million pounds in 1998. This represented a 22.8-percent increase from the 1997 figure of 899.1 million pounds for refined corn oil.

Also, for the calendar year 1998, the production of refined peanut oil decreased 20.4 percent while the production of refined rapeseed oil increased 118.1 percent. The production of refined sunflower oil increased 89.2 percent. At the same time, the consumption in end products of coconut oil increased 1.1 percent, and the consumption in end products of sunflower oil increased 9.6 percent.

### SCOPE OF SURVEY

This survey covers all firms producing or consuming major edible and inedible fats and oils, and warehouses storing these products. Following is a description of the types of establishments included in this survey:

1. Establishments that use alkali refining or similar processes to clarify crude vegetable oils and remove excess fatty acids.
2. Establishments that use animal fats or once-refined vegetable oils in the production of edible fats and oils, such as baking or salad or cooking oil, margarine, frying fats (shortening, mellorine fats, monoglycerides, and diglycerides). In general, establishments consuming fully-refined edible fats and oils in the further manufacture of food products are not included. In this regard, salad dressing plants that use fully-refined deodorized vegetable oils (salad oils) are not included; nor are bakeries, salad oil blending plants, or potato chip plants. However, similar establishments that refine their own oils are included. With minor exceptions, reporting establishments are those equipped for fats and oils processing that either remove undesirable material, or on a commercial scale, alter the color, odor, or melting point.
3. Establishments using crude or once refined fats and oils in such industrial products as soap, paint, varnish, plastics, or other products containing substantial amounts of fats and oils.
4. Establishments that render crude material into lard, edible and inedible tallow and grease, either as their primary operation or as an adjunct to meat packing.
5. Terminals and warehouses storing fats and oils in bulk or in drums, including public and private storage. Warehouses storing only end products such as packaged salad oil, lard, and shortening are not included.

### EXPLANATION OF TERMS

**Refined vegetable oils.** Includes oils that have undergone an alkali or caustic wash or a similar process but have not passed through a further stage of refinement.

**Baking and frying fats.** Baking and frying fats, commonly known as shortening, are animal or vegetable fats or oils or combinations thereof, that have been deodorized or hydrogenated and deodorized and that are sold entirely for baking or frying purposes. They exhibit consistencies that may be fluid, plastics, or solid at room temperature.

**Salad or cooking oils.** Salad or cooking oils are vegetable oil products, completely liquid at room temperature, that have been deodorized or winterized and deodorized.

**Margarine.** Includes only margarines which are ready for table use or use by bakers.



**Table 20. Fats and Oils, Production, Consumption, and Stocks: 1998**

[Millions of pounds]

Product description	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>COTTONSEED OIL</b>													
Production:													
Crude oil .....	1,125.3	80.6	80.0	78.3	59.6	77.8	88.8	87.3	96.1	112.7	116.7	111.1	136.4
Refined oil <sup>1</sup> .....	684.3	48.5	47.9	51.1	29.1	55.8	53.0	50.3	55.2	69.8	68.2	73.1	82.2
Consumption:													
Crude in refining .....	707.3	50.2	49.6	52.9	30.1	57.5	54.9	51.9	57.1	72.1	70.2	75.7	85.0
In end product <sup>2</sup> .....	408.2	(D)	(D)	(D)	(D)	(D)	35.7	36.1	39.4	(D)	30.9	(D)	(D)
In edible products .....	401.7	30.4	28.9	34.7	32.2	37.6	35.4	36.0	39.1	28.8	30.6	33.0	34.9
Baking and frying fats .....	199.9	14.5	15.2	18.1	17.2	17.5	17.3	18.0	18.8	15.2	16.0	15.8	16.3
Salad and cooking oil .....	177.7	14.1	11.6	14.4	12.6	18.0	16.1	15.9	18.0	11.4	12.4	15.6	17.6
Margarine .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other edible products .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products .....	6.5	(D)	(D)	(D)	(D)	(D)	0.3	0.1	0.3	(D)	0.3	(D)	(D)
Stocks:													
Crude oil .....	22.6	22.6	42.1	35.3	20.5	22.2	28.3	37.0	42.2	35.7	28.4	35.6	27.8
Refined oil <sup>2</sup> .....	62.9	62.9	67.9	53.7	58.1	75.1	90.4	93.9	108.2	124.1	112.3	105.7	106.0
<b>SOYBEAN OIL</b>													
Production:													
Crude oil .....	18,090.2	1,610.6	1,598.0	1,598.4	1,410.3	1,285.6	1,409.5	1,337.2	1,417.9	1,525.8	1,654.7	1,557.7	1,684.3
Refined oil <sup>1</sup> .....	13,300.2	1,042.2	1,108.8	1,200.6	1,114.5	1,173.4	1,083.9	1,053.1	1,140.7	1,094.8	1,148.2	1,047.4	1,092.6
Consumption:													
Crude in refining .....	13,809.1	1,080.7	1,149.7	1,256.6	1,156.0	1,216.1	1,125.3	1,092.0	1,183.1	1,136.8	1,191.3	1,087.2	1,134.3
In end product <sup>2</sup> .....	13,184.9	1,057.1	1,150.3	1,231.5	1,122.1	1,123.5	1,062.4	1,070.3	1,101.8	1,066.7	1,129.8	1,020.2	1,049.2
In edible products .....	12,644.6	1,008.1	1,104.0	1,182.2	1,075.5	1,087.1	1,012.9	1,023.1	1,061.9	1,021.4	1,083.3	982.8	1,002.4
Baking and frying fats .....	4,747.6	376.2	401.8	448.6	426.0	423.6	393.3	390.4	401.9	396.3	406.5	333.9	349.2
Salad and cooking oil .....	6,200.3	486.3	547.2	570.3	494.0	524.8	494.1	498.9	530.2	491.2	521.0	518.9	523.4
Margarine .....	1,606.2	135.0	146.2	155.5	147.8	131.0	119.0	125.4	121.6	126.3	147.6	125.8	124.9
Other edible products .....	90.5	'10.5	'8.8	'7.9	'7.7	'7.7	'6.5	'8.3	'8.2	'7.6	'8.3	'4.2	'5.0
In inedible products .....	540.3	49.0	46.4	49.4	46.7	36.4	49.4	47.2	39.9	45.3	46.5	37.4	46.7
Soap .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Paint and varnish .....	45.4	2.6	2.4	2.8	3.3	3.7	5.8	4.6	4.2	4.9	4.0	3.7	3.2
Resins and plastics .....	114.8	'7.0	'10.4	'9.4	'8.6	'10.4	'8.0	'11.4	'10.6	'11.5	'10.8	'7.8	'9.0
Fatty acids .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other inedible products .....	315.7	33.5	28.2	30.4	29.5	16.8	30.7	24.5	18.9	24.8	26.4	21.4	30.4
Stocks:													
Crude oil .....	1,066.2	1,066.2	1,142.0	1,195.0	1,167.4	1,240.1	1,535.9	1,451.7	1,577.6	1,533.3	1,498.6	1,459.1	1,518.8
Refined oil <sup>2</sup> .....	246.7	246.7	264.4	221.7	215.0	213.0	243.2	260.9	279.5	324.3	264.0	252.1	269.1
<b>CORN OIL</b>													
Production:													
Crude oil .....	2,323.8	189.2	199.4	209.2	188.9	202.8	192.8	201.4	201.2	203.9	201.0	162.7	171.4
Refined oil <sup>1</sup> .....	1,103.9	99.1	98.7	100.7	89.0	95.1	85.4	98.4	94.6	87.0	94.5	83.8	77.6
Consumption:													
Crude in refining .....	1,172.8	105.0	104.4	106.6	94.6	101.7	90.6	104.2	100.5	92.5	100.5	89.2	83.0
In end product <sup>2</sup> .....	(D)	(D)	49.0	47.3	44.9	40.9	35.9	46.8	39.5	39.7	44.0	42.1	31.7
In edible products .....	507.6	45.9	49.0	47.2	44.9	40.9	35.9	46.8	39.5	39.7	44.0	42.1	31.7
Baking and frying fats .....	60.4	5.6	(D)	(D)	(D)	(D)	(D)	(D)	4.5	4.5	4.5	4.1	5.0
Salad and cooking oil .....	392.7	34.1	35.9	37.6	34.7	33.2	27.7	37.6	31.2	31.1	34.3	33.9	21.7
Margarine .....	54.5	6.2	(D)	(D)	(D)	(D)	(D)	(D)	3.8	4.1	5.2	4.1	5.1
Other edible products .....	-	-	-	-	-	-	-	-	-	-	-	-	-
In inedible products .....	(D)	(D)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)
Stocks:													
Crude oil .....	32.4	32.4	47.6	60.5	66.4	58.3	64.1	56.1	62.9	64.1	58.5	58.5	61.7
Refined oil <sup>2</sup> .....	68.0	68.0	53.1	32.0	35.5	62.5	49.9	40.1	26.6	22.9	37.3	28.9	30.0

See footnotes at end of table.

Table 20. **Fats and Oils, Production, Consumption, and Stocks: 1998**—Con.

[Millions of pounds]

Product description	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>PEANUT OIL</b>													
Production:													
Crude oil .....	134.5	13.9	13.6	6.9	5.8	6.3	9.5	10.0	10.8	13.0	14.3	14.5	16.0
Refined oil <sup>1</sup> .....	101.3	(D)	(D)	13.1	9.3	6.3	5.3	8.0	7.0	7.8	7.4	6.6	10.4
Consumption:													
Crude in refining .....	108.8	(D)	(D)	14.0	10.0	6.8	5.7	8.6	7.5	8.4	8.0	7.0	11.2
In end products <sup>2</sup> .....	(D)	15.7	17.3	16.4	11.8	9.5	8.7	9.7	9.9	(D)	9.0	8.5	11.6
In edible products .....	139.0	15.7	17.2	16.3	11.8	9.4	8.7	9.6	9.8	11.6	8.9	8.4	11.6
Salad or cooking oil ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other edible products ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products .....	(D)	(Z)	0.1	(Z)	(Z)	0.1	-	0.1	0.1	(D)	0.1	0.1	(Z)
Stocks:													
Crude oil .....	48.0	48.0	54.6	67.9	54.3	70.4	37.4	41.4	38.2	42.9	34.7	33.0	31.2
Refined oil <sup>2</sup> .....	3.5	3.5	2.0	1.4	3.9	2.7	3.6	3.6	3.2	3.1	4.5	4.5	3.2
<b>LARD</b>													
Production .....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Consumption:													
In end products <sup>2</sup> .....	412.8	35.1	40.1	38.9	38.3	34.2	34.2	37.0	29.7	30.8	32.3	31.1	'31.1
In edible products .....	299.7	24.6	28.2	29.4	27.3	24.0	25.0	24.7	22.4	22.9	25.4	24.9	'21.0
Baking and frying fats ..	279.8	'21.7	25.6	27.1	25.8	'22.9	'23.6	'23.3	'20.9	'21.3	'24.2	'23.8	'19.6
Margarine .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other edible products ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products .....	113.1	10.5	11.9	9.5	11.1	10.2	9.2	12.3	7.4	7.9	6.9	6.3	'10.0
Lubricants and similar oils .....	7.6	0.4	0.5	0.6	0.7	0.4	0.7	0.6	0.5	0.8	0.7	0.9	0.6
Other inedible products .....	105.5	10.1	11.4	8.8	10.3	9.8	8.5	11.7	6.8	7.0	6.2	5.4	'9.4
Stocks .....	28.4	28.4	26.3	34.8	40.4	38.8	44.8	43.7	47.6	41.6	34.1	38.3	30.1
<b>EDIBLE TALLOW</b>													
Production .....	1,536.8	118.0	124.3	125.2	133.8	132.5	136.6	139.4	134.5	129.7	130.8	117.0	114.9
Consumption:													
In end products <sup>2</sup> .....	439.0	31.0	32.9	34.4	36.9	34.6	28.7	35.3	(D)	(D)	(D)	(D)	(D)
In edible products .....	265.8	20.6	22.7	24.0	24.5	23.0	22.2	20.1	21.3	21.6	22.2	20.7	23.0
Baking and frying fats ..	259.4	20.2	21.9	23.5	23.8	22.7	21.6	19.5	20.8	21.2	21.7	20.2	22.2
Margarine .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other edible products ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products .....	173.2	10.5	10.2	10.4	12.4	11.6	6.5	15.2	(D)	(D)	(D)	(D)	(D)
Stocks .....	39.1	39.1	39.7	44.1	46.1	50.8	48.7	52.3	53.5	54.6	42.5	48.8	55.3
<b>COCONUT OIL</b>													
Production:													
Crude oil .....	-	-	-	-	-	-	-	-	-	-	-	-	-
Refined oil <sup>1</sup> .....	(D)	28.0	33.0	28.7	15.6	31.0	33.9	(D)	29.5	37.5	34.5	38.7	30.3
Consumption:													
Crude in refining .....	(D)	29.0	34.4	29.8	16.2	32.2	35.2	(D)	30.8	39.0	36.0	40.2	31.4
In end products <sup>2</sup> .....	595.9	41.0	48.8	48.3	52.5	49.2	48.2	45.8	53.3	53.2	58.2	47.0	50.4
In edible products .....	144.5	10.6	12.3	11.5	16.4	12.1	10.6	14.8	12.8	11.2	13.2	10.5	8.3
Baking or frying fats ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other edible products ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products .....	451.4	30.4	36.5	36.8	36.1	37.1	37.6	31.0	40.5	42.0	45.0	36.5	42.1
Soap .....	91.6	7.5	7.5	6.8	8.2	7.1	7.7	7.9	8.0	6.7	8.3	7.8	8.1
Paint and varnish .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Resins and plastics .....	5.6	0.3	0.4	0.4	0.4	0.4	0.8	0.7	0.8	0.4	0.3	0.3	0.4
Lubricants .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Fatty acids .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other inedible products .....	(D)	14.2	(D)	15.5	14.5	15.8	16.1	9.7	16.6	16.9	16.2	13.1	16.5

See footnotes at end of table.

Table 20. **Fats and Oils, Production, Consumption, and Stocks: 1998**—Con.

[Millions of pounds]

Product description	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>COCONUT OIL—Con.</b>													
Stocks:													
Crude oil .....	298.7	298.7	322.8	316.5	291.0	307.9	306.8	297.7	260.3	264.2	284.0	286.2	297.3
Refined oil <sup>2</sup> .....	103.0	103.0	124.5	115.3	101.7	126.5	117.8	68.6	40.3	54.6	53.4	58.3	35.1
<b>VEGETABLE OIL FOOTS</b>													
Production .....	279.9	24.3	24.9	22.7	24.9	24.8	23.8	19.1	23.7	22.9	24.6	21.7	22.3
Consumption:													
In inedible products <sup>2</sup> .....	96.5	8.0	7.9	8.9	8.0	8.2	7.3	7.4	8.8	8.1	7.9	8.4	7.7
Feed .....	86.2	7.2	7.1	8.0	7.1	7.5	6.1	6.5	8.0	7.1	7.2	7.6	6.8
Other inedible products ..	10.3	0.9	0.8	0.9	0.9	0.7	1.2	0.9	0.7	1.0	0.7	0.8	0.9
Stocks .....	8.8	8.8	9.3	8.9	9.1	10.5	7.5	7.0	8.0	7.9	10.2	7.5	8.5
<b>CASTOR OIL</b>													
Production .....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Consumption:													
In inedible products <sup>2</sup> .....	46.0	3.7	3.6	2.3	4.2	3.5	4.4	4.7	3.6	4.2	4.4	3.0	4.4
Soap .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Paint and varnish .....	2.6	0.5	0.2	0.2	0.3	0.3	0.1	0.1	0.1	0.3	0.1	0.2	0.2
Resins and plastics .....	0.4	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	0.1	(Z)	(Z)
Lubricants .....	(D)	0.3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other inedible products ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2.4	3.8
Stocks .....	36.6	36.6	36.9	46.8	40.0	29.9	16.6	24.7	15.4	18.9	2.8	7.1	12.7
<b>SUNFLOWER OIL</b>													
Production:													
Crude oil .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Refined oil <sup>1</sup> .....	120.5	11.9	18.9	9.7	(D)	(D)	10.6	5.3	13.3	15.7	16.2	(D)	(D)
Consumption:													
Crude in refining .....	121.8	12.1	19.1	9.8	(D)	(D)	10.7	5.4	13.4	15.9	16.4	(D)	(D)
In end products <sup>2</sup> .....	118.7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	15.0	9.0	9.5	6.8	7.8
In edible products .....	116.1	7.5	18.3	7.0	6.6	14.2	7.4	8.7	14.7	8.6	9.2	6.6	7.4
In inedible products .....	2.6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	0.4	0.3	0.4	0.3	0.3
Stocks:													
Crude oil .....	188.9	188.9	150.2	115.7	54.5	51.8	50.3	87.4	66.3	85.6	73.4	86.2	75.9
Refined oil <sup>2</sup> .....	11.3	11.3	7.8	3.9	5.0	5.2	5.2	6.2	5.6	7.3	8.3	5.0	5.9
<b>TALL OIL</b>													
Production:													
Crude oil .....	1,510.8	119.3	113.4	118.4	121.1	120.2	132.0	131.1	131.2	132.3	127.5	126.6	137.7
Refined oil <sup>3</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Consumption:													
Crude in refining .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products .....	1,380.4	121.8	119.8	112.4	121.1	115.6	118.0	102.6	108.8	120.8	114.0	115.2	<sup>1</sup> 110.2
Soap .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Paint and varnish .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Resins and plastics .....	18.6	1.4	1.2	1.1	1.4	1.6	1.8	2.2	1.7	1.5	1.5	1.7	1.6
Lubricants .....	7.0	0.4	0.6	0.6	0.7	0.6	0.7	0.5	0.6	0.7	0.6	0.5	0.5
Fatty acids .....	1,168.7	100.9	98.4	100.6	100.8	99.1	101.8	86.0	92.7	98.4	96.9	95.5	<sup>1</sup> 97.6
Other inedible products ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks:													
Crude oil .....	197.5	197.5	200.3	219.8	268.7	245.2	278.4	259.1	239.1	254.1	256.8	219.4	202.8
Refined oil .....	12.5	12.5	17.0	14.9	15.1	15.3	14.7	15.1	13.1	13.0	14.2	17.0	30.4

See footnotes at end of table.

Table 20. **Fats and Oils, Production, Consumption, and Stocks: 1998**—Con.

[Millions of pounds]

Product description	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>INEDIBLE TALLOW AND GREASE</b>													
Production.....	6,575.0	557.1	537.2	567.1	562.3	526.9	558.2	570.0	537.5	559.1	553.7	513.3	532.6
Inedible tallow .....	3,611.6	291.8	297.0	307.7	299.9	286.6	306.5	316.3	297.5	309.3	317.3	288.1	293.6
Grease.....	2,927.6	261.5	236.7	255.7	259.5	237.7	248.5	251.1	237.2	247.0	233.8	222.7	236.2
Inedible tallow and grease, n.s.k.....	35.8	3.8	3.5	3.7	2.9	2.6	3.1	2.6	2.8	2.9	2.7	2.5	2.9
Consumption:													
In inedible products.....	3,442.2	290.9	277.3	294.5	303.6	289.1	295.2	299.3	283.8	278.1	295.9	262.7	271.9
Soap.....	227.7	16.3	21.1	15.7	21.2	18.8	19.1	17.4	17.8	17.3	20.9	21.1	21.1
Feed <sup>4</sup> .....	2,451.8	214.0	201.3	211.0	221.1	209.6	211.6	220.1	196.9	197.1	208.2	177.3	183.6
Inedible tallow .....	748.5	'71.1	'63.3	'66.9	'68.8	'65.7	'60.0	'69.6	'54.1	'49.1	'69.6	'55.8	'54.6
Greases.....	1,703.3	142.9	138.0	144.1	152.4	143.9	151.6	150.5	142.9	148.1	138.7	121.5	129.0
Inedible tallow and grease, n.s.k.....	-	-	-	-	-	-	-	-	-	-	-	-	-
Lubricants and similar oils.....	90.3	6.7	7.7	7.9	7.4	7.9	7.7	7.2	7.3	8.3	8.1	7.2	6.7
Fatty acids.....	608.2	49.9	42.2	53.5	48.8	47.3	51.6	48.2	57.1	50.4	53.9	51.0	54.4
Other inedible products ..	64.2	'4.1	'4.9	'6.4	'5.0	'5.6	'5.2	6.5	'4.7	'4.9	'4.7	6.2	6.1
Stocks:													
Inedible tallow .....	294.3	294.3	308.9	281.7	300.8	286.8	297.2	272.3	284.1	279.5	319.1	300.8	247.1
Grease.....	138.2	138.2	143.4	141.7	146.0	158.4	176.4	155.2	160.2	137.2	142.9	144.4	123.4
Inedible tallow and grease, n.s.k.....	4.9	4.9	5.6	5.1	4.9	5.0	4.9	4.7	5.1	5.1	5.1	4.8	4.4
<b>LINSEED OIL</b>													
Production:													
Crude oil.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Consumption:													
Crude in refining .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products.....	79.4	7.1	5.0	6.0	6.9	7.2	7.6	6.1	7.2	6.4	6.6	6.4	7.1
Paint and varnish.....	18.4	2.2	1.0	1.6	1.8	2.5	1.8	1.2	1.0	0.9	0.9	1.4	2.2
Resins and plastics.....	35.3	'2.3	'1.9	'2.0	'2.7	'3.0	'3.8	'3.1	'3.6	'3.8	'3.3	'2.7	'3.1
Lubricants.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Fatty acids.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other inedible products ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks:													
Crude <sup>5</sup> .....	22.3	'22.3	26.7	18.6	24.6	21.4	22.8	24.3	22.1	34.2	37.6	33.2	38.6
Refined oil <sup>6</sup> .....	22.9	22.9	17.8	17.1	30.8	17.1	22.5	25.3	27.3	20.4	25.4	22.7	22.2
<b>PALM OIL</b>													
Production:													
Refined oil <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Consumption:													
Crude in refining .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In end products <sup>2</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In edible products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Baking or frying fats....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other edible products....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2.3	(D)
In inedible products.....	(D)	3.5	6.8	9.4	6.0	8.7	9.2	8.4	(D)	8.2	8.7	8.4	9.7
Stocks:													
Crude oil.....	3.2	3.2	9.5	9.5	11.0	4.3	8.0	5.5	9.4	9.9	14.8	12.6	10.0
Refined oil.....	24.6	24.6	24.4	20.1	24.6	29.6	28.4	27.7	28.5	21.9	25.2	35.1	45.9

See footnotes at end of table.

Table 20. **Fats and Oils, Production, Consumption, and Stocks: 1998**—Con.

[Millions of pounds]

Product description	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>PALM KERNAL OIL</b>													
Production:													
Refined oil <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Consumption:													
Crude in refining .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In end products <sup>2</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In edible products .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks .....	55.9	55.9	74.6	70.7	63.4	76.3	72.5	91.4	88.4	73.4	52.9	53.1	59.6
<b>TUNG OIL</b>													
Consumption:													
In inedible products.....	14.3	1.1	1.0	1.2	1.2	1.2	1.2	1.3	1.5	1.1	1.3	1.1	0.9
Paint and varnish.....	2.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2
Resins and plastics.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other inedible products .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks .....	2.5	2.5	2.3	2.5	2.5	3.6	2.4	2.4	3.3	3.4	3.9	4.5	3.1
<b>FISH OIL</b>													
Production:													
Crude fish oil .....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Consumption:													
In inedible products <sup>2</sup> .....	2.4	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
Paint and varnish.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Resins and plastics.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Lubricants .....	0.2	(Z)	(Z)	(Z)	(D)	(D)	(D)	(D)	(D)	(D)	(Z)	(D)	(Z)
Other inedible products .	(D)	0.1	0.1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks .....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
<b>SAFFLOWER OIL</b>													
Production:													
Crude oil .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Refined oil <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.6	(D)	(D)	4.6
Consumption:													
Crude in refining .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1.7	(D)	(D)	4.8
In end products <sup>2</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In edible products .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Salad and cooking													
oil .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other edible products.	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products.....	0.6	(Z)	(Z)	(Z)	(D)	(Z)	0.1	(Z)	(Z)	(Z)	0.1	0.1	(Z)
Paint and varnish ....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Resins and plastics ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other inedible													
products .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(Z)	(D)	(D)	(Z)
Stocks:													
Crude oil .....	42.9	42.9	38.8	34.9	36.2	31.2	28.8	44.2	36.1	25.6	35.5	23.6	29.1
Refined oil <sup>2</sup> .....	0.7	0.7	1.3	1.2	2.0	1.1	1.7	1.3	0.3	0.4	1.1	1.2	2.4
<b>RAPSEED OIL</b>													
Production:													
Crude oil .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Refined oil.....	574.8	42.5	40.8	56.6	54.0	65.8	58.7	53.2	63.2	51.0	42.1	21.1	25.8

See footnotes at end of table.

Table 20. **Fats and Oils, Production, Consumption, and Stocks: 1998**—Con.

[Millions of pounds]

Product description	Total	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>RAPSEED OIL—Con.</b>													
Consumption:													
Crude in refining .....	587.0	43.5	41.7	58.0	55.2	67.4	59.8	54.0	64.2	52.1	43.1	21.6	26.3
In end products <sup>2</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In edible products .....	490.5	38.0	49.2	43.6	37.3	51.0	49.6	38.2	44.6	34.5	37.8	35.6	31.1
Baking or frying fats ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Salad and cooking oil .....	375.7	28.7	40.2	33.3	27.0	42.1	40.5	28.4	35.9	24.5	27.3	26.0	21.7
Margarine .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other edible products ..	-	-	-	-	-	-	-	-	-	-	-	-	-
In inedible products.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stocks:													
Crude oil .....	98.5	98.5	72.6	75.7	83.7	85.7	45.1	63.1	67.9	105.6	91.8	69.9	47.2
Refined oil .....	25.7	25.7	37.4	39.6	28.4	32.6	34.1	29.3	24.6	17.4	18.7	30.3	27.2
<b>OTHER OILS</b>													
Consumption:													
In end products <sup>2</sup> .....	76.7	5.5	5.0	4.6	6.2	(D)	6.3	(D)	7.3	8.6	7.5	7.1	9.0
In edible products .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
In inedible products.....	(D)	(D)	(D)	(D)	(D)	2.8	(D)	3.3	(D)	(D)	(D)	(D)	(D)
Stocks .....	4.9	4.9	1.7	1.5	2.2	3.3	3.6	3.5	4.0	3.3	2.6	3.8	6.3

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.s.k. Not specified by kind.  
 \*Revised by 5 percent or more from previously published data. Z Less than .05 million pounds.

<sup>1</sup>Production of refined oils covers only once-refined oils. Degummed soybean oil is reported as crude oil.

<sup>2</sup>Includes hydrogenated fats (vegetable and animal) and other fats and oils in process (for example, refined cottonseed including stocks of stearin).

<sup>3</sup>Use of whole or crude tall oil in distillation or fractionation process is reported as consumed in fatty acids, and use in acid refining process is reported as consumed in refining. Production represents refined tall oil and distilled tall oil containing less than 90-percent free fatty acids, not including resins acids.

<sup>4</sup>Consumption in feed is reported by renderers and fat reprocessors as shipments for consumption of inedible tallow and grease for use in livestock and poultry feed. Data are not collected regarding other oils provided for or consumed in animal feed.

<sup>5</sup>Includes raw and boiled linseed oil.

<sup>6</sup>Includes linseed oil other than raw and boiled.

Note: Detail may not add to total because of independent rounding.

**Table 21. Production and Stocks of Fat and Oil Products: 1998**

[Millions of pounds]

Product description	Total	Dec.	Nov.	Oct.	Sep.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>Baking and frying fats:</b>													
<b>Vegetable oil:</b>													
Production .....	5,208.0	410.8	438.3	487.3	463.7	461.5	430.9	430.5	444.0	436.0	446.3	374.6	384.2
Stocks.....	82.1	82.1	93.8	109.6	102.7	100.5	83.2	83.9	92.2	79.6	77.9	98.3	91.8
<b>Animal fats or blends:</b>													
Production .....	515.9	40.5	46.8	51.4	49.3	41.7	42.8	40.2	37.6	37.0	42.7	42.2	43.8
Stocks.....	10.3	10.3	13.0	8.6	10.4	9.5	9.4	9.4	9.4	9.5	9.5	9.5	11.5
<b>Soybean salad and cooking oils:</b>													
Production .....	6,175.1	484.4	545.0	568.2	492.0	522.9	492.0	496.8	527.9	489.0	518.9	516.8	521.1
Stocks.....	85.5	85.5	106.5	91.8	68.6	65.2	67.4	69.1	119.6	84.4	84.4	98.2	87.5
<b>Other salad and cooking oils:</b>													
Production .....	1,289.4	106.9	130.7	117.4	103.7	125.5	107.5	105.8	115.1	93.5	97.6	92.7	93.0
Stocks.....	38.4	38.4	48.2	40.0	40.9	45.1	59.1	58.1	57.2	46.7	48.8	39.7	35.7
<b>Margarine:</b>													
Production .....	2,310.9	198.3	213.8	220.6	211.9	186.9	171.2	180.1	174.5	181.7	211.4	180.2	180.4
Stocks.....	34.5	34.5	46.8	39.9	39.4	38.9	34.8	37.1	41.4	36.9	38.3	62.6	57.2
<b>Glycerine crude:</b>													
Production .....	328.5	27.4	29.3	27.1	25.2	24.3	26.6	30.0	25.7	28.6	29.9	24.5	29.9
Used in refining .....	347.7	26.0	34.5	29.2	32.1	26.2	25.6	27.7	27.4	30.3	30.5	27.1	31.1
Stocks.....	31.9	31.9	36.8	39.0	30.8	33.3	35.3	37.5	40.8	42.3	42.0	42.5	46.6
<b>Glycerine refined:</b>													
Production .....	346.3	25.9	34.3	29.1	32.0	26.1	25.5	27.5	27.3	30.2	30.4	27.0	31.0
Stocks.....	36.0	36.0	26.7	28.2	26.0	20.4	17.6	15.8	16.2	15.0	13.6	12.9	14.7
<b>Fatty acids:</b>													
Production .....	1,960.5	141.3	147.8	147.5	160.4	158.4	170.6	154.8	188.0	174.6	186.9	171.1	159.1
Stocks.....	207.7	207.7	140.5	149.9	133.5	138.9	133.4	129.0	143.5	147.2	141.5	128.8	127.9
<b>Meat meal and tannage:</b>													
Production .....	5,535.1	494.3	457.0	484.6	463.5	442.3	465.5	457.8	441.1	456.6	455.7	439.1	477.6
Meat and bone meal ..	4,236.0	382.9	346.9	376.0	349.1	336.4	355.1	353.7	337.8	348.2	346.1	334.9	369.0
Dry rendered tannage .	1,260.6	108.6	107.2	107.9	109.7	101.1	106.6	100.0	100.2	105.3	106.5	101.1	106.4
Meat and bone meal, n.s.k.....	73.5	5.8	5.8	3.5	7.6	7.6	6.8	7.0	6.1	6.0	6.0	6.1	5.1
Stocks:													
Meat and bone meal ..	55.5	55.5	61.2	56.3	56.9	72.2	56.6	59.7	63.7	52.8	67.5	62.2	66.5
Dry rendered tannage .	13.2	13.2	17.3	16.3	13.9	10.7	12.3	10.5	12.6	10.6	16.8	12.9	14.5
<b>All other products:</b>													
Production .....	2,287.7	228.3	166.5	187.4	192.8	194.5	210.7	198.7	191.0	193.7	190.5	177.1	156.4
Stocks.....	30.5	30.5	24.9	22.3	21.7	24.2	22.5	29.6	27.9	27.2	20.9	24.5	22.1

n.s.k. Not specified by kind.

**Table 22. Selected Fats and Oils Consumed in End Products: 1998**

[Millions of pounds]

Product description	Total all fats and oils	Cotton-seed	Soybean	Corn	Peanut	Safflower seed	Coconut	Linseed	Sunflower	Tall		
<b>Total .....</b>	<b>21,875.8</b>	<b>408.2</b>	<b>13,184.9</b>	<b>(D)</b>	<b>(D)</b>	<b>(D)</b>	<b>595.9</b>	<b>79.4</b>	<b>118.7</b>	<b>1,380.4</b>		
Consumption in edible products .....	15,302.6	401.7	12,644.6	507.6	139.0	(D)	144.5	-	116.1	-		
Baking and frying fats .....	5,749.2	199.9	4,747.6	60.4	(D)	-	(D)	-	(D)	-		
Salad or cooking oil .....	7,497.0	177.7	6,200.3	392.7	(D)	(D)	(D)	-	(D)	-		
Margarine <sup>1</sup> .....	1,691.7	(D)	1,606.2	54.5	-	(D)	-	-	-	-		
Other edible products .....	364.7	(D)	90.5	-	(D)	-	(D)	-	-	-		
Consumption in inedible products .....	6,573.2	6.5	540.3	(D)	(D)	0.6	451.4	79.4	2.6	1,380.4		
Soap .....	560.6	-	(D)	-	-	-	91.6	-	-	(D)		
Paint and varnish .....	72.5	-	45.4	-	-	(D)	(D)	18.4	(D)	(D)		
Feed .....	2,877.8	(D)	(D)	-	-	-	(D)	-	-	-		
Resins and plastics .....	179.1	-	114.8	-	-	(D)	5.6	35.3	(D)	18.6		
Lubricants .....	118.1	(D)	(D)	-	-	-	(D)	(D)	-	7.0		
Fatty acids .....	2,187.1	-	(D)	-	-	-	(D)	(D)	(D)	1,168.7		
Other inedible products .....	578.0	(D)	59.0	(D)	(D)	(D)	(D)	(D)	-	(D)		
		Castor	Tung	Palm	Palm kernel	Fish	Lard <sup>1</sup>	Edible tallow <sup>1</sup>	Inedible tallow	Veg-etable oil foots	Rape-seed	Other fats and oils
<b>Total .....</b>	<b>46.0</b>	<b>14.3</b>	<b>(D)</b>	<b>(D)</b>	<b>2.4</b>	<b>412.8</b>	<b>439.0</b>	<b>3,442.2</b>	<b>96.5</b>	<b>(D)</b>	<b>76.7</b>	
Consumption in edible products .....	-	-	(D)	(D)	-	299.7	265.8	-	-	490.5	(D)	
Baking and frying fats .....	-	-	(D)	(D)	-	279.8	259.4	-	-	(D)	-	
Salad or cooking oil .....	-	-	(D)	-	-	-	-	-	-	375.7	(D)	
Margarine <sup>1</sup> .....	-	-	-	-	-	(D)	(D)	-	-	(D)	-	
Other edible products .....	-	-	(D)	(D)	-	(D)	(D)	-	-	-	(D)	
Consumption in inedible products .....	46.0	14.3	(D)	(D)	2.4	113.1	173.2	3,442.2	96.5	(D)	(D)	
Soap .....	(D)	-	(D)	(D)	-	-	(D)	227.7	-	-	-	
Paint and varnish .....	2.6	2.8	-	-	-	-	-	-	-	-	(D)	
Feed .....	-	-	(D)	-	-	(D)	(D)	2,451.8	86.2	-	(D)	
Resins and plastics .....	0.4	(D)	-	-	(D)	-	-	-	-	-	(D)	
Lubricants .....	(D)	-	-	-	(D)	7.6	-	90.3	(D)	(D)	(D)	
Fatty acids .....	-	-	(D)	(D)	(D)	(D)	(D)	608.2	(D)	(D)	(D)	
Other inedible products .....	(D)	(D)	-	-	(D)	24.4	(D)	64.2	(D)	-	(D)	

- Represents zero. D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Includes 21.5 million pounds of lard and edible tallow consumed in margarine for 1998.

Note: Detail may not add to total because of independent rounding.



**Table 23. Total Consumption in Edible and Inedible Products: 1998**

[Millions of pounds]

Product description	Total	Dec.	Nov.	Oct.	Sep.	Aug.	July	June	May	April	March	Feb.	Jan.
<b>Consumption in edible products<sup>1</sup></b>	<b>15,302.6</b>	<b>1,225.2</b>	<b>1,353.3</b>	<b>1,422.7</b>	<b>1,304.3</b>	<b>1,323.1</b>	<b>1,229.5</b>	<b>1,245.8</b>	<b>1,287.2</b>	<b>1,221.2</b>	<b>1,299.8</b>	<b>1,186.1</b>	<b>1,204.4</b>
Baking or frying fats . . . .	5,749.2	453.3	487.3	541.2	515.2	505.4	475.7	472.7	483.7	475.1	491.1	418.6	429.9
Salad or cooking oil . . . .	7,497.0	593.8	678.8	688.4	598.4	651.2	602.1	605.2	645.6	585.1	619.3	612.2	616.9
Margarine . . . . .	1,691.7	145.2	156.5	161.5	155.1	136.8	125.4	131.8	127.7	133.0	154.7	131.9	132.1
Other edible products <sup>2</sup> . . .	364.7	32.9	30.7	31.6	35.6	29.7	26.3	36.1	30.2	28.0	34.7	23.4	25.5
<b>Consumption in inedible products<sup>1</sup></b>	<b>6,573.2</b>	<b>548.2</b>	<b>537.6</b>	<b>549.7</b>	<b>569.6</b>	<b>537.2</b>	<b>555.6</b>	<b>545.2</b>	<b>542.4</b>	<b>556.3</b>	<b>573.0</b>	<b>512.0</b>	<b>546.4</b>
Soap . . . . .	560.6	44.2	49.1	45.5	52.3	47.5	42.4	45.7	45.6	45.2	52.1	444.0	47.0
Paint and varnish . . . . .	72.5	5.7	4.0	5.0	5.8	6.9	8.0	6.3	6.1	6.8	5.7	6.0	6.2
Feed . . . . .	2,877.8	256.2	237.4	253.0	262.7	234.4	249.4	251.6	225.5	230.9	243.0	209.2	224.5
Resins and plastics . . . . .	179.1	11.3	14.2	13.4	13.5	15.7	14.9	17.8	17.1	17.7	16.4	12.8	14.3
Lubricants . . . . .	118.1	8.4	9.7	10.3	10.2	10.3	10.3	9.5	9.5	10.8	10.6	9.7	8.8
Fatty acids . . . . .	2,187.1	175.4	173.3	181.9	177.9	174.5	182.2	169.6	189.8	189.7	193.9	181.9	197.0
Other inedible products . . .	578.0	47.0	49.9	40.6	47.2	47.9	48.4	44.7	48.8	55.2	51.3	48.4	48.6

<sup>1</sup>Includes hydrogenated fats (vegetable and animal) and other fats and oils in process.

<sup>2</sup>Includes confectioner's fats.

**Table 24. Shipments, Exports, Imports, and Apparent Consumption of Animal and Vegetable Fats and Oils: 1998**

[Quantity in millions of kilograms]

Product description	Manufacturers' production	Exports of domestic merchandise <sup>1</sup>	Percent exports to manufacturers' production	Imports for consumption <sup>2</sup>	Apparent consumption <sup>3</sup>
<b>Cottonseed:</b>					
Crude . . . . .	510.4	7.5	-	-	502.9
Refined . . . . .	310.4	33.8	0.1	11.9	288.5
<b>Soybean:</b>					
Crude . . . . .	8,205.7	1,039.3	0.1	2.6	7,169.0
Refined . . . . .	6,033.0	58.7	-	-	5,974.3
Corn oil (crude and refined) . . . . .	1,554.8	208.9	0.1	14.1	1,360.0
<b>Peanut:</b>					
Crude . . . . .	61.0	1.1	-	30.0	89.9
Refined . . . . .	45.9	3.2	0.1	0.3	43.0
Edible tallow . . . . .	697.1	111.8	0.2	1.0	586.3
Inedible tallow . . . . .	1,638.2	1,041.4	0.6	25.4	622.2

- Represents zero.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 146, *U.S. Imports for Consumption*.

<sup>3</sup>Apparent consumption represents new domestic supply and is derived by subtracting exports from the sum of manufacturers' shipments plus imports.

Note: For comparison of SIC-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

**Table 25a. Supply and Distribution of Cottonseed Oil, Soybean Oil, Corn Oil, and Palm Oil: 1998**

[Millions of pounds]

Supply and distribution	Cottonseed oil	Soybean oil	Corn oil	Palm oil
Beginning stocks .....	105.3	1,679.6	204.9	64.1
Production (crude) .....	1,125.3	18,090.2	2,323.8	(X)
Imports .....	26.2	5.7	31.1	255.3
A. Total supply .....	1,256.8	19,775.5	2,559.8	319.4
Ending stocks .....	85.5	1,312.9	100.4	27.8
Production of foots <sup>1</sup> .....	23.0	508.9	68.9	(D)
Exports <sup>2</sup> .....	91.3	2,421.1	460.6	12.3
Domestic consumption <sup>3</sup> .....	408.2	13,184.9	(D)	(D)
B. Total distribution (-) .....	608.0	17,427.8	(D)	(D)
Statistical discrepancy (A-B) <sup>4</sup> .....	648.9	2,347.7	(D)	(D)
Discrepancy as a percent of total supply .....	51.6	11.9	(D)	(D)

D Withheld to avoid disclosing data for individual companies. X Not applicable.

<sup>1</sup>Represents difference between crude oil consumed in refining and refined oil production.

<sup>2</sup>Represents crude and once-refined oil only; excludes exports of fully refined oil.

<sup>3</sup>Consumption of once-refined oils plus direct consumption of crude in end products.

<sup>4</sup>Represents difference between several elements of supply and distribution due to timing of production and stock reported, goods in transit, etc.

**Table 25b. Supply and Distribution of Selected Fats and Oils: 1998**

[Millions of pounds]

Supply and distribution	Cottonseed		Soybean		Inedible tallow and grease
	Crude	Once-refined <sup>1</sup>	Crude	Once-refined <sup>1</sup>	
Beginning stocks .....	25.1	80.2	1,439.8	239.8	339.1
Production (crude) .....	1,125.3	684.3	18,090.2	13,300.2	6,575.0
Imports .....	-	26.2	5.7	-	56.4
A. Total supply .....	1,150.4	790.7	19,535.7	13,540.0	6,970.5
Ending stocks .....	22.6	62.9	1,066.2	246.7	437.4
Exports .....	16.5	74.8	2,291.7	129.4	2,300.3
Reported domestic consumption .....	707.3	408.2	13,809.1	13,184.9	3,442.2
B. Total distribution (-) .....	746.4	545.9	17,167.0	13,561.0	6,179.9
Statistical discrepancy (A-B) <sup>2</sup> .....	404.0	244.8	2,368.8	(21.0)	790.7
Discrepancy as a percent of total supply .....	35.1	31.0	12.1	(0.2)	11.3

- Represents zero.

<sup>1</sup>Includes once-refined oil consumed in making salad oil, some of which is subsequently exported.

<sup>2</sup>Represents difference between several elements of supply and distribution due to timing of production and stock reports, goods in transit, etc.

**HISTORICAL NOTE**

Previously, the surveys M20J (Fats and Oils—Oilseed Crushings) and M20K (Fats and Oils—Production, Consumption, and Stocks) were published together on an annual basis. Prior to 1991, data were collected on a monthly crop year basis starting from September 1 and ending on August 31. In 1991, data were collected on a quarterly calendar year basis starting on January 1 and ending on December 31. Currently, data are collected on a monthly calendar year basis starting from January 1 and ending on December 31.

Data on fats and oils have been collected by the Census Bureau since 1919. Historical data may be obtained from the Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Nancy Higgins, 301-457-4626.

# Chapter 2.

## Textiles, Apparel, and Footwear

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### GENERAL INFORMATION

This chapter of the Manufacturing Profiles document contains data for textiles, apparel, and footwear. In this chapter data are provided that cover most of the major segments of the textile industry. Data on selected finished products, such as shirts, pants, carpet, or towels, and data on the various stages of production are also included.

The first “step” in making most textile products is to make yarn. Staple yarn is a bunch of fibers twisted and spun together into a long, continuous strand. Staple fiber is the term used to identify lengths of fibers which require spinning and twisting in the manufacture of yarn. Staple fibers are either natural fibers or manmade fibers cut to a specific length. The Current Industrial Report entitled MA313F (MA22F), Yarn Production, collects data on the quantity of yarn produced.

There are several spinning systems used to make yarn from staple fibers. The three most common spinning systems are the cotton system, the woolen system, and the worsted system. Data are compiled on fiber staples consumed on these three systems in the following Current Industrial Reports: M22P, Consumption on the Cotton System and Stocks, and MQ22D, Consumption on the Woolen and Worsted Systems.

The next phase of the textile manufacturing process is fabric formation. Most fabric is either woven or knitted. Current Industrial Reports have two series that collect these data, MQ22T, Broadwoven Fabrics, and MA313K (MA22K), Knit Fabrics.

The last major phase is to cut the fabric and then sew the pieces together into garments or other textile products. The Current Industrial Reports have a report entitled MQ23A, Apparel, which provides data for most major garment categories. The series also has data on MA314Q (MA22Q), Carpet and Rugs, MA315D, (MA23D), Gloves and Mittens, and the MQ23X, Sheets, Pillowcases, and Towels.

### EXPLANATION OF TERMS

**Blends and mixtures.** Fabrics made from more than one fiber are classified in the same way as other fabrics, i.e., according to whether the fabric is chiefly cotton, wool, or manmade fiber. For example, a fabric which is 55 percent cotton and 45 percent rayon is classified in the cotton section; a fabric which is 40 percent cotton, 30 percent rayon, and 30 percent acetate is classified in the manmade fibers section. Blends and mixtures which are by weight 50 percent natural fiber and 50 percent manmade fiber are classified as manmade fibers fabrics.

**Canton flannel.** Fabric woven with a four-harness warp face twill with heavy, soft filling yarn, and a medium count warp. A long nap is raised on the back.

**Commission.** Includes fabrics made from yarns owned by others.

**Cotton fabrics.** Includes fabrics that are wholly or chiefly, by weight, made of cotton.

**Cotton system.** This term originally referred to the equipment and machinery used in the process of manufacturing cotton fiber into yarn. The cotton spinning system is now also used extensively for manmade fiber staple and cotton/manmade fiber blends. It includes the general operations of opening, picking, carding, drawing, roving, and ring or open end spinning.

**Denim, all other.** Includes sport denims and all other denim not included in blue denim.

**Denim, blue.** Fabrics of 3- or 4-thread twill, including broken twill, warp faced (the warp yarns which are dyed blue and the weft yarns that are unbleached, bleached, dyed gray or colored a lighter shade of blue than that of the warp yarns).

### Distribution Channels:

*Branded retail.* Sales of company brands including premium goods, drop (closeouts), and seconds sold to domestic consumers through all types of retailers.

*Private ticket retail.* Sales with retail identification with or without a manufacturer's corporate identification, but not with a manufacturer's brand name.

*Other (institutional).* Includes domestic distribution only and includes all Federal and state contract business, commercial accounts (e.g., hotels) which are sold on a contract basis, and shipments to dealers who are involved in resale to the institutional trade.

**Duck.** Fabrics weighing more than 5 ounces per square yard (chiefly manmade fabric) or 5.9 ounces per square yard (chiefly cotton fabric), with average yarn number of 15 or lower, napped or not; and a plain weave where the warp or filling or both, consist of multiple (folded) or cabled yarns.

**Filament yarn fabrics.** Includes all fabrics that contain 85 percent or more filament yarns.

**Flat fabrics.** Fabrics containing yarns having less than 12 turns per inch.

**For sale.** Products which are produced for the purpose of selling them to other companies.

### **Garments, Men's and Boys':**

*Tailored uniform suits.* Includes military, guards, band, police, fire, etc. Nontailored work-type suits, such as delivery drivers and gas station attendants, are included under work clothing and washable service apparel.

*Trios.* Includes tailored suits with a matching and contrasting pair of pants.

*Tailored suit-type sport coats and jackets.* Includes only tailored separate suit-type coats, including tailored uniform and separate formal jackets.

*Overcoats and top coats.* Includes only tailored items, including uniform, reversible zipper-lined, fingertip, and wool water-repellent coats. Excludes raincoats.

*Raincoats.* Includes waterproof outercoats and water-repellent coats of cotton and manmade fibers, including uniforms. Wool and chiefly wool water-repellent coats and capes are included with overcoats and top coats.

*Heavy nontailored outer jackets, including uniform.* Includes lumberjacks and mackinaws. Excludes ski jackets.

*Light nontailored outer jackets, including uniform.* Includes golf-type zip front and snorkel jackets for outdoor outerwear.

*Separate vests, including uniform.* Includes vests that are not part of suits. Excludes sweater vests.

*Separate dress and sport trousers, including uniform.* Includes all pants except jeans, jean-cut casuals, dungarees, and work pants.

*Jeans and dungarees.* Includes all pants of jean-type construction which are made from denim fabric. Excludes waistband overalls.

*Jean-cut casual slacks.* Includes all pants of jean-type construction made from fabrics other than denim, to be worn as sportswear (e.g., corduroy).

*Dress and business shirts.* Includes open front shirts designed primarily for dress or business wear, usually with a collar band. Sleeve length may or may not be sized in inches. Neck may be sized or feature a convertible collar and may include shirts sized S-M-L-XL.

*Work pants, excluding jeans and dungarees.* Includes utility trousers in a sturdy fabric designed for hard wear, and work pants with closed-seam construction and a waistband in the same fabric as the shell. Also includes waistband overalls.

*Work shirts.* Includes open front or pullover shirts in a sturdy fabric, designed for work and ease of movement.

*Washable service apparel.* Includes nontailored washable work apparel designed for use by waiters, gas station attendants, hospital staff, and other uniformed service workers.

*Overall and work jackets.* Includes utility jackets in a sturdy fabric, designed for hard work and ease of movement, usually with closed seam construction.

*Team sports uniform.* Clothing designed to be worn as a uniform in team athletic games, such as baseball, football, soccer, and hockey.

### **Garments, Women's, Misses', and Junior's:**

*Suits.* Includes tailored suits and uniforms but excludes pantsuits, jumpsuits, and coordinate suit sets that can be purchased as separate pieces, e.g., shirt, vest, blouse, and pants. Excludes nurses', maids', and medical uniforms which are included in washable service apparel.

*Pantsuits.* Includes jumpsuits and pantsuits sold as a unit. Excludes coordinates which are sold as separates.

*Dresses.* Includes suit-type dresses, formal, work, house, etc.

*Coats and capes.* Includes toppers, car coats, suburban coats, plastic coats, reversible coats, and wool water-repellent coats, but excludes raincoats.

*Jeans and dungarees.* Includes all pants of jean-type construction that are made from denim fabric.

*Slacks, including jean-cut casuals.* Includes all pants other than denim jeans, e.g., tailored pants and pants with an elastic waistband.

**Ginghams, plaids, and checks.** Yarn-dyed fabrics composed of two or more colors in the warp and two or more colors in the filling.

**Girls'.** Includes subteen and teenage girls', usually sizes 7 through 16. Also includes little girls' sizes 4 through 6x and toddler girls' sizes 2T through 4T.

**High tenacity yarn fabric.** Fabric made from yarns having a tenacity, expressed in centinewtons per tex (cN/tex) greater than 60 cN/tex for multiple (folded) or cabled yarns of nylon or polyester; or 27 cN/tex for multiple (folded), cabled, or singles yarns of viscose rayon.

**Infants'.** Includes all garments, sizes 0-24 months.

**Kitchen accessories.** Includes items such as terry cloth aprons, pot holders, dish cloths, and toaster covers.

**Lawns, voiles, and batistes.** Fabrics of plain weave weighing not more than 5 ounces per square yard (chiefly

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cotton fabric) consisting of more than 85 warp ends and filling picks per square inch, of square construction, and of average yarn number 41 or higher, napped or not napped.

**Little boys'.** Includes little boys' sizes 4 through 7 and toddler boys' sizes 2T through 4T.

**Manmade fiber fabrics.** Includes fabrics that are wholly or chiefly, by weight, made of manmade fibers.

**Men's and junior boys'.** Includes all men's sizes and junior boys', preps' (cadets), and students' sizes. These usually include boys', junior boys', and preps' sizes 6-20, chest 22-36 and waist 23-30; and students' sizes, chest 35-42 and waist 28-36.

**Oxfords.** Fabrics weighing not more than 5 ounces per square yard (chiefly manmade fabric) or 5.9 ounces per square yard (chiefly cotton fabric), napped, or not. They are woven as a plain weave fabric except that two or more warp ends are woven as one (taped warp). Oxford cloth is not to be classified as a plain weave fabric.

**Plain weave fabrics.** A fabric construction in which each yarn of the weft passes alternately over and under successive yarns of the warp and each yarn of the warp passes alternately over and under successive yarns of the weft.

**Poplin and broadcloth.** Fabrics of plain weave, not of square construction, whether or not napped. These fabrics do not include the following: fabrics weighing not more than 5.9 ounces per square yard, containing 85 or less warp ends and filling picks per square inch; or fabrics weighing more than 5.9 ounces per square yard, with average yarn number of 15 or lower.

**Print cloth.** Fabrics of plain weave, weighing not more than 5 ounces per square yard (chiefly manmade fabric) or 5.9 ounces per square yard (chiefly cotton fabric) with average yarn numbers of 26-40; consisting of more than 85 single yarns per square inch; and with square construction, whether or not of yarns of different colors (yarn dyed), and whether or not napped.

**Sateens.** Fabrics woven with a satin weave, whether or not napped, in which the surface of the cloth consists almost entirely of warp or filling floats; that is, in the repeat of a weave pattern, each yarn of one system passes over several yarns of the other system before interlacing.

**Sheeting.** Fabrics of plain weave, whether or not napped, of the following types: (1) Fabrics weighing not more than 5 ounces per square yard (chiefly manmade fabric) or 5.9 ounces per square yard (chiefly cotton fabric), of square construction containing more than 85 warp end and filling picks per square inch, with average yarn number of 40 or lower, but not including print cloth. (2) Fabrics weighing

more than 5 ounces per square yard (chiefly manmade fabric) or 5.9 ounces per square yard (chiefly cotton fabric), but not including fabrics of which the warp or filling, or both, consist of multiple (folded) or cabled yarns, with average yarn number of 15 or lower or fabrics with average yarn number of 16 or higher, not of square construction.

**Sheet sets.** Packages of at least two sheets and one pillowcase which may contain additional sheets, pillowcases, or other items.

**Shirting, jacquard or doobby.** Fabrics weighing not more than 5 ounces per square yard (chiefly manmade fiber) or 5.9 ounces per square yard (chiefly cotton fiber), whether or not napped, or woven wholly or in part with jacquard or doobby attachment.

**Spun/filament combinations.** Includes fabrics that are combinations of spun and filament yarn where neither the spun or the filament yarns exceed 85 percent.

**Spun yarn fabrics.** Includes all fabrics that contain 85 percent or more spun yarns.

**Table damask.** Fabrics, whether or not napped, woven wholly or in part with jacquard or doobby attachment and characterized by elaborate decorative designs, usually of floral patterns. The designs are reversible and are formed by warpface satin weave. Table damask is generally all white, although it is sometimes made with colored stripes or in solid pastel shades.

**Taped warp duck.** Fabrics weighing more than 5 ounces per square yard (chiefly manmade fabric) or 5.9 ounces per square yard (chiefly cotton fabric), with average yarn number of 15 or lower, whether or not napped. The fabrics have a plain weave, except that two or more warp ends are woven as one (tape warp) whether or not they contain multiple (folded) or cabled yarns.

**Textured yarns.** Yarns produced by looping, bulking, curling, or twisting to enhance the volume or elasticity. They include yarns made by the false twist principle, the conventional twist method (twist and detwist procedures), the stuffer crimp method, and the filament loop method. Yarns that are thrown only are excluded.

**Tobacco, cheese, and bandage cloth.** Fabrics of plain weave, weighing not more than 5 ounces per square yard (chiefly manmade fabric) or 5.9 ounces per square yard (chiefly cotton fabric) consisting of 85 or less warp ends and filling picks per square inch, whether or not napped.

**Towel blanks.** Includes towels sold for further processing elsewhere. The figure reported for finished terry woven towels includes towel blanks; thus, both sets of data are not additive.

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**Twill weave fabrics.** Fabrics in which the warp and filling yarns are interlaced in such a manner as to produce a diagonal or bias effect on the face of the fabric.

### **Types of Finish**

*Solids (sheets).* Includes solid color sheets with attached hems or piping.

*Fancies.* Towels include jacquards, mixed color or pattern weaves, prints, embroidered, and attached or embellished hems. Excludes solid color, white dobby, and white cam. Sheets include prints and solids with embroidery, lace, or other embellishments, except attached hems or piping.

**Women's, misses' and junior's.** Includes all women's, misses' and junior's sizes.

**Woolen system.** Refers to the machinery and processes used to produce yarn from shorter wools and manmade fiber. The fibers are carded two or three times, and then go directly to the spinning frame. The system is used widely to produce both machine and hand knitting yarns, as well as weaving yarns where softness and bulk are desired.

**Wool fabrics.** Includes fabrics that are 36 percent or more by weight of wool, reprocessed wool, or reused wool.

**Wool, reprocessed wool, and reused wool.** These terms are used in accordance with the definitions in the Wool Products Labeling Act of 1939.

**Wool tops.** Figures on top production include only first combings and exclude recombined materials. Mixed tops are classified according to chief fiber content.

**Worsted system.** Refers to the machinery and process used to manufacture yarn from medium to long wools, alpaca, and mohair, as well as manmade fibers and blends. In the worsted system, the short fibers or noils are removed by combing in order to produce a compact yarn. The three basic worsted spinning systems are Bradford, French, and American.

**Yarn-dyed.** Fabrics woven from yarns that have been dyed.

### **TEXTILE MACHINERY IN PLACE**

There are data for three basic types of machinery in this chapter : (1) cotton system spindles, (2) weaving machines, and (3) knitting machines. Generally, the information collected is the number of machines in place and the number of hours operated during the period.

"Machines in place" are the number of machines that are in producing positions at the end of the survey period, regardless of whether they are actually operating. In the case of spindles, the data are for the number of spindles in place, not the number of spinning frames.

Where it is available, the hours of operation refer to the number of hours the equipment was actually in use during the survey period.

The information shown on spinning equipment is for cotton system spinning machinery only. This type of information is not collected for woolen, worsted, or other spinning systems.

These data are compiled from information collected on our MA313K (MA22K), Knit Fabric Production; M22P, Consumption on the Cotton System and Stocks; and MQ22T, Broadwoven Fabrics, Gray, surveys.

Table A. **Textile Machinery in Place: End of Year 1998**

Product description	Machines in place
Total looms .....	63,344
Shuttle type looms .....	4,813
Single shuttle cam looms .....	2,944
Single shuttle dobby looms .....	554
Multiple shuttle box or head motion looms .....	1,052
Double shuttle pile and plush, and jacquard looms .....	263
Shuttleless looms and weaving machines .....	58,531
Single filling insertion capability .....	32,349
Air jet looms .....	17,324
Water jet looms .....	4,314
Projectile looms .....	9,077
Rapier looms .....	1,634
Multiple filling insertion capability .....	25,342
Air jet looms .....	(D)
Water jet looms .....	(D)
Projectile looms .....	6,757
Rapier looms .....	11,599
Pile and plush looms .....	840
Cotton system spindles in place .....	5,337
Ring spindles .....	4,282
Air jet position .....	106
Open end position (i.e., rotors) .....	949
Active, spinning 100 percent cotton fibers .....	2,665
Ring spindles .....	2,099
Air jet position .....	-
Open end position (i.e., rotors) .....	566
Active, spinning cotton/manmade fibers .....	753
Ring spindles .....	712
Air jet position .....	5
Open end position (i.e., rotors) .....	36
Active, spinning cotton/manmade blends .....	1,599
Ring spindles .....	1,183
Air jet position .....	101
Open end position (i.e., rotors) .....	315
Knitting machines .....	20,816
Warp knitting machines (over 12 inches in length) .....	4,829
Pile fabrics .....	1,263
Elastic fabrics .....	885
All other warp knit fabrics .....	2,682
Warp knitting machines (12 inches or less in length) .....	626
Elastic fabrics .....	288
All other warp knit fabrics .....	338
Weft knitting machines (over 12 inches in length) .....	11,990
Pile fabrics .....	514
Elastic fabrics .....	128
Single circular knit .....	8,048
Double knit and interlock .....	1,617
Rib, other than double knit and interlock .....	1,683
Weft knitting machines (12 inches or less in length) .....	814
Elastic fabrics .....	144
All other weft knit fabrics .....	670
Knitting garment lengths, trimmings, and collars .....	2,557
Knit garment lengths, made on sweater-strip, V-bed strip, and full-fashioned machines .....	1,138
Knit trimmings and collars .....	1,419

- Represents zero. D Withheld to avoid disclosing data for individual companies.

**Table B. Textile Machines in Place and Hours Operated by Quarter: 1998**

[Looms in thousands of hours units. Spindles in millions of hours units]

Product description	Hours, year-to-date	First quarter		Second quarter		Third quarter		Fourth quarter	
		Machines	Hours	Machines	Hours	Machines	Hours	Machines	Hours
Total looms . . . . .	450,194	67,665	121,424	67,232	116,129	66,613	110,973	63,344	101,668
Shuttle type looms . . . . .	35,288	7,536	10,819	7,308	9,220	7,293	8,401	4,813	6,848
Single shuttle cam looms . . . . .	26,972	5,656	8,685	5,477	7,185	5,384	6,505	2,944	4,597
Single shuttle dobby looms . . . . .	1,368	689	427	689	422	597	282	554	237
Multiple shuttle box or head motion looms . . . . .	5,535	904	1,310	893	1,288	1,052	1,288	1,052	1,649
Double shuttle pile and plush, and jacquard looms . . . . .	1,413	287	397	249	325	260	326	263	365
Shuttleless looms and weaving machines . . . . .	414,906	60,129	110,605	59,924	106,909	59,320	102,572	58,531	94,820
Single filling insertion capability . . . . .	242,409	33,312	63,920	32,904	62,335	32,893	60,169	32,349	55,985
Air jet looms . . . . .	131,102	17,005	33,956	17,132	33,058	17,395	32,713	17,324	31,375
Water jet looms . . . . .	31,247	4,770	8,592	4,611	8,245	4,536	7,604	4,314	6,806
Projectile looms . . . . .	69,612	9,874	18,767	9,537	18,401	9,306	17,074	9,077	15,370
Rapier looms . . . . .	10,448	1,663	2,605	1,624	2,631	1,656	2,778	1,634	2,434
Multiple filling insertion capability . . . . .	168,267	25,935	45,357	26,171	43,610	25,572	41,448	25,342	37,852
Air jet looms . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Water jet looms . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Projectile looms . . . . .	47,133	7,121	12,565	7,108	12,213	6,759	11,413	6,757	10,942
Rapier looms . . . . .	68,726	11,917	19,074	11,988	17,938	11,769	16,775	11,599	14,939
Pile and plush looms . . . . .	4,230	882	1,328	849	964	855	955	840	983
Cotton system spindles in place . . . . .	34,750	5,437	9,231	5,451	8,975	5,433	8,543	5,337	8,001
Ring spindles . . . . .	26,763	4,380	7,129	4,400	6,909	4,385	6,571	4,282	6,154
Air jet position . . . . .	791	106	206	104	206	103	193	106	186
Open end position (i.e., rotors) . . . . .	7,196	951	1,896	947	1,860	945	1,779	949	1,661
Active, spinning 100 percent cotton fibers . . . . .	18,750	2,566	4,816	2,645	4,771	2,638	4,644	2,665	4,519
Ring spindles . . . . .	14,429	2,019	3,695	2,084	3,671	2,083	3,566	2,099	3,497
Air jet position . . . . .	-	-	-	-	-	-	-	-	-
Open end position (i.e., rotors) . . . . .	4,321	547	1,121	561	1,100	555	1,078	566	1,022
Active, spinning cotton/manmade fibers . . . . .	4,931	774	1,317	776	1,306	773	1,227	753	1,081
Ring spindles . . . . .	4,589	730	1,214	732	1,213	730	1,151	712	1,011
Air jet position . . . . .	39	5	8	5	9	5	11	5	11
Open end position (i.e., rotors) . . . . .	303	39	95	39	84	38	65	36	59
Active, spinning cotton/manmade blends . . . . .	11,069	1,767	3,098	1,725	2,898	1,671	2,672	1,599	2,401
Ring spindles . . . . .	7,745	1,317	2,220	1,295	2,025	1,233	1,854	1,183	1,646
Air jet position . . . . .	752	101	198	97	197	96	182	101	175
Open end position (i.e., rotors) . . . . .	2,572	349	680	333	676	342	636	315	580

- Represents zero. D Withheld to avoid disclosing data for individual companies.



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## STAPLE FIBER CONSUMPTION

Staple fiber is the term used to identify lengths of fiber that require spinning and twisting in the manufacture of yarn. They are either natural fibers or manufactured fibers that are cut to a specific length. They are generally an inch to an inch and a half long.

This chapter contains information on the amount of fiber consumed on the cotton, woolen, and worsted spinning systems. These terms refer to the group of machinery used in the manufacture of spun yarn. Producing a yarn is the first step in the manufacture of textile products.

Although the vast majority of staple fiber is spun on the three systems for which data is collected, there is a small amount of fiber consumed on other spinning systems. There is also a small amount of staple fiber consumed without spinning, in processes such as felting. Neither the amount spun on other systems nor the amount consumed by other means are included in these data.

Since these data are for staple fiber consumption, they should account for nearly all of the cotton fiber and wool (or other fine animal hair) consumed in domestic manufacturing, but only a portion of the manufactured fibers such as rayon, acrylic, nylon, and polyester.

In the case of cotton in addition to information on the consumption of cotton fiber, information is provided on the consumption of cotton linters. Linters are the short fibers that adhere to the cotton seeds after the first ginning. These are removed from the cotton seed by a separate process and are used in the manufacture of some types of rayon and by the chemicals and paper industries.

The data on fiber consumption are collected in two surveys: MQ22D, Consumption on the Woolen System and Worsted Combing and M22P, Consumption on the Cotton System and Stocks. In all cases, the information in this chapter is presented for the consumption of a specific type of fiber. Additional information is presented depending on the fiber.

## CONSUMPTION ON THE COTTON SYSTEM—M313P (FORMERLY M22P)

### INTRODUCTION

The tables in this subsection present data on the fiber consumed in cotton system spinning. Cotton system spinning is a process of manufacturing cotton fiber into yarn. It includes the general operations of opening, picking, carding, drawing, roving, and spinning. In making combed yarns, three steps are added. The system is also used extensively for spinning manufactured fibers and blends.

The data in these tables are collected using two questionnaires; the M22P, Consumption on the Cotton System and Stocks, and the M22N, Cotton and Raw Linters in Public Storage. Much of the data shown reflect the interest in cotton as an important agricultural and export commodity.

The fiber data in these tables are shown in two basic units of measure, running bales and pounds. Bale weights do vary, but they average around slightly over 500 pounds for cotton and from 610 to 620 pounds for linters. Data for stocks in public storage are collected only in bales, and data for manufactured fiber are collected only in pounds.

### EXPLANATION OF TERMS

See explanation of terms at the beginning of this chapter.

**Table 1. Summary of Daily Averages of Cotton and Manmade Fibers Consumed on the Cotton System, Spindle Hours Operated, and End-of-Month Stocks, Including Stocks Held at Public Warehouses: 1998**

[Cotton in running bales. Manmade fibers in thousand pounds. Spindle hours operated in millions]

Month	Daily average consumption						Stocks		Daily average spindle hours operated
	Cotton			Manmade fibers			Cotton <sup>3</sup>	Manmade fiber staple	
	Total	Upland <sup>1</sup>	Long staple <sup>2</sup>	Total	Cellulosic	Non-cellulosic			
<b>SEASONALLY ADJUSTED</b>									
December	38,002	37,530	472	4,836	366	4,470	4,481	43,993	131
November	37,910	37,361	549	4,900	338	4,562	4,893	40,564	124
October	40,457	39,891	566	5,154	347	4,807	6,697	44,120	132
September	39,162	38,680	482	5,262	388	4,874	7,241	45,842	132
August	39,737	39,267	470	5,384	444	4,940	7,392	47,507	133
July	41,943	41,536	407	5,643	557	5,086	7,392	51,787	136
June	40,380	39,957	423	5,373	445	4,928	7,518	47,390	133
May	41,215	40,765	450	5,583	436	5,147	7,722	48,223	136
April	40,989	40,540	449	5,671	479	5,192	7,738	48,693	135
March	41,538	41,091	447	5,684	469	5,215	7,714	52,445	135
February	42,152	41,682	470	5,698	507	5,191	7,813	51,097	138
January	42,183	41,750	433	5,817	517	5,300	7,657	49,773	143
<b>NOT SEASONALLY ADJUSTED</b>									
December	31,858	31,386	472	3,905	257	3,648	9,362	43,993	111
November	37,919	37,370	549	4,692	356	4,336	8,759	40,564	125
October	41,701	41,135	566	5,207	385	4,822	7,019	44,120	136
September	40,514	40,032	482	5,313	404	4,909	3,485	45,842	132
August	41,746	41,276	470	5,662	467	5,195	3,225	47,507	138
July	38,496	38,089	407	5,263	454	4,809	3,879	51,787	125
June	40,672	40,249	423	5,566	452	5,114	4,815	47,390	135
May	42,708	42,258	450	5,954	459	5,495	6,115	48,223	141
April	41,956	41,507	449	5,853	535	5,318	7,297	48,693	139
March	42,707	42,260	447	5,978	486	5,492	8,577	52,445	140
February	43,032	42,562	470	5,873	535	5,338	10,145	51,097	144
January	42,386	41,953	433	5,766	502	5,264	11,577	49,773	143

<sup>1</sup>Upland includes American upland and foreign cotton.

<sup>2</sup>Long staple cotton includes American-Pima, Egyptian, Sudanese, and all other foreign cotton.

<sup>3</sup>Cotton in 1,000 running bales.

**Table 2. Supply and Distribution of Cotton 1997/1998 Crop Year**

[Number of bales]

Supply and distribution	Cotton
<b>SUPPLY</b>	
Stocks, July 26, 1997 .....	3,985,409
In consuming establishments .....	667,873
In public storage and at compresses .....	3,167,536
Elsewhere .....	150,000
Net imports <sup>1</sup> .....	13,473
Total imports for consumption .....	13,473
Less: Re-exports .....	-
Ginnings, crop year of 1997 during crop year 1997 to 1998 <sup>2</sup> .....	18,299,300
Total ginnings, crop year of 1997 .....	18,301,500
Less: Ginnings prior to August 1, 1997 .....	2,200
Ginnings, prior to August 1, 1998, crop year of 1997 .....	145,550
Aggregate supply .....	22,443,732
<b>DISTRIBUTION</b>	
Total exports <sup>2</sup> .....	7,279,300
Consumption, July 28, 1997, to July 25, 1998 .....	10,901,854
Cotton lost or destroyed .....	50,000
Stocks, July 25, 1998 <sup>3</sup> .....	4,079,052
In consuming establishments .....	731,395
In public storage .....	3,147,657
Elsewhere (partially estimated) <sup>4</sup> .....	200,000
Aggregate distribution .....	22,310,206
Excess of reported supply over distribution .....	133,526

- Represents zero.

<sup>1</sup>Source: U.S. Department of Agriculture.

<sup>2</sup>Source: U.S. Census Bureau, Foreign Trade Division.

<sup>3</sup>Cotton "carry-over" in the United States as of August 1, 1998, is 4,079,052 bales. Linters are not included in this "carry-over." In addition to stocks of cotton in warehouses and in consuming establishments, these data include a partially estimated count of cotton held elsewhere.

<sup>4</sup>Includes cotton in transit to ports, warehouses, consuming establishments, and Canada; on docks, on shipboard but not cleared, and other port stocks not in warehouses or consuming establishments; and on farms, in merchant sheds, and in other private storage.

**Table 3. Consumption of Domestic and Foreign Cotton by Staple Length by Month: 1998**

Month	Domestic and foreign cotton	American upland and foreign cotton	American upland					Foreign cotton	Extra long staple <sup>1</sup>
			American upland	Staples less than 1 inch	1 inch and 1-1/32 inch staples	1-1/16 inch and 1-1/32 inch staples	Staples larger than 1-1/32 inch		
Number of running bales									
<b>Total, year ending December 26, 1998.....</b>	<b>10,492,615</b>	<b>10,371,167</b>	<b>(D)</b>	<b>(D)</b>	<b>1,860,167</b>	<b>8,028,842</b>	<b>438,755</b>	<b>(D)</b>	<b>121,448</b>
December.....	796,433	784,644	(D)	(D)	141,935	611,678	28,300	(D)	11,789
November.....	758,389	747,402	(D)	(D)	136,797	579,580	28,595	(D)	10,987
October.....	834,019	822,705	(D)	(D)	150,751	631,523	37,263	(D)	11,314
September.....	1,012,850	1,000,803	1,000,803	3,589	183,472	768,812	44,930	-	12,047
August.....	834,903	825,513	(D)	(D)	151,339	635,441	34,755	(D)	9,390
July.....	769,917	761,784	(D)	(D)	134,394	590,177	33,331	(D)	8,133
June.....	1,016,805	1,006,225	(D)	(D)	176,621	780,198	44,759	(D)	10,580
May.....	854,154	845,160	845,160	3,907	156,679	648,977	35,597	-	8,994
April.....	839,114	830,138	(D)	(D)	151,931	640,334	34,503	(D)	8,976
March.....	1,067,683	1,056,504	(D)	(D)	187,792	818,115	45,653	(D)	11,179
February.....	860,642	851,234	(D)	(D)	147,869	664,297	35,145	(D)	9,408
January.....	847,706	839,055	(D)	(D)	140,587	659,710	35,924	(D)	8,651
1,000 pounds									
<b>Total, year ending December 26, 1998.....</b>	<b>5,227,565</b>	<b>5,166,478</b>	<b>(D)</b>	<b>(D)</b>	<b>926,977</b>	<b>3,998,866</b>	<b>219,108</b>	<b>(D)</b>	<b>61,087</b>
December.....	396,470	390,543	(D)	(D)	70,670	304,387	14,127	(D)	5,927
November.....	377,682	372,166	(D)	(D)	68,161	288,532	14,266	(D)	5,516
October.....	415,988	410,296	(D)	(D)	75,213	314,893	18,619	(D)	5,692
September.....	505,310	499,221	499,221	1,782	91,542	383,461	22,436	-	6,089
August.....	416,876	412,131	(D)	(D)	75,521	317,287	17,347	(D)	4,745
July.....	383,774	379,745	(D)	(D)	66,979	294,190	16,659	(D)	4,029
June.....	506,911	501,581	(D)	(D)	88,035	388,872	22,370	(D)	5,330
May.....	425,438	420,910	420,910	1,939	78,095	323,089	17,787	-	4,528
April.....	417,898	413,380	(D)	(D)	75,709	318,754	17,251	(D)	4,518
March.....	531,420	525,813	(D)	(D)	93,594	406,965	22,799	(D)	5,607
February.....	428,587	423,834	(D)	(D)	73,801	330,559	17,526	(D)	4,753
January.....	421,211	416,858	(D)	(D)	69,657	327,877	17,921	(D)	4,353

- Represents zero. D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Includes American-Pima, Sea Island and domestic raw cotton other than American upland.

**Table 4. Consumption of Domestic and Foreign Cotton by State: 1998**

Month	Domestic and foreign total	Cotton growing states									All other states
		Total	Alabama	Georgia	North Carolina	South Carolina	Tennessee	Texas	Virginia	Other	
Number of running bales											
<b>Total, year ending December 26, 1998 ...</b>	<b>10,492,615</b>	<b>(D)</b>	<b>1,353,532</b>	<b>1,842,595</b>	<b>4,723,036</b>	<b>1,760,526</b>	<b>128,808</b>	<b>171,542</b>	<b>365,773</b>	<b>(D)</b>	<b>(D)</b>
December .....	796,433	(D)	85,983	147,704	358,394	144,857	7,344	11,192	31,807	(D)	(D)
November .....	758,389	(D)	89,544	136,278	345,676	124,457	8,612	13,081	30,219	(D)	(D)
October .....	834,019	(D)	104,737	146,061	383,715	132,392	8,264	15,788	30,575	(D)	(D)
September .....	1,012,850	(D)	129,646	184,921	457,307	162,256	11,993	16,931	36,016	(D)	(D)
August .....	834,903	(D)	110,607	147,107	380,360	130,162	12,091	11,937	30,327	(D)	(D)
July .....	769,917	(D)	103,374	128,894	349,549	122,190	11,448	13,126	31,555	(D)	(D)
June .....	1,016,805	(D)	126,607	171,568	463,387	179,144	10,862	17,418	32,288	(D)	(D)
May .....	854,154	(D)	112,487	148,805	383,936	144,146	10,839	13,673	28,364	(D)	(D)
April .....	839,114	(D)	113,247	145,803	374,755	140,321	11,165	13,519	28,591	(D)	(D)
March .....	1,067,683	(D)	147,746	190,263	469,530	181,684	14,261	15,025	33,774	(D)	(D)
February .....	860,642	(D)	117,285	151,454	377,722	149,099	11,202	16,271	25,997	(D)	(D)
January .....	847,706	(D)	112,269	143,737	378,705	149,818	10,727	13,581	26,260	(D)	(D)
1,000 pounds											
<b>Total, year ending December 26, 1998 ...</b>	<b>5,227,565</b>	<b>(D)</b>	<b>672,909</b>	<b>919,260</b>	<b>2,352,497</b>	<b>878,090</b>	<b>64,486</b>	<b>85,209</b>	<b>181,945</b>	<b>(D)</b>	<b>(D)</b>
December .....	396,470	(D)	42,659	73,613	178,356	72,219	3,660	5,546	15,858	(D)	(D)
November .....	377,682	(D)	44,482	68,009	172,130	61,992	4,310	6,493	15,014	(D)	(D)
October .....	415,988	(D)	52,160	73,007	191,288	66,133	4,140	7,834	15,196	(D)	(D)
September .....	505,310	(D)	64,622	92,623	227,858	81,017	5,991	8,400	17,911	(D)	(D)
August .....	416,876	(D)	55,089	73,360	189,660	65,484	6,028	5,994	15,090	(D)	(D)
July .....	383,774	(D)	51,449	64,235	174,378	60,772	5,782	6,554	15,712	(D)	(D)
June .....	506,911	(D)	63,102	85,546	231,164	89,172	5,473	8,634	16,063	(D)	(D)
May .....	425,438	(D)	55,967	74,230	191,284	71,687	5,434	6,787	14,117	(D)	(D)
April .....	417,898	(D)	56,337	72,711	186,454	70,040	5,590	6,715	14,234	(D)	(D)
March .....	531,420	(D)	73,301	94,825	233,781	90,491	7,134	7,450	16,795	(D)	(D)
February .....	428,587	(D)	58,213	75,525	187,854	74,620	5,610	8,080	12,919	(D)	(D)
January .....	421,211	(D)	55,528	71,576	188,290	74,463	5,334	6,722	13,036	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

**Table 5. Stocks of Cotton Held in Consuming Establishments and in Public Warehouses: 1998**

[Number of bales]

Month	Total <sup>1</sup>	In consuming establishments					In warehouses and compresses		
		Domestic and foreign cotton	American upland and foreign cotton			Extra long staple <sup>2</sup>	Total	American upland <sup>3</sup>	Extra long staple <sup>2</sup>
			Total	American upland	Foreign cotton				
December . . . . .	9,361,839	548,456	539,194	(D)	(D)	9,262	8,813,383	8,595,533	217,850
November . . . . .	8,758,715	538,383	528,461	(D)	(D)	9,922	8,220,332	8,114,404	105,928
October . . . . .	7,019,494	563,181	552,155	(D)	(D)	11,026	6,456,313	6,419,890	36,423
September . . . . .	3,484,751	636,336	622,803	(D)	(D)	13,533	2,848,415	2,820,633	27,782
August . . . . .	3,225,272	695,817	685,319	(D)	(D)	10,498	2,529,455	2,495,342	34,113
July . . . . .	3,879,052	731,395	720,100	(D)	(D)	11,295	3,147,657	3,100,549	47,108
June . . . . .	4,815,682	729,486	717,734	(D)	(D)	11,752	4,086,196	4,019,198	66,998
May . . . . .	6,115,384	719,454	708,465	(D)	(D)	10,989	5,395,930	5,309,251	86,679
April . . . . .	7,297,299	706,816	697,389	(D)	(D)	9,427	6,590,483	6,487,258	103,225
March . . . . .	8,577,409	678,458	669,335	(D)	(D)	9,123	7,898,951	7,766,884	132,067
February . . . . .	10,144,746	660,900	652,675	(D)	(D)	8,225	9,483,846	9,312,287	171,559
January . . . . .	11,576,873	602,771	594,963	(D)	(D)	7,808	10,974,102	10,760,656	213,446

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Excludes cotton in transit to ports, warehouses, consuming establishments, and Canada; on docks, on shipboard but not cleared, and other port stocks not in warehouses or consuming establishments; and on farms, in merchant sheds, and in other private storage.

<sup>2</sup>Includes foreign cotton, American-Pima, Sea Island, and other domestic cotton.

<sup>3</sup>Includes Egyptian, Sudanese, and other foreign cotton (other than foreign cotton held in bond awaiting opening of quota or held for transshipments to other countries).

**Table 6. Stocks of Cotton Held by Consuming Establishments by State: 1998**

Month	Domestic and foreign total	Cotton growing states									
		Total	Alabama	Georgia	North Carolina	South Carolina	Tennessee	Texas	Virginia	Other	All other states
Number of running bales											
December . . . . .	548,456	(D)	135,147	83,965	187,058	108,167	6,942	6,637	11,959	(D)	(D)
November . . . . .	538,383	(D)	128,006	88,002	182,079	101,816	7,501	8,683	13,179	(D)	(D)
October . . . . .	563,181	(D)	142,474	88,292	181,497	110,230	9,098	10,512	13,249	(D)	(D)
September . . . . .	636,336	(D)	125,574	106,492	224,270	138,650	9,834	11,043	11,726	(D)	(D)
August . . . . .	695,817	(D)	121,906	120,736	257,715	155,826	10,441	8,804	11,788	(D)	(D)
July . . . . .	731,395	(D)	142,982	123,812	261,349	162,719	12,003	7,445	12,511	(D)	(D)
June . . . . .	729,486	(D)	144,147	119,244	272,354	152,541	10,617	9,938	12,159	(D)	(D)
May . . . . .	719,454	(D)	154,660	113,644	263,353	147,889	9,392	11,557	11,192	(D)	(D)
April . . . . .	706,816	(D)	158,613	103,313	261,938	147,044	8,993	9,134	10,055	(D)	(D)
March . . . . .	678,458	(D)	159,478	91,346	253,528	135,618	8,150	12,391	10,447	(D)	(D)
February . . . . .	660,900	(D)	161,628	86,059	243,155	130,111	8,321	12,457	10,845	(D)	(D)
January . . . . .	602,771	(D)	160,420	72,077	213,519	114,020	9,298	13,059	11,590	(D)	(D)
1,000 pounds											
December . . . . .	272,613	(D)	66,670	41,994	93,126	53,758	3,472	3,300	6,015	(D)	(D)
November . . . . .	268,337	(D)	63,697	43,999	90,684	50,761	3,755	4,316	6,568	(D)	(D)
October . . . . .	280,522	(D)	70,578	44,043	90,547	55,039	4,549	5,231	6,611	(D)	(D)
September . . . . .	317,253	(D)	62,528	53,132	112,005	68,973	4,903	5,487	5,842	(D)	(D)
August . . . . .	346,673	(D)	60,704	60,251	128,684	77,280	5,203	4,378	5,859	(D)	(D)
July . . . . .	364,761	(D)	71,145	61,764	130,815	80,847	5,976	3,702	6,221	(D)	(D)
June . . . . .	363,245	(D)	71,579	59,505	135,986	75,674	5,276	4,939	6,054	(D)	(D)
May . . . . .	357,819	(D)	76,743	56,635	131,300	73,299	4,673	5,742	5,561	(D)	(D)
April . . . . .	351,689	(D)	78,684	51,478	130,602	73,061	4,468	4,553	4,999	(D)	(D)
March . . . . .	337,527	(D)	79,023	45,492	126,331	67,521	4,044	6,167	5,203	(D)	(D)
February . . . . .	328,626	(D)	80,037	42,956	121,086	64,692	4,127	6,199	5,395	(D)	(D)
January . . . . .	299,631	(D)	79,392	35,897	106,313	56,810	4,592	6,497	5,763	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

**Table 7. Stocks of Cotton Held in Public Storage and at Compresses by State: 1998**

[Number of bales]

States	December	November	October	September	August	July	June	May	April	March	February	January
<b>Total . . . . .</b>	<b>8,813,383</b>	<b>8,220,332</b>	<b>6,456,313</b>	<b>2,848,415</b>	<b>2,529,455</b>	<b>3,147,657</b>	<b>4,086,196</b>	<b>5,395,930</b>	<b>6,590,483</b>	<b>7,898,951</b>	<b>9,483,846</b>	<b>10,974,102</b>
Alabama . . . . .	342,976	373,578	297,503	112,561	51,660	91,786	126,946	158,370	190,467	232,275	275,266	313,460
Arizona and New Mexico . . . . .	439,026	379,139	228,338	140,916	148,648	193,232	246,653	372,952	421,676	492,657	577,641	658,563
Arkansas . . . . .	704,762	808,377	728,513	189,510	123,798	233,771	338,338	453,615	577,548	687,746	818,095	937,711
California . . . . .	973,237	518,913	212,457	179,094	265,100	379,927	512,512	665,062	838,120	1,065,449	1,395,702	1,668,558
Florida and Georgia . . . . .	858,202	710,245	418,632	182,576	168,743	257,591	324,715	425,460	533,473	663,296	799,040	875,771
Louisiana . . . . .	487,930	559,887	568,759	177,258	70,023	112,137	170,242	235,068	288,229	403,909	448,337	562,911
Mississippi . . . . .	873,785	975,810	966,658	344,095	97,606	183,061	290,324	433,046	570,460	732,780	920,980	1,074,523
Missouri . . . . .	131,785	150,520	128,259	30,483	21,965	38,741	62,957	88,456	112,316	136,379	165,738	192,026
North Carolina . . . . .	594,934	620,407	465,614	255,283	305,264	369,339	429,011	491,110	547,517	537,996	540,234	569,754
Oklahoma and Texas . . . . .	2,607,295	2,247,346	1,605,353	837,889	949,728	866,428	1,128,976	1,531,572	1,856,231	2,228,104	2,742,662	3,266,152
South Carolina . . . . .	213,741	222,289	176,485	91,840	75,260	99,093	100,728	120,463	140,649	160,553	183,144	209,180
Tennessee . . . . .	585,710	653,821	659,742	306,910	251,660	322,551	354,794	420,756	513,797	557,807	617,007	645,493
Other states . . . . .	-	-	-	-	-	-	-	-	-	-	-	-

- Represents zero.

**Table 8. Consumption of Manmade Fiber Staple: 1998**

[Thousands of pounds]

Month	Total <sup>1</sup>	Rayon and/or acetate	Total noncellulosic	Nylon	Acrylic and modacrylic	Polyester	Other manmade fiber staple
<b>Total, year ending December 26, 1998 . . . . .</b>	<b>1,404,471</b>	<b>113,819</b>	<b>1,290,652</b>	<b>39,434</b>	<b>93,448</b>	<b>1,141,589</b>	<b>16,181</b>
December . . . . .	97,625	6,415	91,210	2,979	5,182	81,351	1,698
November . . . . .	93,840	7,115	86,725	2,821	4,886	77,619	1,399
October . . . . .	104,140	7,692	96,448	3,486	5,673	85,893	1,396
September . . . . .	132,819	10,095	122,724	4,105	7,647	109,592	1,380
August . . . . .	113,242	9,343	103,899	3,221	7,643	91,846	1,189
July . . . . .	105,278	9,089	96,189	3,306	6,603	84,897	1,383
June . . . . .	139,139	11,291	127,848	3,939	9,119	113,204	1,586
May . . . . .	119,086	9,186	109,900	2,984	8,313	97,350	1,253
April . . . . .	117,061	10,709	106,352	3,279	9,091	92,677	1,305
March . . . . .	149,458	12,147	137,311	3,358	11,549	120,809	1,595
February . . . . .	117,463	10,703	106,760	3,229	9,201	93,374	956
January . . . . .	115,320	10,034	105,286	2,727	8,541	92,977	1,041

<sup>1</sup>Represents consumption in mills with cotton system spindles.

**Table 9. Stocks of Manmade Fiber Staple: 1998**

[Thousands of pounds]

Month	Total <sup>1</sup>	Rayon and/or acetate	Total noncellulosic	Nylon	Acrylic and modacrylic	Polyester	Other manmade fiber staple
December . . . . .	43,993	6,279	37,714	597	3,273	33,034	810
November . . . . .	40,564	4,930	35,634	336	3,430	31,120	748
October . . . . .	44,120	5,176	38,944	365	3,669	34,192	718
September . . . . .	45,842	6,880	38,962	495	3,883	33,638	946
August . . . . .	47,507	7,711	39,796	366	4,355	34,416	659
July . . . . .	51,787	7,532	44,255	369	4,737	38,443	706
June . . . . .	47,390	6,215	41,175	395	4,872	35,121	787
May . . . . .	48,223	6,814	41,409	575	5,421	34,762	651
April . . . . .	48,693	6,849	41,844	597	5,319	35,279	649
March . . . . .	52,445	7,354	45,091	476	5,872	38,173	570
February . . . . .	51,097	7,590	43,507	439	4,961	37,503	604
January . . . . .	49,773	7,478	42,295	325	3,657	37,709	604

<sup>1</sup>Stocks are only for mills with cotton system spindles.

**Table 10. Cotton System Spindles in Place and Active by Type of Fiber Spun: 1998**

[In thousands]

State and type	December	November	October	September	August	July	June	May	April	March	February	January
Spindles in place:												
United States .....	5,337	5,363	5,357	5,433	5,483	5,416	5,451	5,440	5,440	5,437	5,459	5,518
By state:												
Alabama .....	569	572	572	571	573	573	571	573	575	574	574	580
Georgia .....	497	497	493	494	495	495	495	494	494	494	493	490
North Carolina .....	2,179	2,184	2,199	2,205	2,183	2,183	2,227	2,209	2,209	2,181	2,192	2,191
South Carolina .....	1,555	1,573	1,550	1,621	1,688	1,688	1,681	1,689	1,689	1,711	1,722	1,785
Tennessee .....	211	210	217	217	217	217	217	215	214	217	218	214
Texas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Virginia .....	242	242	242	242	242	177	176	175	175	175	175	175
Other states .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
By type:												
Ring spindles .....	4,282	4,307	4,307	4,385	4,445	4,372	4,400	4,398	4,395	4,380	4,418	4,487
Air jet position .....	106	107	104	103	102	104	104	102	101	106	105	104
Open-end position (i.e., rotors) .....	949	949	946	945	936	940	947	940	944	951	936	927
Active, 100 percent cotton:												
United States .....	2,665	2,671	2,678	2,638	2,651	2,585	2,645	2,595	2,637	2,566	2,605	2,605
By state:												
Alabama .....	309	311	304	303	311	310	303	305	304	281	283	291
Georgia .....	267	267	265	264	263	262	258	261	262	263	262	260
North Carolina .....	1,072	1,092	1,112	1,117	1,102	1,098	1,156	1,133	1,149	1,085	1,123	1,127
South Carolina .....	657	649	635	602	622	614	619	599	628	624	625	638
Tennessee .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Texas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Virginia .....	170	166	169	164	161	96	106	100	107	107	97	82
Other states .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
By type:												
Ring spindles .....	2,099	2,106	2,117	2,083	2,093	2,027	2,084	2,035	2,086	2,019	2,035	2,048
Air jet position .....	-	-	-	-	-	-	-	-	-	-	-	-
Open-end position (i.e., rotors) .....	566	565	561	555	558	558	561	560	551	547	570	557
Active, 100 percent manmade fibers:												
United States .....	753	776	779	773	781	772	776	800	784	774	788	823
By state:												
Alabama .....	16	16	16	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Georgia .....	62	61	61	63	64	64	64	63	63	63	63	63
North Carolina .....	542	563	572	560	563	561	571	576	570	568	569	562
South Carolina .....	94	94	92	109	109	104	101	120	111	102	117	154
Tennessee .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Texas .....	-	-	-	-	-	-	-	-	-	-	-	-
Virginia .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other states .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
By type:												
Ring spindles .....	712	735	738	730	737	728	732	756	738	730	745	782
Air jet position .....	5	5	5	5	5	5	5	5	5	5	5	5
Open-end position (i.e., rotors) .....	36	36	36	38	39	39	39	39	41	39	38	36
Active, other fibers and blends:												
United States .....	1,599	1,591	1,575	1,671	1,702	1,702	1,725	1,687	1,733	1,767	1,759	1,781
By state:												
Alabama .....	221	220	214	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Georgia .....	154	156	156	155	157	158	158	158	157	158	159	156
North Carolina .....	451	441	449	455	448	441	454	451	447	459	439	444
South Carolina .....	666	670	658	711	754	759	780	733	790	804	808	822
Tennessee .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Texas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Virginia .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other states .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
By type:												
Ring spindles .....	1,183	1,169	1,144	1,233	1,279	1,279	1,295	1,260	1,297	1,317	1,341	1,357
Air jet position .....	101	102	98	96	95	97	97	97	96	101	100	99
Open-end position (i.e., rotors) .....	315	320	333	342	328	326	333	330	340	349	318	325

- Represents zero. D Withheld to avoid disclosing data for individual companies.



**Table 11. Cotton System Spindle Hours by Type of Fiber Spun: 1998**

[In thousands]

State and type	December	November	October	September	August	July	June	May	April	March	February	January
<b>Spindle hours:</b>												
United States .....	2,773	2,499	2,729	3,292	2,754	2,497	3,374	2,825	2,776	3,501	2,874	2,856
By state:												
Alabama .....	291	273	307	352	304	282	381	303	312	397	323	304
Georgia .....	261	244	250	308	262	247	317	275	268	333	268	262
North Carolina .....	1,183	1,056	1,189	1,424	1,178	1,047	1,440	1,197	1,179	1,428	1,168	1,141
South Carolina .....	771	683	739	849	738	689	981	796	794	1,050	873	907
Tennessee .....	94	89	79	102	107	117	120	112	111	148	123	123
Texas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Virginia .....	143	128	134	155	135	88	98	94	83	107	90	93
Other states .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
By type:												
Ring spindles .....	2,148	1,919	2,087	2,549	2,110	1,912	2,598	2,175	2,136	2,694	2,220	2,215
Air jet position .....	64	60	62	75	63	55	79	64	63	81	63	62
Open-end position (i.e., rotors) .....	561	520	580	668	581	530	697	586	577	726	591	579
<b>100 percent cotton:</b>												
United States .....	1,548	1,435	1,536	1,808	1,496	1,340	1,791	1,504	1,476	1,817	1,495	1,504
By state:												
Alabama .....	157	160	174	195	170	157	196	167	179	205	178	165
Georgia .....	154	148	154	187	164	156	188	169	165	202	162	159
North Carolina .....	683	616	680	817	659	589	831	672	662	779	639	647
South Carolina .....	360	332	345	335	311	284	400	321	323	426	354	361
Tennessee .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Texas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Virginia .....	115	101	105	115	104	59	65	60	53	71	54	60
Other states .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
By type:												
Ring spindles .....	1,200	1,113	1,184	1,409	1,142	1,015	1,384	1,152	1,135	1,400	1,140	1,155
Air jet position .....	-	-	-	-	-	-	-	-	-	-	-	-
Open-end position (i.e., rotors) .....	348	322	352	399	354	325	407	352	341	417	355	349
<b>100 percent manmade fibers:</b>												
United States .....	381	325	375	473	404	350	480	425	401	499	420	398
By state:												
Alabama .....	9	8	10	11	10	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Georgia .....	29	26	25	31	24	24	35	29	28	36	29	28
North Carolina .....	257	219	268	333	284	245	346	292	289	362	296	266
South Carolina .....	56	46	50	80	60	49	72	82	65	74	71	86
Tennessee .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Texas .....	-	-	-	-	-	-	-	-	-	-	-	-
Virginia .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other states .....	(D)	(D)	(D)	(D)	(D)	-	-	-	-	(D)	(D)	(D)
By type:												
Ring spindles .....	357	303	351	445	379	327	453	392	368	458	388	368
Air jet position .....	4	3	4	4	4	3	3	3	3	4	2	2
Open-end position (i.e., rotors) .....	20	19	20	24	21	20	24	30	30	37	30	28
<b>Other fibers and blends:</b>												
United States .....	844	739	818	1,011	854	807	1,103	896	899	1,185	959	954
By state:												
Alabama .....	125	105	123	146	124	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Georgia .....	78	70	71	90	74	67	94	77	75	95	77	75
North Carolina .....	243	221	241	274	235	213	263	233	228	287	233	228
South Carolina .....	355	305	344	434	367	356	509	393	406	550	448	460
Tennessee .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Texas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Virginia .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other states .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
By type:												
Ring spindles .....	591	503	552	695	589	570	761	631	633	836	692	692
Air jet position .....	60	57	58	71	59	52	76	61	60	77	61	60
Open-end position (i.e., rotors) .....	193	179	208	245	206	185	266	204	206	272	206	202

- Represents zero. D Withheld to avoid disclosing data for individual companies.

**Table 12. Consumption, Stocks, and Spindle Activity on the Cotton System by Industry Groups: 1998**

Product description	Unit of measure	Total	December	November	October	September	August	July	June	May	April	March	February	January
<b>All industries total:</b>														
<b>Domestic and foreign cotton:</b>														
Consumption . . .	Bales . . .	10,492,615	796,433	758,389	834,019	1,012,850	834,903	769,917	1,016,805	854,154	839,114	1,067,683	860,642	847,706
Stocks . . . . .	. . . do . . .	(NA)	548,456	538,383	563,181	636,336	695,817	731,395	729,486	719,454	706,816	678,458	660,900	602,771
<b>Manmade fiber staple:</b>														
Consumption . . .	1,000 lb .	1,404,471	97,625	93,840	104,140	132,819	113,242	105,278	139,139	119,086	117,061	149,458	117,463	115,320
Stocks . . . . .	. . . do . . .	(NA)	43,993	40,564	44,120	45,842	47,507	51,787	47,390	48,223	48,693	52,445	51,097	49,773
<b>Cellulosic:</b>														
Consumption . . .	. . . do . . .	113,819	6,415	7,115	7,692	10,095	9,343	9,089	11,291	9,186	10,709	12,147	10,703	10,034
Stocks . . . . .	. . . do . . .	(NA)	6,279	4,930	5,176	6,880	7,711	7,532	6,215	6,814	6,849	7,354	7,590	7,478
<b>Noncellulosic:</b>														
Consumption . . .	. . . do . . .	1,290,652	91,210	86,725	96,448	122,724	103,899	96,189	127,848	109,900	106,352	137,311	106,760	105,286
Stocks . . . . .	. . . do . . .	(NA)	37,714	35,634	38,944	38,962	39,796	44,255	41,175	41,409	41,844	45,091	43,507	42,295
<b>Spindle activity:</b>														
Spindles in place . . . . .	1,000 . . .	(NA)	5,337	5,363	5,357	5,433	5,483	5,416	5,451	5,440	5,440	5,437	5,459	5,518
Active spindles . . . . .	. . . do . . .	(NA)	5,017	5,038	5,032	5,082	5,134	5,059	5,146	5,082	5,154	5,107	5,152	5,209
Hours operated . . . . .	Millions . .	34,750	2,773	2,499	2,729	3,292	2,754	2,497	3,374	2,825	2,776	3,501	2,874	2,856
<b>Weaving mills (SIC 221, 222, 223, and 224):</b>														
<b>Domestic and foreign cotton:</b>														
Consumption . . . . .	Bales . . .	5,864,073	427,179	414,192	458,640	574,221	461,554	430,395	565,023	483,272	486,584	601,969	490,469	470,575
Stocks . . . . .	. . . do . . .	(NA)	346,886	343,387	370,631	389,899	423,367	449,474	441,069	431,179	424,765	418,990	402,480	366,094
<b>Manmade fiber staple:</b>														
Consumption . . . . .	1,000 lb .	806,369	59,136	54,536	60,051	76,847	64,532	60,335	80,390	66,494	65,933	84,674	68,687	64,754
Stocks . . . . .	. . . do . . .	(NA)	22,950	20,574	21,659	22,616	22,616	25,165	22,037	21,542	21,401	23,316	25,916	24,875
<b>Cellulosic:</b>														
Consumption . . . . .	. . . do . . .	64,273	3,816	4,231	4,141	5,646	5,328	5,070	6,603	4,998	6,470	6,637	6,411	4,922
Stocks . . . . .	. . . do . . .	(NA)	1,261	1,341	1,445	2,608	2,902	2,269	1,138	1,966	1,799	2,203	2,640	2,386
<b>Noncellulosic:</b>														
Consumption . . . . .	. . . do . . .	742,096	55,320	50,305	55,910	71,201	59,204	55,265	73,787	61,496	59,463	78,037	62,276	59,832
Stocks . . . . .	. . . do . . .	(NA)	21,689	19,233	20,214	20,008	19,714	22,896	20,899	19,576	19,602	21,113	23,276	22,489
<b>Spindle activity:</b>														
Spindles in place . . . . .	1,000 . . .	(NA)	2,958	2,980	2,960	3,030	3,095	3,092	3,087	3,087	3,089	3,112	3,124	3,120
Active spindles . . . . .	. . . do . . .	(NA)	2,759	2,740	2,709	2,755	2,822	2,820	2,837	2,784	2,848	2,850	2,879	2,870
Hours operated . . . . .	Millions . .	18,533	1,415	1,298	1,408	1,710	1,432	1,345	1,808	1,513	1,504	1,946	1,586	1,568
<b>Yarn and thread mills (SIC 228):</b>														
<b>Domestic and foreign cotton:</b>														
Consumption . . . . .	Bales . . .	4,462,791	359,330	332,445	362,254	421,148	357,720	326,423	436,018	358,075	340,431	449,431	356,014	363,502
Stocks . . . . .	. . . do . . .	(NA)	193,927	186,709	183,152	233,453	258,606	266,957	275,075	276,701	270,489	248,110	246,270	223,809
<b>Manmade fiber staple:</b>														
Consumption . . . . .	1,000 lb .	460,006	29,929	31,055	34,983	43,906	37,784	34,300	44,869	39,848	38,179	48,350	38,063	38,740
Stocks . . . . .	. . . do . . .	(NA)	15,689	14,606	16,468	17,487	18,239	20,509	19,401	20,049	20,673	22,758	19,102	20,019
<b>Cellulosic:</b>														
Consumption . . . . .	. . . do . . .	32,933	1,638	1,905	2,507	3,173	2,746	2,676	3,131	2,810	2,659	3,412	2,819	3,457
Stocks . . . . .	. . . do . . .	(NA)	4,530	3,252	3,401	4,038	4,565	5,116	4,746	4,331	4,590	4,640	4,468	4,712
<b>Noncellulosic:</b>														
Consumption . . . . .	. . . do . . .	427,073	28,291	29,150	32,476	40,733	35,038	31,624	41,738	37,038	35,520	44,938	35,244	35,283
Stocks . . . . .	. . . do . . .	(NA)	11,159	11,354	13,067	13,449	13,674	15,393	14,655	15,718	16,083	18,118	14,634	15,307
<b>Spindle activity:</b>														
Spindles in place . . . . .	1,000 . . .	(NA)	2,256	2,259	2,272	2,279	2,263	2,200	2,239	2,228	2,227	2,200	2,210	2,274
Active spindles . . . . .	. . . do . . .	(NA)	2,144	2,182	2,210	2,212	2,199	2,126	2,199	2,186	2,194	2,146	2,166	2,229
Hours operated . . . . .	Millions . .	15,537	1,304	1,156	1,272	1,521	1,268	1,102	1,499	1,254	1,214	1,487	1,231	1,229
<b>All other industry groups:</b>														
<b>Domestic and foreign cotton:</b>														
Consumption . . . . .	Bales . . .	165,751	9,924	11,752	13,125	17,481	15,629	13,099	15,764	12,807	12,099	16,283	14,159	13,629
Stocks . . . . .	. . . do . . .	(NA)	7,643	8,287	9,398	12,984	13,844	14,964	13,342	11,574	11,562	11,358	12,150	12,868
<b>Manmade fiber staple:</b>														
Consumption . . . . .	1,000 lb .	138,096	8,560	8,249	9,106	12,066	10,926	10,643	13,880	12,744	12,949	16,434	10,713	11,826
Stocks . . . . .	. . . do . . .	(NA)	5,354	5,384	5,993	5,739	6,652	6,113	5,952	6,632	6,619	6,371	6,079	4,879
<b>Cellulosic:</b>														
Consumption . . . . .	. . . do . . .	16,613	961	979	1,044	1,276	1,269	1,343	1,557	1,378	1,580	2,098	1,473	1,655
Stocks . . . . .	. . . do . . .	(NA)	488	337	330	234	244	147	331	517	460	511	482	380
<b>Noncellulosic:</b>														
Consumption . . . . .	. . . do . . .	121,483	7,599	7,270	8,062	10,790	9,657	9,300	12,323	11,366	11,369	14,336	9,240	10,171
Stocks . . . . .	. . . do . . .	(NA)	4,866	5,047	5,663	5,505	6,408	5,966	5,621	6,115	6,159	5,860	5,597	4,499
<b>Spindle activity:</b>														
Spindles in place . . . . .	1,000 . . .	(NA)	123	124	125	124	125	124	125	125	124	125	125	124
Active spindles . . . . .	. . . do . . .	(NA)	114	116	113	115	113	113	110	112	112	111	107	110
Hours operated . . . . .	Millions . .	680	54	45	49	61	54	50	67	58	58	68	57	59

NA Not available.

**Table 13. Consumption of Linters by Type of Consumer: 1998**

[Number of running bales]

Month	Total	Bleachers	Other consumers		
			Total	Pacific and Mountain states	All other states
<b>Total, year ending December 26, 1998 .....</b>	<b>852,505</b>	<b>809,385</b>	<b>43,120</b>	<b>12,849</b>	<b>30,271</b>
December .....	68,868	65,780	3,088	1,000	2,088
November .....	65,532	62,724	2,808	915	1,893
October .....	58,315	55,012	3,303	985	2,318
September .....	79,608	75,784	3,824	1,096	2,728
August .....	84,735	81,030	3,705	989	2,716
July .....	59,271	55,898	3,373	938	2,435
June .....	81,482	77,515	3,967	951	3,016
May .....	67,614	63,833	3,781	1,110	2,671
April .....	67,703	64,199	3,504	1,135	2,369
March .....	88,737	84,621	4,116	1,277	2,839
February .....	65,655	62,156	3,499	1,169	2,330
January .....	64,985	60,833	4,152	1,284	2,868

**Table 14. Stocks of Linters by Type of Establishment: 1998**

[Number of running bales]

Month	All establishments	Bleachers	Other consumers			Public storage and compresses	Oil mills <sup>1</sup>
			Total	Pacific and Mountain states	All other states		
December .....	175,125	152,368	(D)	(D)	(D)	(D)	20,643
November .....	171,798	151,548	(D)	(D)	(D)	(D)	17,239
October .....	165,881	140,970	(D)	(D)	(D)	(D)	21,607
September .....	171,906	141,882	(D)	(D)	1,367	(D)	26,432
August .....	193,468	155,325	(D)	(D)	1,209	(D)	34,348
July .....	194,835	153,090	(D)	(D)	1,632	(D)	37,595
June .....	206,961	149,201	(D)	(D)	1,521	(D)	53,183
May .....	219,192	152,287	(D)	(D)	1,162	(D)	62,653
April .....	223,659	158,023	(D)	(D)	1,439	(D)	61,757
March .....	211,232	150,763	(D)	(D)	1,581	(D)	56,095
February .....	214,229	155,636	(D)	(D)	1,451	(D)	54,172
January .....	197,250	151,225	(D)	(D)	1,238	(D)	41,988

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Oil mill stocks in estimated running bales based on information reported in pounds.

**HISTORICAL NOTE**

Data on cotton consumption and stocks have been collected by the Census Bureau since 1912. Except for 1991, which was done on a quarterly basis, the entire series is monthly. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959), available at your local Federal Depository Library.

Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Robert Lee, 301-457-4810.

## CONSUMPTION ON THE WOOLEN SYSTEM AND WORSTED COMBING—MQ313D (FORMERLY MQ22D)

### INTRODUCTION

These data cover all establishments consuming fibers in woolen spinning and/or producing tops and noils, including commission work on materials owned by others (fibers laid in mixes for commission spinning on the woolen system, and commission top making).

Woolen and worsted spinning systems are frequently studied together since both are used to spin wool. The primary differences between the two systems are that yarns spun on the worsted system are combed in order to remove the short fibers or noils and to make the individual fibers more parallel. This produces a yarn that is more tightly twisted and of finer texture. This yarn is generally used to produce fabric that is more tightly woven, with a smoother finish and with a crisper hand.

Fabrics made from yarns spun on the woolen system are typically characterized by softness or bulk. The fabrics are frequently knitted or woven into plain or twill weaves and are generally subjected to considerable finishing to enhance the texture.

Both of these systems are used to produce yarn of manufactured fibers and blends, as well as wool. For example, while very little carpet yarn is still wool, much of it is spun on the worsted system.

### EXPLANATION OF TERMS

See explanation of terms at the beginning of this chapter.

**Table 15. Summary of Fibers Consumed in Woolen Spinning and Worsted Combing: 1994 to 1998**

[Thousands of pounds]

Product description	1998	1997	1996	1995	1994
All fibers <sup>1</sup> .....	833,437	904,777	912,195	953,372	1,035,750
Raw wool <sup>2 3</sup> .....	114,704	143,962	141,836	141,966	153,302
Apparel class .....	98,373	130,386	129,525	129,299	138,563
Woolen system .....	46,337	70,341	69,716	57,300	61,998
Worsted combing .....	52,036	60,045	59,809	71,999	76,565
Carpet class .....	16,331	13,576	12,311	12,667	14,739
Noils, reprocessed and reused wool, and other animal fibers <sup>4</sup> .....	11,049	20,371	22,557	19,808	18,641
Other fibers <sup>1 5</sup> .....	707,684	740,444	747,802	791,598	863,807

<sup>1</sup>Includes manmade fiber top converted from tow without combing.

<sup>2</sup>Data are shown on a scoured basis for greasy wool.

<sup>3</sup>Shorn and pulled wool of the sheep does not include raw wool consumed in cotton system spinning; withheld to avoid disclosing data for individual companies.

<sup>4</sup>Includes mohair, alpaca, vicuna, and other specialty fibers, as well as tops and noils consumed in woolen spinning and mohair consumed in worsted combing. Does not include wool tops consumed in cotton system spinning.

<sup>5</sup>Includes cotton, jute, and other vegetable fibers. Data for product code 22993 62, which were included with "Other fibers" data in previous publications, are now being included in the data for "Noils, reprocessed and reused wool, and other animal fibers."

**Table 16. Fibers Consumed in Woolen Spinning and Worsted Combing by Quarter: 1998 and 1997**

[Thousands of pounds]

Product description	Total	First quarter	Second quarter	Third quarter	Fourth quarter
<b>1998</b>					
All fibers <sup>1</sup> .....	833,437	219,729	225,062	197,599	191,047
Raw wool <sup>2 3</sup> .....	114,704	33,189	33,629	25,968	21,918
Apparel class .....	98,373	29,318	29,577	21,948	17,530
Woolen system .....	46,337	14,083	14,782	9,548	7,924
Worsted combing .....	52,036	15,235	14,795	12,400	9,606
Carpet class <sup>4</sup> .....	16,331	3,871	4,052	4,020	4,388
Noils, reprocessed and reused wool, and other animal fibers <sup>5</sup> .....	11,049	3,152	3,797	1,924	2,176
Other fibers <sup>1</sup> .....	707,684	183,388	187,636	169,707	166,953
Nylon .....	443,860	114,650	116,698	109,632	102,880
Polyester .....	107,784	27,605	28,181	26,131	25,867
Acrylic and modacrylic .....	127,028	32,464	34,073	27,683	32,808
Other fibers <sup>6</sup> .....	29,012	8,669	8,684	6,261	5,398
<b>1997</b>					
All fibers <sup>1</sup> .....	904,777	229,038	234,576	220,396	220,767
Raw wool <sup>2 3</sup> .....	143,962	36,561	37,154	34,033	36,214
Apparel class .....	130,386	33,124	33,830	30,638	32,794
Woolen system .....	70,341	18,289	18,112	16,145	17,795
Worsted combing .....	60,045	14,835	15,718	14,493	14,999
Carpet class <sup>4</sup> .....	13,576	3,437	3,324	3,395	3,420
Noils, reprocessed and reused wool, and other animal fibers <sup>5</sup> .....	20,371	5,444	5,423	5,012	4,492
Other fibers <sup>1</sup> .....	740,444	187,033	191,999	181,351	180,061
Nylon .....	458,280	116,120	117,350	114,483	110,327
Polyester .....	117,184	28,597	30,379	27,744	30,464
Acrylic and modacrylic .....	143,063	36,631	38,053	34,231	34,148
Other fibers <sup>6</sup> .....	21,917	5,685	6,217	4,893	5,122

<sup>1</sup>Includes top converted from manmade fiber tow without combing.

<sup>2</sup>Data are shown on a scoured basis for greasy wool.

<sup>3</sup>Shorn and pulled wool of the sheep does not include raw wool consumed in cotton system spinning.

<sup>4</sup>Data for carpet and rug yarns, tops, noils, reprocessed wool, and other wool, except shorn and pulled, are included with carpet class raw wool in order to avoid disclosing data for individual companies. These data represent less than one-half of 1 percent of "Total carpet class, raw wool."

<sup>5</sup>Includes mohair, alpaca, vicuna, and other specialty fibers, as well as tops and noils consumed in woolen spinning and mohair and other fibers, except wool of the sheep consumed in worsted combing. Does not include wool tops consumed in cotton system spinning, which in 1998 amounted to 1,786 thousand pounds and in 1997 amounted to 2,194 thousand pounds.

<sup>6</sup>Includes cotton, jute, and other vegetable fibers. Data for product code 22993 62, which were included with "Other fibers" data in previous publications, are now being included in the data for "Noils, reprocessed and reused wool, and other animal fibers."

**Table 17. Fibers Consumed in Woolen Spinning by Quarter: 1998 and 1997**

[Thousands of pounds]

Product code	Product description	Total	First quarter	Second quarter	Third quarter	Fourth quarter
<b>1998</b>						
	Fibers consumed in woolen spinning <sup>1</sup> . . . . .	745,990	194,613	200,965	177,031	173,381
	For yarns (except carpet and rug) . . . . .	235,080	65,967	71,189	47,617	50,307
	Shorn and pulled wool of the sheep (domestic and foreign duty-paid) . . . . .	46,337	14,083	14,782	9,548	7,924
00214 61	60S and finer . . . . .	31,258	9,343	10,711	6,217	4,987
00214 62	Coarser than 60S . . . . .	15,079	4,740	4,071	3,331	2,937
	Other wool . . . . .	9,557	2,697	3,345	1,565	1,950
02299 38	Sheep (tops, noils, etc.) . . . . .	6,548	1,795	2,492	940	1,321
00214 71	Other (mohair, alpaca, vicuna, etc.) . . . . .	3,009	902	853	625	629
02294 07	Reprocessed wool and reused wool . . . . .	1,297	260	452	359	226
	Other fibers . . . . .	177,889	48,927	52,610	36,145	40,207
02824 14	Nylon . . . . .	20,709	7,898	8,796	2,042	1,973
02824 29	Polyester . . . . .	29,353	7,911	8,289	6,451	6,702
02824 25	Acrylic and modacrylic . . . . .	99,065	24,512	26,903	21,454	26,196
00100 17	All other fibers, including rayon and acetate . . . . .	28,762	8,606	8,622	6,198	5,336
	For carpet and rug yarns . . . . .	510,910	128,646	129,776	129,414	123,074
00214 51	Shorn and pulled wool of the sheep (domestic and foreign duty-paid) <sup>2</sup> . . . . .	(D)	(D)	(D)	(D)	(D)
02299 36	Tops, noils, mohair, reused and reprocessed wool, and other wool (except shorn or pulled) <sup>2</sup> . . . . .	16,331	3,871	4,052	4,020	4,388
	Other fibers . . . . .	494,579	124,775	125,724	125,394	118,686
02824 13	Nylon . . . . .	423,151	106,752	107,902	107,590	100,907
02824 25	Polyester . . . . .	(D)	(D)	(D)	(D)	(D)
02824 24	Acrylic and modacrylic . . . . .	(D)	(D)	(D)	(D)	(D)
00100 14	All other fibers, including rayon and acetate . . . . .	(D)	(D)	(D)	(D)	(D)
<b>1997</b>						
	Fibers consumed in woolen spinning <sup>1</sup> . . . . .	802,257	203,380	208,016	195,352	195,509
	For yarns (except carpet and rug) . . . . .	289,026	75,370	77,510	67,591	68,555
	Shorn and pulled wool of the sheep (domestic and foreign duty-paid) . . . . .	70,341	18,289	18,112	16,145	17,795
00214 61	60S and finer . . . . .	49,038	12,027	12,228	11,647	13,136
00214 62	Coarser than 60S . . . . .	21,303	6,262	5,884	4,498	4,659
	Other wool . . . . .	17,061	4,415	4,690	4,015	3,941
02299 38	Sheep (tops, noils, etc.) . . . . .	12,198	3,078	3,496	2,907	2,717
00214 71	Other (mohair, alpaca, vicuna, etc.) . . . . .	4,863	1,337	1,194	1,108	1,224
02294 07	Reprocessed wool and reused wool . . . . .	2,248	609	629	639	371
	Other fibers . . . . .	199,376	52,057	54,079	46,792	46,448
02824 14	Nylon . . . . .	35,156	9,692	9,140	8,338	7,986
02824 29	Polyester . . . . .	31,829	8,258	8,848	7,382	7,341
02824 25	Acrylic and modacrylic . . . . .	110,502	(D)	(D)	26,179	25,999
00100 17	All other fibers, including rayon and acetate . . . . .	21,889	(D)	(D)	4,893	5,122
	For carpet and rug yarns . . . . .	513,231	128,010	130,506	127,761	126,954
00214 51	Shorn and pulled wool of the sheep (domestic and foreign duty-paid) <sup>2</sup> . . . . .	(D)	(D)	(D)	(D)	(D)
02299 36	Tops, noils, mohair, reused and reprocessed wool, and other wool (except shorn or pulled) <sup>2</sup> . . . . .	13,576	3,437	3,324	3,395	3,420
	Other fibers . . . . .	499,655	124,573	127,182	124,366	123,534
02824 13	Nylon . . . . .	423,124	106,428	108,210	106,145	102,341
02824 25	Polyester . . . . .	(D)	(D)	(D)	(D)	(D)
02824 24	Acrylic and modacrylic . . . . .	(D)	(D)	(D)	(D)	(D)
00100 14	All other fibers, including rayon and acetate . . . . .	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Data are shown on a scoured basis for greasy wools.

<sup>2</sup>Product codes 00214 51 and 02299 36 are combined to avoid disclosing data for individual companies.

**Table 18. Production of Tops and Noils Combed and Manmade Tow Converted to Top Without Combing by Quarter: 1998 and 1997**

[Thousands of pounds]

Product code	Product description	Total	First quarter	Second quarter	Third quarter	Fourth quarter
	<b>1998</b>					
	Tops and noils combed . . . . .	52,231	15,430	14,795	12,400	9,606
	Top production . . . . .	48,141	14,194	13,687	11,395	8,865
	Wool of the sheep (domestic and foreign duty-paid) . . . . .	(D)	(D) 13,687	11,395	8,865	
22993 21	60S and finer . . . . .	38,994	12,412	11,063	8,456	7,063
22993 24	Coarser than 60S . . . . .	(D)	(D)	2,624	2,939	1,802
22993 31	All other fibers, including mohair . . . . .	(D)	(D)	-	-	-
	Noil production . . . . .	4,090	1,236	1,108	1,005	741
	Wool of the sheep (domestic and foreign duty-paid) . . . . .	(D)	(D)	1,108	1,005	741
22993 51	60S and finer . . . . .	3,249	1,042	877	753	577
22993 54	Coarser than 60S . . . . .	(D)	(D)	231	252	164
22993 62	All other fibers, including mohair . . . . .	(D)	(D)	-	-	-
	Manmade tow converted to top without combing . .	35,216	9,686	9,302	8,168	8,060
22993 75	Polyester . . . . .	(D)	(D)	(D)	(D)	(D)
22993 73	Acrylic fibers . . . . .	(D)	(D)	(D)	(D)	(D)
22993 76	Manmade fibers (except polyester or acrylic) . .	(D)	(D)	(D)	(D)	(D)
	<b>1997</b>					
	Tops and noils combed . . . . .	61,107	15,255	15,822	14,851	15,179
	Top production . . . . .	56,313	14,090	14,521	13,687	14,015
	Wool of the sheep (domestic and foreign duty-paid) . . . . .	(D)	(D)	(D)	(D)	(D)
22993 21	60S and finer . . . . .	44,459	11,692	12,025	9,687	11,055
22993 24	Coarser than 60S . . . . .	(D)	(D)	(D)	(D)	(D)
22993 31	All other fibers, including mohair . . . . .	(D)	(D)	(D)	(D)	(D)
	Noil production . . . . .	4,794	1,165	1,301	1,164	1,164
	Wool of the sheep (domestic and foreign duty-paid) . . . . .	(D)	(D)	(D)	(D)	(D)
22993 51	60S and finer . . . . .	3,694	954	1,055	825	860
22993 54	Coarser than 60S . . . . .	(D)	(D)	(D)	(D)	(D)
22993 62	All other fibers, including mohair . . . . .	(D)	(D)	(D)	(D)	(D)
	Manmade tow converted to top without combing . .	41,413	10,403	10,738	10,193	10,079
22993 75	Polyester . . . . .	(D)	(D)	(D)	(D)	(D)
22993 73	Acrylic fibers . . . . .	(D)	(D)	(D)	(D)	(D)
22993 76	Manmade fibers (except polyester or acrylic) . .	(D)	(D)	(D)	-	-

- Represents zero.    D Withheld to avoid disclosing data for individual companies.

**HISTORICAL NOTE**

Data on the consumption of staple fibers on the woolen and worsted systems have been collected by the Census Bureau since 1919. Prior to 1990, the survey was conducted on a monthly basis. Beginning in 1991, the survey became quarterly. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before

1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Stephanie Angel, 301-457-4698.

## YARN PRODUCTION (TEXTURED AND SPUN)—MA313F (FORMERLY MA22F)

### INTRODUCTION

Yarn production is the first stage in the textile manufacturing process. Yarn is a continuous strand of textile fibers and is the basic material that is made into fabrics, thread, twine, or cable. It can be woven, knitted, crocheted, braided, etc.

There are two basic classes of yarn: spun yarn or continuous filament yarn. This subsection of the report provides data on spun yarn and textured filament yarn. Textured yarn has been either bulked, crimped, heat set, or

subjected to some other process intended to give the yarn fullness, stretch, etc. Data are not included that relate to the production of flat filament yarn, which is generally considered to be a chemical manufacturing process.

The data are presented by end use, by fiber, and by spinning system.

### EXPLANATION OF TERMS

See explanation of terms at the beginning of this chapter.

**Table 19. Summary of Yarn Production: 1986 to 1998**

[Millions of pounds]

Year	Spun yarn			Textured, crimped, or bulked yarn		
	Total	For sale	For own use or commission	Total	For sale	For own use or commission
1998.....	7,476.9	2,973.6	4,503.3	3,665.8	2,269.2	1,396.6
1997.....	8,111.4	2,929.9	5,181.5	3,790.5	2,235.4	1,555.1
1996.....	7,771.6	2,801.6	4,970.0	3,858.1	2,240.2	1,617.9
1995.....	8,127.1	3,022.8	5,104.3	3,781.8	2,294.6	1,487.2
1994.....	8,145.2	2,818.9	5,326.3	3,947.5	2,294.1	1,653.4
1993.....	7,566.6	2,510.6	5,056.0	3,564.6	2,149.1	1,415.5
1992.....	7,444.6	2,555.3	4,889.3	3,223.8	2,019.1	1,204.7
1991.....	6,875.1	2,332.6	4,542.5	2,999.7	1,996.9	1,002.8
1990.....	6,493.3	2,190.0	4,303.3	2,811.6	1,874.8	936.8
1989.....	6,759.3	2,289.7	4,469.6	2,789.7	1,898.7	891.0
1988.....	6,636.4	2,287.8	4,348.6	2,617.5	1,849.8	767.7
1987.....	6,731.4	2,303.3	4,428.1	2,470.9	1,790.2	680.7
1986.....	6,154.1	2,095.8	4,058.4	2,273.5	1,682.2	591.3

<sup>†</sup>Revised by 5 or more percent from previously published data.

Note: For 1993, a number of companies were added based on information in the 1992 Census of Manufactures. Data were received from these establishments for 1992; therefore, information shown for years prior to 1992 may not be directly comparable. These changes represent approximately 1.2 percent of total spun yarn production, and 3.5 percent for textured, crimped, or bulked filament yarn.



Table 20. **Summary of Spun Yarn Production by Fiber and End Use of Distribution: 1998 and 1997**

[Thousands of pounds]

Principal fiber	1998			1997		
	Total	For sale	For own use or commission	Total	For sale	For own use or commission
<b>Spun yarn</b> .....	<b>7,476,868</b>	<b>2,973,564</b>	<b>4,503,304</b>	<b>8,111,422</b>	<b>2,929,949</b>	<b>5,181,473</b>
Cotton .....	4,398,359	2,151,086	2,247,273	4,647,905	2,013,255	2,634,650
Carded .....	3,966,104	1,849,982	2,116,122	4,178,066	1,694,994	2,483,072
85 percent or more cotton .....	3,592,353	1,608,066	1,984,287	3,811,390	1,492,100	2,319,290
Other chiefly cotton blends .....	373,751	241,916	131,835	366,676	202,894	163,782
Combed .....	432,255	301,104	131,151	469,839	318,261	151,578
85 percent or more cotton .....	358,345	(D)	(D)	396,506	(D)	(D)
Other chiefly cotton blends .....	73,910	(D)	(D)	73,333	(D)	(D)
Wool and chiefly wool blends .....	92,945	19,308	73,637	108,714	20,398	88,316
Woolen .....	48,984	9,258	39,726	60,163	11,248	48,915
Worsted .....	43,961	10,050	33,911	48,551	9,150	39,401
Cellulosic (rayon, acetate and/or lyocell) .....	112,467	46,548	65,919	130,645	64,657	65,988
85 percent or more rayon, acetate and/or lyocell .....	73,719	34,182	39,537	103,722	50,640	53,082
Other chiefly rayon, acetate and/or lyocell blends .....	38,748	12,366	26,382	26,923	14,017	12,906
Noncellulosic .....	2,873,097	756,622	2,116,475	3,224,158	831,639	2,392,519
85 percent or more acrylic .....	255,961	182,334	73,627	269,528	198,432	71,096
Other chiefly acrylic blends:						
Mixed with cotton .....	8,103	(D)	(D)	9,199	(D)	(D)
Mixed with wool .....	1,471	(D)	(D)	2,073	566	1,507
Mixed with other fibers .....	8,892	4,894	3,998	7,130	896	6,234
85 percent or more nylon .....	683,659	78,112	605,547	700,319	76,478	623,841
Other chiefly nylon blends .....	5,703	(D)	(D)	5,992	(D)	(D)
85 percent or more polyester .....	519,262	192,065	327,197	509,895	212,797	297,098
Other chiefly polyester blends:						
Mixed with cotton .....	1,174,292	177,595	996,697	1,489,431	208,908	1,280,523
Mixed with wool .....	7,930	(D)	(D)	11,421	(D)	(D)
Mixed with other fibers .....	76,397	30,830	45,567	75,964	37,318	38,646
All other manmade fibers <sup>1</sup> .....	131,427	(D)	(D)	143,206	84,366	58,840

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>"All other manmade fibers" includes "Silk and other natural fibers" to avoid disclosing data for individual companies.

**Table 21. Production of Spun Yarn by Fiber and End Use of Distribution: 1998 and 1997**

[Thousands of pounds]

Principal fiber	1998			1997		
	Total	For sale	For own use or commission	Total	For sale	For own use or commission
<b>Weaving yarn (except carpet)</b> .....	<b>3,462,313</b>	<b>645,338</b>	<b>2,816,975</b>	<b>3,504,012</b>	<b>518,132</b>	<b>2,985,880</b>
Cotton .....	2,111,820	466,350	1,645,470	2,104,438	'309,959	1,794,479
Carded .....	1,962,744	420,898	1,541,846	1,957,861	(D)	(D)
85 percent or more cotton .....	1,853,668	(D)	(D)	1,879,399	(D)	(D)
Other chiefly cotton blends .....	109,076	(D)	(D)	78,462	16,260	62,202
Combed .....	149,076	45,452	103,624	146,577	(D)	(D)
85 percent or more cotton .....	(D)	(D)	(D)	(D)	(D)	(D)
Other chiefly cotton blends .....	(D)	(D)	(D)	(D)	(D)	(D)
Wool and chiefly wool blends .....	65,093	6,883	58,210	81,731	7,158	74,573
Woolen .....	31,295	(D)	(D)	42,129	(D)	(D)
Worsted .....	33,798	(D)	(D)	39,602	(D)	(D)
Cellulosic (rayon, acetate and/or lyocell) .....	96,335	33,682	62,653	109,568	47,497	62,071
85 percent or more rayon, acetate and/or lyocell .....	68,192	(D)	(D)	(D)	(D)	(D)
Other chiefly rayon, acetate and/or lyocell blends .....	28,143	(D)	(D)	(D)	(D)	(D)
Noncellulosic .....	1,189,065	138,423	1,050,642	1,208,275	153,518	1,054,757
85 percent or more acrylic .....	61,532	29,689	31,843	57,381	31,367	26,014
Other chiefly acrylic blends:						
Mixed with cotton .....	2,137	(D)	(D)	1,985	(D)	(D)
Mixed with wool .....	(D)	-	(D)	1,542	(D)	(D)
Mixed with other fibers .....	5,319	(D)	(D)	6,696	(D)	(D)
85 percent or more nylon .....	3,959	(D)	(D)	(D)	(D)	(D)
Other chiefly nylon blends .....	3,303	(D)	(D)	4,256	(D)	(D)
85 percent or more polyester .....	147,860	53,200	94,660	122,578	'53,499	69,079
Other chiefly polyester blends:						
Mixed with cotton .....	874,329	43,893	830,436	910,535	53,822	856,713
Mixed with wool .....	(D)	(D)	(D)	(D)	(D)	(D)
Mixed with other fibers .....	46,983	(D)	(D)	43,175	(D)	(D)
All other manmade fibers <sup>1</sup> .....	35,557	(D)	(D)	46,907	(D)	(D)
<b>Machine knitting yarn (except carpet)</b> ..	<b>2,733,255</b>	<b>1,960,594</b>	<b>772,661</b>	<b>'3,355,185</b>	<b>2,042,410</b>	<b>'1,312,775</b>
Cotton .....	2,202,556	1,619,911	582,645	'2,476,233	1,650,149	826,084
Carded .....	1,925,390	(D)	(D)	2,159,505	1,365,033	794,472
85 percent or more cotton .....	1,668,051	1,172,854	495,197	1,877,986	(D)	(D)
Other chiefly cotton blends .....	257,339	(D)	(D)	281,519	(D)	(D)
Combed .....	277,166	(D)	(D)	316,728	285,116	31,612
85 percent or more cotton .....	(D)	(D)	(D)	(D)	(D)	31,612
Other chiefly cotton blends .....	(D)	(D)	-	(D)	(D)	-
Wool and chiefly wool blends .....	(D)	(D)	(D)	(D)	(D)	(D)
Woolen .....	(D)	(D)	(D)	(D)	(D)	(D)
Worsted .....	5,475	(D)	(D)	5,818	(D)	(D)
Cellulosic (rayon, acetate and/or lyocell) .....	(D)	(D)	(D)	(D)	5,699	(D)
85 percent or more rayon, acetate and/or lyocell .....	(D)	(D)	(D)	(D)	(D)	(D)
Other chiefly rayon, acetate and/or lyocell blends .....	(D)	(D)	-	(D)	(D)	-
Noncellulosic .....	516,558	328,188	188,370	'860,610	376,473	'484,137
85 percent or more acrylic .....	143,626	(D)	(D)	159,705	(D)	(D)
Other chiefly acrylic blends:						
Mixed with cotton .....	(D)	(D)	-	(D)	(D)	-
Mixed with wool .....	(D)	(D)	-	531	(D)	(D)
Mixed with other fibers .....	(D)	(D)	(D)	350	(D)	(D)
85 percent or more nylon .....	-	-	-	(D)	-	(D)
Other chiefly nylon blends .....	-	-	-	-	-	-
85 percent or more polyester .....	(D)	(D)	(D)	121,571	(D)	(D)
Other chiefly polyester blends:						
Mixed with cotton .....	(D)	(D)	(D)	'536,950	(D)	(D)
Mixed with wool .....	(D)	(D)	-	(D)	(D)	-
Mixed with other fibers .....	(D)	(D)	-	(D)	(D)	-
All other manmade fibers <sup>1</sup> .....	920	(D)	(D)	1,350	(D)	(D)

See footnotes at end of table.

Table 21. **Production of Spun Yarn by Fiber and End Use of Distribution: 1998 and 1997—Con.**

[Thousands of pounds]

Principal fiber	1998			1997		
	Total	For sale	For own use or commission	Total	For sale	For own use or commission
<b>Carpet and rug yarns</b> .....	<b>1,034,789</b>	<b>172,272</b>	<b>862,517</b>	<b>1,005,648</b>	<b>169,418</b>	<b>836,230</b>
Cotton .....	17,462	17,462	-	(D)	(D)	-
Carded .....	17,462	17,462	-	(D)	(D)	-
85 percent or more cotton .....	(D)	(D)	-	(D)	(D)	-
Other chiefly cotton blends .....	(D)	(D)	-	-	-	-
Combed .....	-	-	-	-	-	-
85 percent or more cotton .....	-	-	-	-	-	-
Other chiefly cotton blends .....	-	-	-	-	-	-
Wool and chiefly wool blends .....	(D)	(D)	(D)	(D)	(D)	(D)
Woolen .....	12,530	(D)	(D)	12,372	(D)	(D)
Worsted .....	(D)	1,349	(D)	(D)	(D)	(D)
Cellulosic (rayon, acetate and/or lyocell) .....	(D)	(D)	-	(D)	(D)	-
85 percent or more rayon, acetate and/or lyocell .....	(D)	(D)	-	(D)	(D)	-
Other chiefly rayon, acetate and/or lyocell blends .....	-	-	-	-	-	-
Noncellulosic .....	999,505	150,559	848,946	975,295	151,475	823,820
85 percent or more acrylic .....	21,987	(D)	(D)	20,208	(D)	(D)
Other chiefly acrylic blends:						
Mixed with cotton .....	-	-	-	-	-	-
Mixed with wool .....	-	-	-	-	-	-
Mixed with other fibers .....	-	-	-	-	-	-
85 percent or more nylon .....	679,651	74,937	604,714	673,297	75,204	598,093
Other chiefly nylon blends .....	(D)	(D)	-	(D)	(D)	-
85 percent or more polyester .....	257,459	52,553	204,906	243,882	53,766	190,116
Other chiefly polyester blends:						
Mixed with cotton .....	(D)	(D)	-	1,817	(D)	(D)
Mixed with wool .....	-	-	-	-	-	-
Mixed with other fibers .....	(D)	(D)	-	(D)	(D)	-
All other manmade fibers <sup>1</sup> .....	18,952	(D)	(D)	16,641	(D)	(D)
<b>Hand knitting yarns</b> .....	<b>33,793</b>	<b>24,687</b>	<b>9,106</b>	<b>34,997</b>	<b>(D)</b>	<b>(D)</b>
Cotton .....	3,208	1,850	1,358	(D)	(D)	-
Carded .....	3,208	(D)	(D)	(D)	(D)	-
85 percent or more cotton .....	(D)	(D)	(D)	(D)	(D)	-
Other chiefly cotton blends .....	(D)	(D)	-	(D)	(D)	-
Combed .....	-	-	-	-	-	-
85 percent or more cotton .....	-	-	-	-	-	-
Other chiefly cotton blends .....	-	-	-	-	-	-
Wool and chiefly wool blends .....	744	201	543	177	(D)	(D)
Woolen .....	559	(D)	(D)	(D)	(D)	-
Worsted .....	185	(D)	(D)	(D)	(D)	(D)
Cellulosic (rayon, acetate and/or lyocell) .....	(D)	(D)	-	(D)	(D)	-
85 percent or more rayon, acetate and/or lyocell .....	-	-	-	-	-	-
Other chiefly rayon, acetate and/or lyocell blends .....	(D)	(D)	-	(D)	(D)	-
Noncellulosic .....	29,823	22,618	7,205	32,687	25,012	7,675
85 percent or more acrylic .....	28,734	(D)	(D)	31,632	(D)	(D)
Other chiefly acrylic blends:						
Mixed with cotton .....	(D)	(D)	-	(D)	(D)	-
Mixed with wool .....	-	-	-	-	-	-
Mixed with other fibers .....	(D)	(D)	-	(D)	(D)	-
85 percent or more nylon .....	-	-	-	-	-	-
Other chiefly nylon blends .....	-	-	-	-	-	-
85 percent or more polyester .....	(D)	(D)	-	-	-	-
Other chiefly polyester blends:						
Mixed with cotton .....	-	-	-	-	-	-
Mixed with wool .....	-	-	-	-	-	-
Mixed with other fibers .....	-	-	-	-	-	-
All other manmade fibers <sup>1</sup> .....	990	(D)	(D)	980	(D)	(D)

See footnotes at end of table.

Table 21. **Production of Spun Yarn by Fiber and End Use of Distribution: 1998 and 1997**—Con.

[Thousands of pounds]

Principal fiber	1998			1997		
	Total	For sale	For own use or commission	Total	For sale	For own use or commission
<b>All other spun yarns. . . . .</b>	<b>212,718</b>	<b>170,673</b>	<b>42,045</b>	<b>211,580</b>	<b>(D)</b>	<b>(D)</b>
Cotton . . . . .	63,313	45,513	17,800	50,777	36,690	14,087
Carded . . . . .	57,300	(D)	(D)	44,243	(D)	(D)
85 percent or more cotton . . . . .	(D)	(D)	(D)	37,555	(D)	(D)
Other chiefly cotton blends . . . . .	(D)	-	(D)	6,688	(D)	(D)
Combed . . . . .	6,013	(D)	(D)	6,534	(D)	(D)
85 percent or more cotton . . . . .	6,013	(D)	(D)	6,534	(D)	(D)
Other chiefly cotton blends . . . . .	-	-	-	-	-	-
Wool and chiefly wool blends . . . . .	699	(D)	(D)	680	(D)	(D)
Woolen . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
Worsted . . . . .	(D)	(D)	-	(D)	(D)	-
Cellulosic (rayon, acetate, and/or lyocell) . . . . .	10,560	(D)	(D)	12,832	(D)	(D)
85 percent or more rayon, acetate, and/or lyocell . . . . .	257	(D)	(D)	1,683	(D)	(D)
Other chiefly rayon, acetate blends, and/or lyocell . . . . .	10,303	(D)	(D)	11,149	(D)	(D)
Noncellulosic . . . . .	138,146	116,834	21,312	147,291	125,161	22,130
85 percent or more acrylic . . . . .	82	82	-	602	(D)	(D)
Other chiefly acrylic blends:						
Mixed with cotton . . . . .	(D)	-	(D)	-	-	-
Mixed with wool . . . . .	-	-	-	-	-	-
Mixed with other fibers . . . . .	-	-	-	(D)	(D)	-
85 percent or more nylon . . . . .	49	(D)	(D)	(D)	(D)	(D)
Other chiefly nylon blends . . . . .	(D)	(D)	-	(D)	(D)	-
85 percent or more polyester . . . . .	19,606	(D)	(D)	21,864	(D)	(D)
Other chiefly polyester blends:						
Mixed with cotton . . . . .	38,943	(D)	(D)	40,129	(D)	(D)
Mixed with wool . . . . .	-	-	-	-	-	-
Mixed with other fibers . . . . .	4,357	(D)	(D)	7,245	(D)	(D)
All other manmade fibers <sup>1</sup> . . . . .	75,008	(D)	(D)	77,328	(D)	(D)

- Represents zero.    D Withheld to avoid disclosing data for individual companies.    <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>"All other manmade fibers" includes "Silk and other natural fibers" to avoid disclosing data for individual companies.

**Table 22. Production of Spun Yarn by State: 1998 and 1997**

[Thousands of pounds]

State	1998	1997
<b>United States</b> .....	<b>7,476,868</b>	<b>8,111,422</b>
Alabama .....	567,233	<sup>1</sup> 771,616
Georgia .....	1,702,264	1,711,523
Kentucky .....	(D)	(D)
Maine .....	38,872	39,694
Massachusetts .....	8,883	9,145
Mississippi .....	(D)	(D)
North Carolina .....	2,988,921	<sup>1</sup> 3,308,862
Pennsylvania .....	5,716	6,861
South Carolina .....	1,482,225	1,506,633
Tennessee .....	192,163	<sup>1</sup> 190,467
Texas .....	108,909	114,168
Virginia .....	161,893	<sup>1</sup> 175,616
All other states .....	124,497	<sup>1</sup> 147,846

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 23. Production of Spun Yarn by Spinning System and End Use: 1998 and 1997**

[Thousands of pounds]

System of spinning	1998			1997		
	Total	For sale	For own use or commission	Total	For sale	For own use or commission
<b>Production, all systems</b> .....	<b>7,476,868</b>	<b>2,973,564</b>	<b>4,503,304</b>	<b>8,111,422</b>	<b>2,929,949</b>	<b><sup>1</sup>5,181,473</b>
Cotton system .....	6,266,630	2,679,039	3,587,591	6,864,162	2,620,859	<sup>1</sup> 4,243,303
Weaving (except carpet) .....	3,329,263	620,659	2,708,604	3,354,909	494,103	2,860,806
Machine knitting (except carpet) .....	2,664,178	1,892,203	771,975	<sup>1</sup> 3,254,413	1,967,430	<sup>1</sup> 1,286,983
Carpet and rug .....	135,095	66,796	68,299	(D)	(D)	(D)
Hand knitting .....	1,403	(D)	(D)	(D)	(D)	-
All other uses .....	136,691	(D)	(D)	132,790	(D)	(D)
Woolen system .....	107,410	11,103	96,307	138,763	15,952	122,811
Weaving (except carpet) .....	50,094	(D)	(D)	(D)	(D)	(D)
Machine knitting (except carpet) .....	(D)	(D)	(D)	(D)	(D)	(D)
Carpet and rug .....	44,961	(D)	(D)	43,847	4,418	39,429
Hand knitting .....	(D)	(D)	(D)	(D)	(D)	(D)
All other uses .....	(D)	(D)	(D)	3,759	(D)	(D)
Worsted system .....	937,603	193,886	743,717	947,335	203,403	743,932
Weaving (except carpet) .....	60,760	9,585	51,175	72,667	7,188	65,479
Machine knitting (except carpet) .....	60,667	(D)	(D)	66,914	(D)	(D)
Carpet and rug .....	787,982	100,154	687,828	776,195	102,552	673,643
Hand knitting .....	24,019	(D)	(D)	<sup>1</sup> 27,177	(D)	(D)
All other uses .....	4,175	(D)	(D)	4,382	(D)	(D)
Other systems .....	165,225	89,536	75,689	161,162	89,735	71,427
Weaving (except carpet) .....	22,196	(D)	(D)	(D)	(D)	(D)
Machine knitting (except carpet) .....	(D)	(D)	-	(D)	(D)	-
Carpet and rug .....	66,751	(D)	(D)	(D)	(D)	(D)
Hand knitting .....	(D)	(D)	-	-	-	-
All other uses .....	(D)	(D)	-	70,649	70,649	-

- Represents zero.

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

Table 24. **Production of Textured, Crimped, or Bulked Filament Yarns by Fiber and End Use: 1998 and 1997**

Product description	1998			1997		
	Total	For sale	For own use or commission	Total	For sale	For own use or commission
All yarn .....	3,665,799	2,269,156	1,396,643	3,790,466	2,235,376	1,555,090
Nylon .....	2,203,245	1,434,830	768,415	2,202,311	1,420,218	782,093
Polyester .....	996,236	680,845	315,391	991,952	680,307	311,645
Rayon, acetate and/or lyocell .....	2,326	938	1,388	2,283	1,098	1,185
Other yarns .....	463,992	152,543	311,449	593,920	133,753	460,167
Weaving yarn (except carpet) .....	654,677	354,555	300,122	651,196	357,945	293,251
Nylon .....	90,513	78,007	12,506	109,844	93,919	15,925
Polyester .....	493,321	(D)	(D)	478,281	(D)	(D)
Rayon, acetate and/or lyocell .....	1,797	(D)	(D)	1,684	(D)	(D)
Other yarns .....	69,046	28,089	40,957	61,387	26,832	34,555
Knitting yarn (except carpet) .....	639,388	575,045	64,343	681,295	618,435	62,860
Nylon .....	175,247	(D)	(D)	204,175	(D)	(D)
Polyester .....	461,399	(D)	(D)	474,810	(D)	(D)
Rayon, acetate and/or lyocell .....	(D)	(D)	(D)	(D)	(D)	-
Other yarns .....	(D)	(D)	-	(D)	(D)	-
Carpet and rug yarn .....	2,197,530	1,176,445	1,021,085	2,300,905	1,122,667	1,178,238
Nylon .....	1,809,135	1,063,327	745,808	1,780,065	1,029,416	750,649
Polyester .....	23,623	(D)	(D)	14,566	(D)	(D)
Rayon, acetate and/or lyocell .....	-	-	-	-	-	-
Other yarns .....	364,772	(D)	(D)	506,274	(D)	(D)
All other uses .....	174,204	163,111	11,093	157,070	136,329	20,741
Nylon .....	128,350	(D)	(D)	108,227	(D)	(D)
Polyester .....	17,893	(D)	(D)	24,295	(D)	(D)
Rayon, acetate and/or lyocell .....	(D)	(D)	(D)	(D)	(D)	(D)
Other yarns .....	(D)	(D)	(D)	(D)	(D)	(D)

- Represents zero.      D Withheld to avoid disclosing data for individual companies.

**Table 25. Domestic Production, Imports, and Exports of Yarn: 1998 and 1997**

[Quantity in thousands of kilograms. Value in thousands of dollars]

Product description	Total production (quantity)	Exports of domestic merchandise <sup>1</sup>		Percent exports to domestic production		Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup>		Percent imports to apparent consumption	
		Quantity	Value	Quantity	Value	Quantity	Value <sup>3</sup>	Quantity	Value	Quantity	Value
<b>1998</b>											
<b>Spun yarn.....</b>	<b>3,391,507</b>	<b>98,232</b>	<b>346,581</b>	<b>2.9</b>	<b>(NA)</b>	<b>144,707</b>	<b>643,086</b>	<b>3,437,982</b>	<b>(NA)</b>	<b>4.2</b>	<b>(NA)</b>
Cotton.....	1,995,096	75,147	233,938	3.8	(NA)	83,209	335,768	2,003,158	(NA)	4.2	(NA)
85 percent or more cotton ..	1,792,037	71,272	218,084	4.0	(NA)	72,855	296,322	1,793,620	(NA)	4.1	(NA)
Carded.....	1,629,491	61,078	179,088	3.7	(NA)	48,452	180,688	1,616,865	(NA)	3.0	(NA)
Combed.....	162,545	10,194	38,996	6.3	(NA)	24,403	115,634	176,754	(NA)	13.8	(NA)
Other chiefly cotton blends ..	203,059	3,875	15,854	1.9	(NA)	10,354	39,446	209,538	(NA)	4.9	(NA)
Carded.....	169,533	3,033	11,345	1.8	(NA)	5,655	22,753	172,155	(NA)	3.3	(NA)
Combed.....	33,526	842	4,509	2.5	(NA)	4,699	16,693	37,383	(NA)	12.6	(NA)
Wool spun yarn.....	42,160	400	6,246	0.9	(NA)	6,663	76,355	48,423	(NA)	13.8	(NA)
Woolen.....	22,219	31	632	0.1	(NA)	2,209	20,002	24,397	(NA)	9.1	(NA)
Worsted.....	19,941	369	5,614	1.9	(NA)	4,454	56,353	24,026	(NA)	18.5	(NA)
Manmade spun yarn.....	1,354,252	22,685	106,397	1.7	(NA)	54,835	230,963	1,386,402	(NA)	4.0	(NA)
Cellulosic.....	51,015	4,280	15,658	8.4	(NA)	12,366	49,484	59,101	(NA)	20.9	(NA)
Noncellulosic.....	1,303,237	18,405	90,739	1.4	(NA)	42,469	181,479	1,327,301	(NA)	3.2	(NA)
Polyester.....	806,447	9,917	42,533	1.2	(NA)	12,732	44,345	809,262	(NA)	1.6	(NA)
85 percent or more polyester.....	235,537	3,000	11,937	1.3	(NA)	5,108	21,244	237,645	(NA)	2.1	(NA)
Other chiefly polyester blends.....	570,910	6,917	30,596	1.2	(NA)	7,624	23,101	571,617	(NA)	1.3	(NA)
Acrylic.....	124,480	1,860	10,238	1.5	(NA)	15,432	83,394	138,052	(NA)	11.2	(NA)
85 percent or more acrylic.....	116,104	1,699	8,940	0.9	(NA)	14,303	75,023	128,708	(NA)	11.1	(NA)
Other chiefly acrylic blends.....	8,376	161	1,298	1.9	(NA)	1,129	8,371	9,344	(NA)	12.1	(NA)
Nylon.....	312,695	2,836	16,651	0.9	(NA)	1,112	17,609	310,971	(NA)	0.4	(NA)
All other, including silk and other natural fibers.....	59,615	3,792	21,317	6.4	(NA)	13,193	36,131	69,016	(NA)	19.1	(NA)
<b>Manmade textured, bulked, or crimped filament yarn.....</b>	<b>1,662,806</b>	<b>105,307</b>	<b>313,470</b>	<b>6.3</b>	<b>(NA)</b>	<b>98,671</b>	<b>301,249</b>	<b>1,441,663</b>	<b>(NA)</b>	<b>6.8</b>	<b>(NA)</b>
Polyester.....	451,893	60,489	148,939	13.4	(NA)	33,177	80,387	424,581	(NA)	7.8	(NA)
Nylon.....	999,392	37,924	142,187	3.8	(NA)	55,614	188,810	1,017,082	(NA)	5.5	(NA)
Other.....	211,522	6,894	22,344	3.3	(NA)	9,880	32,052	214,508	(NA)	4.6	(NA)
<b>1997</b>											
<b>Spun yarn.....</b>	<b>4,470,404</b>	<b>95,014</b>	<b>357,522</b>	<b>2.1</b>	<b>(NA)</b>	<b>109,822</b>	<b>500,308</b>	<b>4,485,212</b>	<b>(NA)</b>	<b>2.4</b>	<b>(NA)</b>
Cotton.....	2,274,614	65,706	217,239	2.9	(NA)	51,590	214,185	2,260,498	(NA)	2.3	(NA)
85 percent or more cotton ..	2,075,026	62,811	202,616	3.0	(NA)	44,045	184,118	2,056,260	(NA)	2.1	(NA)
Carded.....	1,895,171	48,978	152,694	2.6	(NA)	38,779	152,282	1,884,972	(NA)	2.1	(NA)
Combed.....	179,855	13,833	49,922	7.7	(NA)	5,266	31,836	171,288	(NA)	3.1	(NA)
Other chiefly cotton blends ..	199,588	2,895	14,623	1.5	(NA)	7,545	30,067	204,238	(NA)	3.7	(NA)
Carded.....	166,324	2,366	10,494	1.4	(NA)	3,273	14,992	167,231	(NA)	2.0	(NA)
Combed.....	33,264	529	4,129	1.6	(NA)	4,272	15,075	37,007	(NA)	11.5	(NA)
Wool spun yarn.....	49,313	590	7,641	1.2	(NA)	6,434	73,475	55,157	(NA)	11.7	(NA)
Woolen.....	27,290	83	981	0.3	(NA)	2,136	17,582	29,343	(NA)	7.3	(NA)
Worsted.....	22,023	507	6,660	2.3	(NA)	4,298	55,893	25,814	(NA)	16.7	(NA)
Manmade spun yarn.....	2,146,478	28,718	132,642	1.3	(NA)	51,798	212,648	2,169,558	(NA)	2.4	(NA)
Cellulosic.....	59,261	5,659	27,975	9.5	(NA)	14,141	56,051	67,743	(NA)	20.9	(NA)

See footnotes at end of table.

Table 25. **Domestic Production, Imports, and Exports of Yarn: 1998 and 1997—Con.**

[Quantity in thousands of kilograms. Value in thousands of dollars]

Product description	Total production (quantity)	Exports of domestic merchandise <sup>1</sup>		Percent exports to domestic production		Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup>		Percent imports to apparent consumption	
		Quantity	Value	Quantity	Value	Quantity	Value <sup>3</sup>	Quantity	Value	Quantity	Value
<b>1997—Con.</b>											
<b>Spun yarn—Con.</b>											
<b>Manmade spun yarn—Con.</b>											
Noncellulosic.....	2,087,217	23,059	104,667	1.1	(NA)	37,657	156,597	2,101,815	(NA)	1.8	(NA)
Polyester.....	920,957	11,669	46,614	1.3	(NA)	7,173	26,527	916,461	(NA)	0.8	(NA)
85 percent or more polyester.....	231,288	3,568	15,337	1.5	(NA)	4,667	18,160	232,387	(NA)	2.0	(NA)
Other chiefly polyester blends.....	689,668	8,101	31,277	1.2	(NA)	2,506	8,367	684,073	(NA)	0.4	(NA)
Acrylic.....	130,634	1,200	7,397	0.9	(NA)	15,586	81,567	145,020	(NA)	10.7	(NA)
85 percent or more acrylic.....	122,258	1,056	6,124	0.9	(NA)	14,637	74,500	135,839	(NA)	10.8	(NA)
Other chiefly acrylic blends.....	8,376	144	1,273	1.7	(NA)	949	7,067	9,181	(NA)	10.3	(NA)
Nylon.....	320,383	3,182	19,696	1.0	(NA)	894	11,745	318,095	(NA)	0.3	(NA)
All other, including silk and other natural fibers.....	715,244	7,008	30,960	1.0	(NA)	14,004	36,758	722,240	(NA)	1.9	(NA)
<b>Manmade textured, bulked, or crimped filament yarn.....</b>	<b>1,719,355</b>	<b>101,666</b>	<b>320,226</b>	<b>5.9</b>	<b>(NA)</b>	<b>95,861</b>	<b>287,464</b>	<b>1,443,036</b>	<b>(NA)</b>	<b>6.6</b>	<b>(NA)</b>
Polyester.....	449,949	58,783	157,131	13.1	(NA)	31,045	78,595	422,211	(NA)	7.4	(NA)
Nylon.....	998,968	36,717	139,047	3.7	(NA)	58,573	186,360	1,020,824	(NA)	5.7	(NA)
Other.....	270,438	6,166	24,048	2.3	(NA)	6,243	22,509	270,515	(NA)	2.3	(NA)

NA Not available.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry into the United States plus U.S. import duties.

<sup>4</sup>Apparent consumption is equal to domestic production plus imports minus exports.

Note: Detail may not add to total because of independent rounding.

## HISTORICAL NOTE

Data on the production of spun, textured, bulked, and crimped yarns have been collected by the Census Bureau since 1960. Historical data may be obtained from Current Industrial Reports at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100. Additional information

(employment, payroll, cost of materials, capital expenditures, inventories, etc.) on these yarns is available in both the census of manufactures and the annual survey of manufactures.

## CONTACT FOR DATA USERS

For additional information about these data, contact Robert Lee, 301-457-4810.



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## FABRICS PRODUCTION

### GENERAL

Although there are a number of ways to manufacture fabrics, the two most common are knitting and weaving. The data collected on fabrics production are for knitted and broadwoven fabrics.

### Quantity of Knit and Broadwoven Fabrics Produced: 1994 to 1998

[Millions of pounds]

Year	Woven fabrics produced	Knit fabrics produced
1998.....	5,170	1,866
1997.....	5,399	2,174
1996.....	4,905	1,914
1995.....	4,882	2,131
1994.....	4,926	2,212

Note: Data for broadwoven fabrics were collected in thousands of square yards. Data shown here in pounds are based upon conversion ratios derived from the MC22T survey, Average Weight and Width of Broadwoven Fabrics, issued May 1998.

The table in the preceding column is a summary of knit fabrics production and broadwoven fabrics production for the last 5 years.

Knitting is a method of constructing fabrics by interlocking a series of loops of one or more yarns. The two main types of machine knitting are weft and warp. Data are presented, by fiber, for both types.

The data for woven fabrics are only for broadwoven fabrics. Broadwoven fabrics are at least 12 inches wide. Although this is the majority of the fabrics produced, it does exclude the narrow fabrics used for items such as seat belts, webbing, bindings, zippers, and labels. At one time, the Current Industrial Report series included narrow fabrics, but that survey was canceled in the late 1980's. The data on broadwoven fabrics are collected by type of weave and type of fiber. The categories for this, as with much of the textile data, are structured to be as compatible as possible with the data collected on imports and exports.

## BROADWOVEN FABRICS—MQ313T (FORMERLY MQ22T)

### INTRODUCTION

The data shown in the following tables were collected in the MQ22T, Broadwoven Fabrics, survey. The survey covers all companies manufacturing broadwoven fabrics (gray) in the United States, except those very small companies (generally with less than five employees) for which census of manufactures data were derived from administrative records.

### EXPLANATION OF TERMS

See explanation of terms and definitions of specific fabrics at the beginning of this chapter.

**Table 26. Summary of Production of Broadwoven Gray Fabrics by Type of Fabrics: 1994 to 1998**

[Fabrics in millions of square yards. Tire cord in millions of pounds]

Quarter and year	Chiefly cotton fabrics	Manmade fiber fabrics, including silk and manmade/wool blends	Chiefly wool fabrics	Tire cord and tire cord fabrics
<b>1998</b>				
Fourth quarter . . . . .	1,142.0	2,665.9	26.3	231.1
Third quarter . . . . .	1,218.0	2,842.4	29.6	244.4
Second quarter . . . . .	1,167.0	3,017.9	37.5	248.9
First quarter . . . . .	1,226.4	2,977.5	38.8	249.0
<b>1997</b>				
Fourth quarter . . . . .	1,309.2	2,831.7	40.5	242.9
Third quarter . . . . .	1,283.0	2,879.8	42.3	246.3
Second quarter . . . . .	1,275.7	2,970.7	49.7	257.3
First quarter . . . . .	1,210.5	3,066.2	42.7	255.7
<b>1996</b>				
Fourth quarter . . . . .	1,186.9	2,835.2	36.0	238.7
Third quarter . . . . .	1,197.9	2,830.1	34.4	239.5
Second quarter . . . . .	1,229.7	2,954.1	47.8	242.0
First quarter . . . . .	1,181.5	2,722.3	47.3	251.3
<b>1995</b>				
Fourth quarter . . . . .	1,093.4	2,769.6	34.3	230.1
Third quarter . . . . .	1,089.5	2,793.0	35.2	240.0
Second quarter . . . . .	1,136.8	3,068.4	45.9	245.7
First quarter . . . . .	1,168.7	3,123.1	46.8	241.8
<b>1994</b>				
Fourth quarter . . . . .	1,143.1	3,105.6	39.0	231.6
Third quarter . . . . .	1,130.7	2,897.7	39.4	218.0
Second quarter . . . . .	1,125.4	2,955.8	51.1	207.4
First quarter . . . . .	1,073.3	2,960.7	49.1	220.9

**Table 27. Summary of Production and Loom Assignments of Broadwoven Gray Fabrics: 1998**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
	Cotton and chiefly cotton fabrics mixed mainly or solely with manmade fibers . . . . .	18,299	4,753,477	19,655	<sup>1</sup> 1,226,443	19,669	1,167,026	19,321	<sup>1</sup> 1,218,015	18,299	1,141,993
2211B 00	Plain weaves . . . . .	7,690	1,984,636	8,435	<sup>1</sup> 525,538	8,589	<sup>1</sup> 458,628	8,479	<sup>5</sup> 511,073	7,690	489,397
2211C 00	Twill weaves . . . . .	6,318	1,818,897	6,393	444,625	6,382	456,640	6,518	479,047	6,318	438,585
2211D 00	All other weaves (except pile) . .	2,034	421,659	2,263	115,319	2,294	117,276	<sup>2</sup> 2,044	99,682	2,034	89,382
2211E 00	Pile fabrics . . . . .	2,257	528,285	2,564	140,961	2,404	134,482	2,280	128,213	2,257	124,629
	Chiefly cotton fabrics mixed mainly or solely with other than manmade fibers . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Manmade fiber and silk gray broadwoven fabrics . . . . .	36,772	11,523,768	39,944	2,997,547	39,864	3,017,932	39,240	2,842,369	36,772	2,665,920
2221B 00	85 percent or more filament rayon and/or acetate fabrics . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 00	85 percent or more filament fabrics (except rayon and/or acetate) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	85 percent or more spun yarn fabrics (except wool blends) . .	14,874	3,797,883	16,833	995,734	16,767	<sup>1</sup> 1,034,491	16,331	911,031	14,874	856,627
2221D 00	Plain weave (except pile) . . . .	11,038	2,986,944	13,163	807,179	12,924	<sup>1</sup> 832,482	12,332	694,081	11,038	653,202
2221E 00	Twill weave (except pile) . . . .	1,781	463,446	1,734	<sup>1</sup> 109,700	1,738	117,311	1,826	122,424	1,781	114,011
2221F 00	All other weaves (except pile) . . . . .	2,055	347,493	1,936	78,855	<sup>2</sup> 1,105	<sup>1</sup> 84,698	2,173	94,526	2,055	89,414
2221G 00	Spun/filament yarn combinations . . . . .	5,248	1,422,857	5,656	364,302	5,784	362,986	5,784	374,997	5,248	320,572
2221H 10	Pile fabrics . . . . .	527	63,796	(D)	(D)	(D)	(D)	521	13,463	527	16,344
2221H 2X	All other chiefly manmade fiber fabrics, including chiefly manmade fiber blends with wool . . . . .	367	35,890	328	9,315	400	10,489	351	8,434	367	7,652
2221H 01	Silk fabrics . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Woolen and worsted fabrics . . . .	1,441	132,213	1,944	38,789	1,829	37,487	1,552	29,590	1,441	26,347

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 28. Summary of Production of Broadwoven Fabrics by Textile Category: 1998**

[Thousands of square yards]

Product description	Production				
	Total	First quarter	Second quarter	Third quarter	Fourth quarter
Blue denim .....	957,336	'238,934	244,460	'258,327	215,615
All other yarn dyed fabrics .....	422,002	'112,428	'105,255	'108,005	96,314
Plain weave .....	118,628	'30,489	'29,658	'31,364	27,117
Twill weave .....	62,965	15,352	17,436	14,839	15,338
All other weave .....	240,409	'66,587	58,161	61,802	53,859
Cheesecloth and batistes .....	864,279	'254,034	'223,032	'204,684	182,529
Duck .....	76,421	18,993	20,491	19,513	17,424
Oxfords .....	102,539	26,984	25,917	25,611	24,027
Pile fabrics .....	592,081	159,496	149,936	141,676	140,973
Special weave fabrics .....	378,535	89,250	'105,429	93,962	89,894
Other fabrics, chiefly cotton fiber:					
Print cloth .....	182,256	54,568	'44,845	44,528	38,315
Poplin and broadcloth .....	56,872	15,972	16,840	15,487	8,573
Sheeting .....	955,200	223,869	234,106	240,343	256,882
Twills .....	808,963	'193,436	'197,603	208,332	209,592
Sateens .....	24,927	6,941	6,988	6,068	4,930
Other fabrics, chiefly manmade fiber:					
Manmade/wool blends .....	35,890	9,315	10,489	8,434	7,652
85 percent or more filament yarn fabrics:					
Typewriter fabrics .....	(D)	(D)	(D)	(D)	(D)
Other nylon .....	344,556	'104,979	'92,365	'81,869	65,343
Rayon and acetate .....	(D)	(D)	(D)	(D)	(D)
Polyester .....	862,853	219,603	217,431	220,851	204,968
Glass fiber .....	465,059	131,124	115,653	111,977	106,305
All other .....	4,128,570	1,047,732	1,054,182	1,014,840	1,011,816
85 percent or more spun yarn fabrics:					
Print cloth .....	590,617	159,818	162,253	148,724	119,822
Poplin and broadcloth .....	413,944	103,376	106,886	103,859	99,823
Sheeting .....	1,729,066	471,582	452,999	412,371	392,114
Twills and sateens .....	476,059	'111,210	120,257	127,030	117,562
Spun/filament combinations (except blue denim):					
Print cloth .....	317,837	73,330	79,690	87,301	77,516
Poplin and broadcloth .....	436,915	116,066	117,739	116,646	86,464
Sheeting .....	63,141	15,305	15,584	(D)	(D)
Twills and sateens .....	89,119	23,109	21,590	23,690	20,730
Other .....	510,377	135,307	127,026	126,910	121,134
Wool fabrics .....	132,213	38,789	37,487	29,590	26,347
Silk fabrics .....	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

'Revised by 5 percent or more from previously published data.

**Table 29. Production and Loom Assignment of 85 Percent or More Spun Yarn Fabrics and Spun/Filament Combinations, Chiefly Cotton or Manmade Fibers, Excluding Blends of Wool, Silk, and Chiefly Cotton/Other Vegetable Fibers and Pile Fabrics: 1998**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
2211B 02	Tobacco, cheese, and bandage cloth . . . . .	1,723	1,011,353	1,746	'291,385	1,792	'255,849	1,789	'244,096	1,723	220,023
	More than 50 percent cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 03	Chiefly spun polyester mixed with cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 04	Chiefly spun rayon and/or acetate . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 05	All other fabrics, 85 percent or more spun yarn . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 05	Chiefly cotton . . . . .	-	-	-	-	-	-	-	-	-	-
2221G 04	Chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 12	Print cloth . . . . .	4,498	1,130,317	7,022	298,119	6,923	296,850	6,554	290,125	4,498	245,223
	More than 50 percent cotton . . . . .	1,312	182,258	2,700	54,568	2,560	'44,845	2,268	44,530	1,312	38,315
2221D 13	Chiefly spun polyester mixed with cotton . . . . .	1,948	614,315	'3,205	'166,892	'3,153	'168,016	'2,926	'153,835	1,948	125,572
2221D 15	Chiefly spun polyester mixed with rayon . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 16	Chiefly spun rayon and/or acetate . . . . .	-	-	-	-	-	-	-	-	-	-
2221D 18	All other fabrics, 85 percent or more spun yarn . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations . . . . .	1,149	317,837	1,031	73,330	1,116	79,690	1,273	87,301	1,149	77,516
2211B 14	Chiefly cotton . . . . .	-	-	-	-	-	-	-	-	-	-
2221G 07	Chiefly manmade . . . . .	1,149	317,837	1,031	73,330	1,116	79,690	1,273	87,301	1,149	77,516
	Poplin and broadcloth . . . . .	3,506	950,538	3,926	246,604	4,192	252,310	4,050	247,411	3,506	204,213
	More than 50 percent cotton . . . . .	125	35,489	'96	'7,839	143	9,308	114	10,372	125	7,970
	Weighing 5.9 ounces or less per square yard . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 21	Carded . . . . .	86	27,914	'79	'6,853	101	7,792	'69	7,589	86	5,680
2211B 25	Combed . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 30	Weighing more than 5.9 ounces per square yard . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Chiefly spun polyester mixed with cotton . . . . .	1,857	415,217	1,973	100,674	2,108	106,652	2,192	107,340	1,857	100,551
	Weighing 5.0 ounces or less per square yard . . . . .	1,748	379,508	1,869	92,113	1,988	96,821	2,060	98,407	1,748	92,167
2221D 23	Carded . . . . .	1,050	220,251	1,227	53,611	1,322	56,394	1,351	56,674	1,050	53,572
2221D 25	Combed . . . . .	698	159,257	642	38,502	666	40,427	709	41,733	698	38,595
	Weighing more than 5.0 ounces per square yard . . . . .	109	35,709	'104	'8,561	'120	'9,831	'132	'8,933	109	8,384
2221D 27	Carded . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 31	Combed . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 33	Chiefly spun rayon and/or acetate . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 34	All other fabrics, 85 percent or more spun yarn . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 35	Chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221G 19	Chiefly manmade . . . . .	1,402	436,915	1,631	116,066	1,737	117,739	1,607	116,646	1,402	86,464

See footnotes at end of table.

**Table 29. Production and Loom Assignment of 85 Percent or More Spun Yarn Fabrics and Spun/Filament Combinations, Chiefly Cotton or Manmade Fibers, Excluding Blends of Wool, Silk, and Chiefly Cotton/Other Vegetable Fibers and Pile Fabrics: 1998—Con.**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
2211B 41	Lawns, voiles, and batistes . . . .	102	4,386	147	1,589	147	1,127	136	868	102	802
	More than 50 percent cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 41	Chiefly spun polyester mixed with cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 44	Chiefly spun rayon and/or acetate . . . . .	-	-	-	-	-	-	-	-	-	-
2221D 42	All other fabrics, 85 percent or more spun yarn . . . . .	-	-	-	-	-	-	-	-	-	-
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 43	Chiefly cotton . . . . .	-	-	-	-	-	-	-	-	-	-
2221G 28	Chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Duck, including taped warp duck . . . . .	452	76,738	411	19,053	446	20,566	463	19,629	452	17,490
2211B 71	More than 50 percent cotton . . . . .	202	36,723	168	9,443	198	10,915	218	9,908	202	8,457
2221D 89	Chiefly spun polyester mixed with cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 91	All other fabrics, 85 percent or more spun yarn . . . . .	164	29,501	164	7,435	169	7,762	160	7,409	164	6,895
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 75	Chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221B 77	Chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 45	Bedsheeting . . . . .	9,067	2,062,645	8,784	515,186	8,832	518,632	8,947	515,586	9,067	513,241
	More than 50 percent cotton . . . . .	3,465	679,803	2,779	153,004	2,945	163,437	3,222	171,332	3,465	192,030
	Chiefly spun polyester mixed with cotton . . . . .	5,193	1,282,179	5,733	338,194	5,505	329,303	5,345	315,892	5,193	298,790
2221D 43	Carded . . . . .	1,503	533,723	1,831	143,385	1,886	142,413	1,680	132,247	1,503	115,678
2221D 45	Combed . . . . .	3,690	748,456	3,902	194,809	3,619	186,890	3,665	183,645	3,690	183,112
2221D 46	Chiefly spun rayon and/or acetate . . . . .	-	-	-	-	-	-	-	-	-	-
2221D 47	All other fabrics, 85 percent or more spun yarn . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 47	Chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221G 33	Chiefly manmade . . . . .	(D)	(D)	115	15,296	148	15,584	148	18,706	(D)	(D)
	All other sheeting, including osnaburgs . . . . .	2,336	720,992	2,561	204,482	2,425	192,808	2,385	166,219	2,336	157,483
	More than 50 percent cotton . . . . .	830	247,706	924	62,878	918	63,121	904	63,775	830	57,932
2211B 61	Weighing 5.9 ounces or less per square yard . . . . .	623	155,491	712	40,468	696	39,670	673	39,365	623	35,988
	Weighing more than 5.9 ounces per square yard . . . . .	207	92,215	212.0	22,410	222	23,451	231	24,410	207	21,944
2211B 63	Blanketing . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 65	All other fabrics . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.

**Table 29. Production and Loom Assignment of 85 Percent or More Spun Yarn Fabrics and Spun/Filament Combinations, Chiefly Cotton or Manmade Fibers, Excluding Blends of Wool, Silk, and Chiefly Cotton/Other Vegetable Fibers and Pile Fabrics: 1998—Con.**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
	All other sheeting, including osnaburgs—Con.										
	85 percent or more spun polyester .....	261	82,357	'183	'20,976	'217	22,258	'230	16,094	261	23,029
2221D 63	Blanketing .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 65	All other fabrics .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Chiefly spun polyester mixed with cotton .....	660	289,119	856	94,609	708	80,417	649	59,246	660	54,847
2221D 73	Weighing 5.0 ounces or less per square yard .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 75	Weighing more than 5.0 ounces per square yard ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Chiefly spun acrylic .....	109	18,701	142	5,071	117	5,308	113	4,900	109	3,422
2221D 81	Blanketing .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 83	All other fabrics .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 84	Chiefly spun rayon and/or acetate .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221D 85	All other fabrics, 85 percent or more spun yarn .....	348	61,819	303	12,821	292	16,665	339	17,553	348	14,780
	Spun/filament combinations .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211B 67	Chiefly cotton .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221G 45	Chiefly manmade .....	(D)	(D)	(D)	(D)	-	-	(D)	(D)	(D)	(D)
	Blue denim .....	2,886	957,336	3,196	'238,934	3,178	244,460	3,029	'258,327	2,886	215,615
	More than 50 percent cotton .....	2,804	939,839	3,116	'234,264	3,104	240,107	2,953	'253,759	2,804	211,709
2211C 01	Weighing 10.7 ounces or less per square yard .....	422	91,965	301	23,098	364	22,214	283	21,330	422	25,323
2211C 03	Weighing more than 10.7 ounces per square yard ..	2,382	847,874	2,815	'211,166	2,740	217,893	2,670	'232,429	2,382	186,386
2221E 03	Chiefly spun polyester mixed with cotton .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211G 05	Chiefly cotton .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221G 46	Chiefly manmade .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	All other denim .....	544	169,432	755	42,035	706	47,381	629	46,429	544	33,587
	More than 50 percent cotton .....	541	167,951	748	41,865	704	47,065	613	45,848	541	33,173
2211C 11	Weighing 10.7 ounces or less per square yard .....	19	15,505	156	5,503	94	5,125	40	3,342	19	1,535
2211C 13	Weighing more than 10.7 ounces per square yard ..	522	152,446	592	36,362	610	41,940	573	42,506	522	31,638
2221E 13	Chiefly spun polyester mixed with cotton .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211C 15	Chiefly cotton .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 18	Chiefly manmade .....	-	(D)	-	-	(D)	(D)	(D)	(D)	-	-
2211C 21	Canton flannels .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	All other twill weaves .....	4,881	1,230,540	4,440	'293,635	4,504	300,995	4,935	315,833	4,881	320,077
	More than 50 percent cotton .....	2,762	687,327	'2,398	'164,667	'2,402	164,431	'2,712	'171,198	2,762	187,031
2211C 31	Weighing 5.9 ounces or less per square yard .....	308	54,752	'232	'11,641	301	15,982	295	13,274	308	13,855
2211C 33	Weighing more than 5.9 ounces per square yard ..	2,454	632,575	'2,166	153,026	'2,101	148,449	'2,417	'157,924	2,454	173,176
2221E 21	85 percent or more spun polyester .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.

**Table 29. Production and Loom Assignment of 85 Percent or More Spun Yarn Fabrics and Spun/Filament Combinations, Chiefly Cotton or Manmade Fibers, Excluding Blends of Wool, Silk, and Chiefly Cotton/Other Vegetable Fibers and Pile Fabrics: 1998—Con.**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
2221E 23	All other twill weaves—Con. Chiefly spun polyester mixed with cotton . . . . .	1,377	362,293	1,343	85,760	1,389	92,263	1,367	95,707	1,377	88,563
2221E 25	Weighing 5.0 ounces or less per square yard . . . . .	259	73,400	233	15,602	269	19,606	232	21,185	259	17,007
2221E 26	Weighing more than 5.0 ounces per square yard . . . . .	1,118	288,893	1,110	70,158	1,120	72,657	1,135	74,522	1,118	71,556
2221E 27	Chiefly spun rayon and/or acetate . . . . .	138	14,621	117	3,932	113	3,561	109	3,162	138	3,966
	All other fabrics, 85 percent or more spun yarn . . . . .	81	21,481	156	6,588	71	5,357	143	5,096	81	4,440
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211C 35	Chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 39	Chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211D 05	Sateens . . . . .	311	54,293	399	13,469	413	14,518	411	14,252	311	12,054
	More than 50 percent cotton . . . . .	95	24,756	144	6,860	120	6,982	123	6,047	95	4,867
2221F 05	Chiefly spun polyester mixed with cotton . . . . .	68	11,872	97	2,184	127	3,364	107	3,641	68	2,683
2221F 06	Chiefly spun rayon and/or acetate . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221F 07	All other fabrics, 85 percent or more spun yarn . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations . . . . .	68	10,689	88	3,045	94	2,803	91	2,357	68	2,484
2211D 07	Chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221G 05	Chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211D 11	Oxfords . . . . .	919	181,499	975	49,446	1,075	47,558	955	46,458	919	38,037
	More than 50 percent cotton . . . . .	500	127,640	570	39,399	612	32,275	497	30,260	500	25,706
2221F 11	Chiefly spun polyester mixed with cotton . . . . .	165	21,014	144	5,360	151	4,465	164	5,883	165	5,306
2221F 17	All other fabrics, 85 percent or more spun yarn . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211D 13	Chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221G 68	Chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211D 31	Birdseye diaper cloth . . . . .	-	-	-	-	-	-	-	-	-	-
2211D 35	Huck and crash toweling . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211D 45	Table damask . . . . .	223	77,073	188	19,876	225	17,065	256	19,842	223	20,290
	More than 50 percent cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221F 32	Chiefly spun polyester mixed with cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221F 37	All other fabrics, 85 percent or more spun yarn . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211D 07	Chiefly cotton . . . . .	-	-	-	-	-	-	-	-	-	-
2221G 82	Chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211D 51	Jacquard and dobby shirting fabrics . . . . .	228	26,801	306	7,320	309	6,863	276	6,007	228	6,611
	More than 50 percent cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221F 41	Chiefly spun polyester mixed with cotton . . . . .	94	2,405	90	541	89	511	91	666	94	687

See footnotes at end of table.

**Table 29. Production and Loom Assignment of 85 Percent or More Spun Yarn Fabrics and Spun/Filament Combinations, Chiefly Cotton or Manmade Fibers, Excluding Blends of Wool, Silk, and Chiefly Cotton/Other Vegetable Fibers and Pile Fabrics: 1998—Con.**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
2221F 43	Jacquard and dobby shirting fabrics—Con.										
	All other fabrics, 85 percent or more spun yarn . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Spun/filament combinations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211D 53	Chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221G 84	Chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	All other weaves . . . . .	4,175	747,772	4,438	189,753	4,351	198,523	4,230	183,362	4,175	176,134
	More than 50 percent cotton . . . . .	1,077	192,400	1,207	50,233	1,185	58,492	1,036	43,355	1,077	40,320
2211D 62	Weighing 5.9 ounces or less per square yard . . . . .	63	14,773	93	4,925	77	4,131	54	2,298	63	3,419
2211D 64	Weighing more than 5.9 ounces per square yard . . . . .	1,014	177,627	1,114	45,308	1,108	54,361	982	41,057	1,014	36,901
2221F 52	85 percent or more spun polyester . . . . .	138	25,549	133	6,209	125	5,969	135	6,943	138	6,428
	Chiefly spun polyester mixed with cotton . . . . .	498	90,120	502	18,434	527	22,322	507	25,500	498	23,864
2221F 54	Weighing 5.0 ounces or less per square yard . . . . .	174	26,829	130	3,663	187	7,894	184	7,987	174	7,285
2221F 56	Weighing more than 5.0 ounces per square yard . . . . .	324	63,291	372	14,771	340	14,428	323	17,513	324	16,579
2221F 58	All other fabrics, 85 percent or more spun yarn . . . . .	548	86,673	516	19,373	552	22,333	584	22,586	548	22,381
	Spun/filament combinations . . . . .	1,914	353,030	2,080	95,504	1,962	89,407	1,968	84,978	1,914	83,141
2211D 66	Chiefly cotton . . . . .	104	11,955	80	2,307	86	2,757	104	2,879	104	4,012
2221G 87	Chiefly manmade . . . . .	1,810	341,075	2,000	93,197	1,876	86,650	1,864	82,099	1,810	79,129

- Represents zero. D Withheld to avoid disclosing data for individual companies. †Revised by 5 percent or more from previously published data.



**Table 30. Production and Loom Assignment of 85 Percent or More Filament Yarn Fabrics: 1998**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
	85 percent or more filament yarn fabrics .....	15,729	6,202,885	16,582	1,609,507	16,369	1,594,414	16,227	1,534,357	15,729	1,464,607
2221B 02	High tenacity yarn fabrics....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 02	100 percent and chiefly rayon .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 04	100 percent and chiefly nylon.....	239	50,121	258	14,176	236	11,766	239	12,358	239	11,821
2221C 07	100 percent and chiefly polyester .....	121	30,999	143	7,933	130	8,322	129	7,521	121	7,223
	85 percent or more filament yarn fabrics obtained from strip-like rayon and/or acetate .....	-	-	-	-	-	-	-	-	-	-
	85 percent or more acetate or triacetate filament yarn fabrics.....	1,570	312,076	1,978	83,293	2,097	90,580	1,911	82,444	1,570	55,759
	Weighing not more than 5 ounces per square yard ..	1,206	274,122	1,604	71,630	1,723	80,058	1,538	74,065	1,206	48,369
2221B 11	Plain weave.....	864	185,336	1,123	48,369	1,245	54,968	1,041	48,647	864	33,352
2221B 13	Other weaves .....	342	88,786	481	23,261	478	25,090	497	25,418	342	15,017
	Weighing more than 5 ounces per square yard ..	364	37,954	'374	11,663	'374	10,522	'373	8,379	364	7,390
2221B 15	Plain weave.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221B 17	Other weaves .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Other chiefly rayon and/or acetate filament yarn fabrics.....	198	17,633	'208	'3,943	'250	'4,962	'225	'4,429	198	4,299
2221B 32	Weighing not more than 5 ounces per square yard ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221B 34	Weighing more than 5 ounces per square yard ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	85 percent or more nylon filament yarn fabrics .....	2,012	351,140	'2,513	'105,965	2,328	95,983	'2,155	'83,440	2,012	65,752
2221C 11	Typewriter and other impression fabrics .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Other 85 percent or more nylon filament yarn fabrics.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Weighing not more than 5 ounces per square yard.....	1,228	240,930	'1,722	'72,470	'1,691	'65,747	'1,556	'60,733	1,228	41,980
2221C 14	Flat, nontextured .....	1,093	220,289	'1,536	'64,733	'1,589	'61,223	'1,439	'56,487	1,093	37,846
2221C 16	All other .....	135	20,641	186	7,737	102	4,524	117	4,246	135	4,134
	Weighing more than 5 ounces per square yard.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 22	Flat, nontextured .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 24	All other .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Other chiefly nylon filament fabrics.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 32	Weighing not more than 5 ounces per square yard ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221C 14	Weighing more than 5 ounces per square yard ..	(D)	(D)	-	-	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.

Table 30. **Production and Loom Assignment of 85 Percent or More Filament Yarn Fabrics: 1998—Con.**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
	85 percent or more filament yarn fabrics—Con.										
	85 percent or more polyester filament yarn fabrics . . . . .	4,798	819,526	4,940	207,979	4,807	205,647	4,874	210,498	4,798	195,402
	Textured . . . . .	3,644	615,212	3,663	159,034	3,561	154,813	3,739	157,486	3,644	143,879
	Weighing not more than 5 ounces per square yard <sup>1</sup> . . . . .	1,478	277,459	1,440	76,360	1,387	67,057	1,415	69,463	1,478	64,579
2221C 42	Flat . . . . .	981	215,785	1,074	58,911	1,017	54,166	946	53,806	981	48,902
2221C 44	Other . . . . .	497	61,674	366	17,449	370	12,891	469	15,657	497	15,677
2221C 45	Weighing more than 5 ounces per square yard <sup>1</sup> . . . . .	2,166	337,753	2,223	82,674	2,174	87,756	2,324	88,023	2,166	79,300
	Nontextured . . . . .	1,154	204,314	1,277	48,945	1,246	50,834	1,135	53,012	1,154	51,523
2221C 50	Weighing not more than 5 ounces per square yard <sup>1</sup> . . . . .	619	104,426	719	22,506	682	24,501	613	28,435	619	28,984
2221C 55	Weighing more than 5 ounces per square yard <sup>1</sup> . . . . .	535	99,888	558	26,439	564	26,333	522	24,577	535	22,539
2221C 62	Other chiefly polyester filament fabrics . . . . .	160	12,328	159	3,691	158	3,462	157	2,832	160	2,343
2221C 72	Glass fiber fabrics . . . . .	2,501	465,059	2,486	131,124	2,427	115,653	2,408	111,977	2,501	106,305
	Woven roving and screening . . . . .	164	114,184	164	31,819	166	29,948	169	31,668	164	20,749
2221C 74	All other glass fiber fabrics . . . . .	2,337	350,875	2,322	99,305	2,261	85,705	2,239	80,309	2,337	85,556
	All other 85 percent or more filament yarn fabrics, including saran and olefin . . . . .	3,971	4,128,570	3,759	1,047,732	3,796	1,054,182	3,982	1,014,840	3,971	1,011,816
2221C 80	Carpet backing . . . . .	2,947	3,764,300	2,779	953,792	2,765	952,629	2,943	924,164	2,947	933,715
	Woven synthetic, including olefin . . . . .	2,947	3,764,300	2,779	953,792	2,765	952,629	2,943	924,164	2,947	933,715
2221C 83	Jute and other backing . . . . .	-	-	-	-	-	-	-	-	-	-
2221C 84	All other . . . . .	1,024	364,270	980	93,940	1,031	101,553	1,039	90,676	1,024	78,101

- Represents zero. D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Classified on a finished weight basis.

**Table 31. Production and Loom Assignment of Pile Fabrics, Including Yarn Dyed Fabrics: 1998**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
	Pile fabrics .....	2,784	592,081	3,093	159,496	2,924	149,936	2,801	141,676	2,784	140,973
	Corduroy .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	More than 50 percent cotton .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211E 01	Finewales and pinwales .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211E 03	Midwales .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211E 06	Widewales and other ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221H 01	Chiefly manmade fiber ...	-	(D)	(D)	(D)	(D)	(D)	-	-	-	-
	Velvets, plushes, and other pile fabrics .....	580	71,632	'576	'20,328	579	17,363	574	15,435	580	18,506
2211E 21	More than 50 percent cotton .....	53	8,246	'57	2,113	'59	1,999	'53	1,972	53	2,162
2221H 11	Chiefly manmade fiber ...	527	63,386	'519	'18,215	520	15,364	521	13,463	527	16,344
	Terry cloth and terry toweling .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211E 32	Terry toweling .....	2,019	477,096	1,956	122,334	1,987	119,662	1,999	117,762	2,019	117,338
2211E 34	Terry cloth .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. 'Revised by 5 percent or more from previously published data.

**Table 32. Production and Loom Assignment of Woolen and Worsted Fabrics, Including Chiefly Manmade/Wool Blends and Chiefly Cotton/Wool Blends: 1998**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
	Woolen and worsted fabrics, 36 percent or more wool (except felts) <sup>1</sup> ...	1,441	132,213	1,944	38,789	1,829	37,487	1,552	29,590	1,441	26,347
	Apparel fabrics, including government orders .....	1,362	126,531	1,839	37,273	1,758	36,527	1,473	27,990	1,362	24,741
22312 01	Worsted fabrics .....	859	78,913	1,247	23,470	1,194	22,639	921	17,764	859	15,040
	Weighing not more than 5.9 ounces per square yard .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
22312 02	Weighing more than 5.9 ounces per square yard .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
22312 21	Woolen fabrics .....	503	47,618	592	13,803	564	13,888	552	10,226	503	9,701
	Weighing not more than 9 ounces per square yard ...	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
22312 23	Weighing more than 9 ounces per square yard .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Nonapparel fabrics, including government orders (except felts) ..	79	5,682	105	'1,516	71	'960	79	'1,600	79	1,606
22312 62	Blanketing, including thermal ...	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
22312 61	Upholstery fabrics .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
22312 85	All other fabrics .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
22312 92	Woven felts (thousands of pounds) ..	107	3,229	110	947	108	760	109	815	107	707
	Chiefly manmade/wool blend and chiefly cotton/wool blend fabrics ...	367	35,890	328	9,315	400	10,489	351	8,434	367	7,652

D Withheld to avoid disclosing data for individual companies. 'Revised by 5 percent or more from previously published data.

<sup>1</sup>Includes fabrics 36 percent or more wool or reprocessed wool by weight. 1986 and prior years include fabrics 50 percent or more wool or reprocessed wool by weight.

**Table 33. Production and Loom Assignment of Upholstery Fabrics: 1998**

[Looms operating in numbers. Production in thousands of square yards]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Looms operating end of year	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production	Looms operating	Production
	Upholstery fabrics . . . . .	3,756	568,552	'3,901	'137,690	'3,869	'139,813	'3,813	'142,885	3,756	148,164
	85 percent or more spun yarn and spun/filament combinations . . . . .	2,712	447,351	'2,798	'107,455	'2,818	'108,700	'2,777	'113,406	2,712	117,790
2211E 41	Pile woven . . . . .	652	89,878	'649	22,520	'652	'22,479	652	21,082	652	23,797
	All cotton and chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2221H 41	All manmade and chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
2211X 01	Flat woven . . . . .	2,060	357,473	'2,149	'84,935	'2,166	'86,221	'2,125	'92,324	2,060	93,993
	All cotton and chiefly cotton . . . . .	488	63,819	'617	'18,048	'616	'17,100	'486	'14,764	488	13,907
	All manmade and chiefly manmade . . . . .	1,572	293,654	'1,532	'66,887	'1,550	'69,121	1,639	77,560	1,572	80,086
2221X 01	Olefin . . . . .	525	119,079	'515	'23,045	'515	'25,709	522	33,409	525	36,916
2221X 03	All other flat woven manmade fiber fabrics . . . . .	1,047	174,575	'1,017	'43,842	1,035	43,412	1,117	44,151	1,047	43,170
	85 percent or more filament yarn . . . . .	1,044	121,201	'1,103	'30,235	'1,051	'31,113	1,036	29,479	1,044	30,374
2221X 01	All polyester and chiefly polyester . . . . .	376	47,471	'382	12,229	389	12,673	369	11,599	376	10,970
2221X 03	All nylon and chiefly nylon . . . . .	35	1,149	'40	'283	'38	'293	'35	'272	35	301
2221X 05	All olefin and chiefly olefin . . . . .	566	70,418	'594	'17,352	'557	'17,526	565	17,090	566	18,450
2221X 07	All other filament fiber fabrics . . . . .	67	2,163	87	'371	'67	621	67	'518	67	653

D Withheld to avoid disclosing data for individual companies. 'Revised by 5 percent or more from previously published data.

**Table 34. Production of Tire Cord and Tire Cord Fabrics: 1998**

[Thousands of pounds]

Product code	Product description	Production				
		Total	First quarter	Second quarter	Third quarter	Fourth quarter
22960 00	Tire cord and tire cord fabrics . . . . .	973,513	249,003	248,941	244,429	231,140
22960 12	Cotton tire cord and tire cord fabrics . . . . .	(D)	-	-	(D)	-
22960 32	Rayon tire cord and tire cord fabrics . . . . .	(D)	(D)	(D)	(D)	(D)
22960 35	Nylon tire cord and tire cord fabrics . . . . .	145,224	'38,063	'37,551	'37,086	32,524
22960 37	Polyester tire cord and tire cord fabrics . . . . .	284,791	'73,314	'74,159	'72,188	65,130
22960 38	Glass tire cord and tire cord fabrics . . . . .	(D)	(D)	(D)	(D)	(D)
22960 45	Steel tire cord . . . . .	532,439	134,273	134,735	132,670	130,761
22960 49	All other tire cord and tire cord fabrics, including chafer . . . . .	9,973	'3,105	'2,226	'2,274	2,368

- Represents zero. D Withheld to avoid disclosing data for individual companies. data. 'Revised by 5 percent or more from previously published data.

**Table 35. Looms in Place and Loom Hours Operated in Broadwoven Fabrics Mills: 1998**

[Looms in place in numbers. Loom hours in thousands]

Type of loom	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
	Looms in place Dec. 31, 1998	Loom hours operated	Looms in place	Loom hours operated	Looms in place	Loom hours operated	Looms in place	Loom hours operated	Looms in place	Loom hours operated
<b>Total.....</b>	<b>63,344</b>	<b>450,194</b>	<b>67,665</b>	<b>121,424</b>	<b>67,232</b>	<b>116,129</b>	<b>66,613</b>	<b>110,973</b>	<b>63,344</b>	<b>101,668</b>
Shuttle type looms.....	4,813	35,288	7,536	10,819	7,308	9,220	7,293	8,401	4,813	6,848
Single shuttle cam looms.....	2,944	26,972	5,656	8,685	5,477	7,185	5,384	6,505	2,944	4,597
Single shuttle dobby looms....	554	1,368	'689	427	'689	422	'597	282	554	237
Multiple shuttle box or head motion looms.....	1,052	5,535	904	1,310	893	1,288	1,052	1,288	1,052	1,649
Double shuttle pile and plush, and jacquard looms.....	263	1,413	'287	'397	'249	325	260	326	263	365
Shuttleless looms and weaving machines.....	58,531	414,906	60,129	110,605	59,924	106,909	59,320	102,572	58,531	94,820
Single filling insertion capability.....	32,349	242,409	33,312	63,920	32,904	62,335	32,893	60,169	32,349	55,985
Air jet looms.....	17,324	131,102	17,005	33,956	17,132	33,058	17,395	32,713	17,324	31,375
Water jet looms.....	4,314	31,247	4,770	8,592	4,611	8,245	4,536	7,604	4,314	6,806
Projectile looms.....	9,077	69,612	9,874	18,767	9,537	18,401	9,306	17,074	9,077	15,370
Rapier looms.....	1,634	10,448	1,663	2,605	1,624	2,631	1,656	2,778	1,634	2,434
Multiple filling insertion capability.....	25,342	168,267	25,935	45,357	26,171	43,610	25,572	41,448	25,342	37,852
Air jet looms.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Water jet looms.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Projectile looms.....	6,757	47,133	7,121	12,565	7,108	12,213	6,759	11,413	6,757	10,942
Rapier looms.....	11,599	68,726	11,917	19,074	11,988	17,938	11,769	16,775	11,599	14,939
Pile and plush looms.....	840	4,230	'882	1,328	'849	'964	'855	955	840	983

D Withheld to avoid disclosing data for individual companies.

'Revised by 5 percent or more from previously published data.

**Table 36. Production, Exports, Imports, and Apparent Consumption of Broadwoven Fabrics: 1998**

[Quantity in thousands of square meters. Value in thousands of dollars]

Product description	Manufacturers' shipments <sup>1</sup> (quantity)	Imports for consumption <sup>2</sup>		Percent imports to manufacturers' shipments (quantity)	Exports of domestic merchandise <sup>4</sup>		Percent exports to manufacturers' shipments (quantity)	Apparent consumption <sup>5</sup>
		Quantity	Value <sup>3</sup>		Quantity	Value		
Cotton fabrics <sup>6</sup> . . . . .	3,974,463	1,563,075	1,678,463	39.3	309,440	711,702	7.8	5,228,098
Cheesecloth and batistes . . . . .	611,131	70,857	38,019	11.6	23,265	47,666	3.8	658,723
Print cloth . . . . .	152,388	297,307	152,149	195.1	9,236	19,872	6.1	440,459
Poplin and broadcloth . . . . .	47,552	232,871	178,366	489.7	25,575	83,060	53.8	254,848
Weighing 5.9 ounces or less per square yard . . . . .	(D)	231,416	173,987	(D)	16,526	57,531	(D)	(D)
Weighing more than 5.9 ounces per square yard . . . . .	(D)	1,455	4,379	(D)	9,049	25,529	(D)	(D)
Duck, including tape warp . . . . .	32,597	128,848	111,977	395.3	8,313	20,252	25.5	153,132
Sheeting . . . . .	798,662	237,648	159,857	29.8	10,245	23,584	1.3	1,026,065
Twills and sateens . . . . .	697,232	224,024	279,769	32.1	60,870	116,755	8.7	860,386
Oxfords . . . . .	52,092	10,693	18,119	20.5	(NA)	(NA)	(NA)	(NA)
All other constructions . . . . .	181,485	97,266	195,230	53.6	(NA)	(NA)	(NA)	(NA)
Blue denim . . . . .	794,216	153,188	278,868	19.3	134,906	312,479	17.0	812,498
Yarn dyed fabrics . . . . .	165,398	88,100	183,790	53.3	31,327	66,746	18.9	222,171
Pile fabrics (except terry), including yarn dyed . . . . .	(D)	19,110	75,745	(D)	4,496	17,365	(D)	(D)
Terry, including yarn dyed . . . . .	(D)	3,163	6,574	(D)	1,207	3,923	(D)	(D)
Manmade fiber fabrics <sup>7</sup> . . . . .	9,616,057	1,107,941	1,367,862	11.5	448,613	992,696	4.7	10,275,385
85 percent or more filament yarn fabrics . . . . .	5,186,359	585,538	712,944	11.3	250,155	541,452	4.8	5,521,742
Nylon and polyester high tenacity fabrics . . . . .	67,826	14,378	32,150	21.2	29,422	71,012	43.4	52,782
Rayon high tenacity fabrics . . . . .	(D)	634	1,487	(D)	6,327	15,909	(D)	(D)
Typewriter fabrics . . . . .	(D)	11	50	(D)	(NA)	(NA)	(NA)	(NA)
Rayon or acetate filament yarn fabrics . . . . .	275,676	20,567	85,288	7.5	17,500	36,974	6.3	278,743
Polyester filament yarn fabrics . . . . .	695,530	288,685	415,970	41.5	89,233	152,650	12.8	894,982
Glass fiber fabrics . . . . .	388,845	47,755	51,780	12.3	17,308	48,821	4.5	419,292
Nylon filament yarn fabrics . . . . .	246,183	49,527	55,887	20.1	(NA)	(NA)	(NA)	(NA)
85 percent or more filament yarn obtained from strip . . . . .	-	137,545	28,826	(NA)	14,837	33,081	(NA)	122,708
All other filament yarn fabrics . . . . .	3,451,982	26,436	41,506	0.8	75,528	183,005	2.2	3,402,890
85 percent or more spun yarn fabrics . . . . .	3,240,018	276,410	305,840	8.5	155,783	336,722	4.8	3,360,645
Cheesecloth and batistes <sup>8</sup> . . . . .	111,510	11,643	7,326	10.4	(NA)	(NA)	(NA)	(NA)
Poplin and broadcloth <sup>8</sup> . . . . .	(D)	82,059	57,833	(D)	(NA)	(NA)	(NA)	(NA)
Poly/cotton blends weighing less than 5.0 ounces per square yard <sup>8</sup> . . . . .	287,613	73,014	44,405	25.4	(NA)	(NA)	(NA)	(NA)
Poly/cotton blends weighing more than 5.0 ounces per square yard <sup>8</sup> . . . . .	29,857	1,970	2,211	6.6	(NA)	(NA)	(NA)	(NA)
All other spun yarns <sup>8</sup> . . . . .	(D)	7,075	11,217	(D)	(NA)	(NA)	(NA)	(NA)
Print cloth <sup>8</sup> . . . . .	493,827	52,496	26,095	10.6	(NA)	(NA)	(NA)	(NA)
Duck <sup>8</sup> . . . . .	(D)	7,121	6,127	(D)	(NA)	(NA)	(NA)	(NA)
Sheeting <sup>8</sup> . . . . .	1,445,707	25,647	28,247	1.8	(NA)	(NA)	(NA)	(NA)
Poly/cotton blends weighing 5.0 ounces or less per square yard <sup>8</sup> . . . . .	(D)	18,526	9,609	(D)	(NA)	(NA)	(NA)	(NA)
Poly/cotton blends weighing more than 5.0 ounces per square yard <sup>8</sup> . . . . .	(D)	206	285	(D)	(NA)	(NA)	(NA)	(NA)
All other spun yarn <sup>8</sup> . . . . .	140,271	6,915	18,353	4.9	(NA)	(NA)	(NA)	(NA)
Sateens or twills <sup>8</sup> . . . . .	399,703	59,203	48,657	14.8	(NA)	(NA)	(NA)	(NA)
Oxfords <sup>8</sup> . . . . .	33,643	12	27	-	(NA)	(NA)	(NA)	(NA)
All other spun manmade fiber fabrics <sup>8</sup> . . . . .	135,016	22,254	64,599	16.5	(NA)	(NA)	(NA)	(NA)
Yarn dyed fabrics <sup>8</sup> . . . . .	189,864	4,653	6,376	2.5	(NA)	(NA)	(NA)	(NA)
Pile fabrics <sup>8</sup> . . . . .	53,341	11,322	60,553	21.2	(NA)	(NA)	(NA)	(NA)
Spun/filament yarn combinations, including yarn dyed . . . . .	1,189,680	245,993	349,078	20.7	42,675	114,522	3.6	1,392,998
Poplin and broadcloth <sup>8</sup> . . . . .	365,314	119,524	101,234	32.7	(NA)	(NA)	(NA)	(NA)
Sheeting <sup>8</sup> . . . . .	(D)	6,953	14,403	(D)	(NA)	(NA)	(NA)	(NA)
Print cloth <sup>8</sup> . . . . .	265,750	34,082	21,368	12.8	(NA)	(NA)	(NA)	(NA)
Twills and sateens <sup>8</sup> . . . . .	(D)	22,059	57,498	(D)	(NA)	(NA)	(NA)	(NA)
All other <sup>8</sup> . . . . .	431,368	63,375	154,575	14.7	(NA)	(NA)	(NA)	(NA)
Chiefly manmade/wool blends <sup>7</sup> . . . . .	30,008	9,739	33,043	32.5	(NA)	(NA)	(NA)	(NA)
Silk fabrics . . . . .	382	31,470	299,883	8,235.9	2,608	20,630	682.5	29,244
Wool fabrics . . . . .	110,546	32,674	317,680	29.6	15,251	80,796	13.8	127,969

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available.

<sup>1</sup>Represents production of gray broadwoven fabrics; import and export data represent gray as well as finished broadwoven fabrics. For comparison of SIC-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection. <sup>2</sup>Source: Census Bureau report IM 145, U.S. Imports for Consumption. <sup>3</sup>Dollar value represents c.i.f. (cost, insurance, and freight) at first port of entry in the United States plus calculated import duty. <sup>4</sup>Source: Census Bureau report EM 545, U.S. Exports. <sup>5</sup>Apparent consumption represents new domestic supply and is derived by subtracting exports from total manufacturers' shipments plus imports. <sup>6</sup>Includes all cotton and chiefly cotton mixed with manmade fiber. <sup>7</sup>Total for manmade fiber fabrics does not include chiefly manmade/wool blends. <sup>8</sup>Individual export data are not available for these products; however, export data are available on a total basis.

Note: Fabrics blends as shown in "Manufacturers' shipments" are reported based on the chief weight of the fiber; whereas, fabrics blends as shown for imports and exports are based on chief value of fiber.

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**HISTORICAL NOTE**

Data on the production of broadwoven fabrics have been collected by the Census Bureau since 1943. Historical data may be obtained from Current Industrial Reports (called Facts for Industry prior to 1959) at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

Additional information (employment, payroll, cost of materials, capital expenditures, inventories, etc.) on broadwoven fabrics is available in both the census of manufactures and the annual survey of manufactures.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Phil Brown, 301-457-4740.

## KNIT FABRICS PRODUCTION—MA313K (FORMERLY MA22K)

### INTRODUCTION

The data from the MA313K, Knit Fabrics survey, include all firms producing knit fabrics whether for sale, for own use, or on commission. It excludes very small firms (generally those with less than five employees) for which data for the economic census, manufacturing sector were derived from administrative records.

The data for production includes all knit fabrics off the knitting machine whether as yard goods, circular sweater strips, or full fashioned garment sections. It also includes the production of fabrics that are finished within the same plant and shipped as finished garments. It does not include hosiery.

### EXPLANATION OF TERMS

**For own use.** Includes cloth that is cut, cut and sewn, or further fabricated within the plant knitting the cloth.

**For sale.** Includes knit cloth that is sold to other plants of the same company for finishing, and to other firms or plants not affiliated with the same company.

**On commission.** Includes fabrics made from yarn owned by others.

See additional explanation of terms at the beginning of this chapter.

**Table 37. Summary of Knit Fabrics Production: 1989 to 1998**

[Millions of pounds]

Year	Total	Warp knit	Weft knit
1998 .....	1,866	451	1,415
1997 <sup>1</sup> .....	2,174	467	1,707
1996 .....	1,914	360	1,555
1995 .....	2,131	397	1,734
1994 .....	2,211	350	1,861
1993 .....	2,188	323	1,865
1992 .....	2,179	315	1,864
1991 .....	1,963	296	1,667
1990 .....	1,901	269	1,632
1989 .....	1,935	315	1,620

<sup>1</sup>For 1997, a number of companies were added based on information in the 1997 Economic Census, Manufacturing sector. Data were received from these establishments for 1997; therefore, information shown for years prior to 1997 may not be directly comparable. These changes represent approximately 7.8 percent of total knit fabric production.

Note: Detail may not add because of independent rounding.



**Table 38. Production of Knit Fabrics Off Knitting Machine by Type: 1998 and 1997**

[Thousands of pounds]

Product code	Product description	1998		1997 <sup>1</sup>	
		Number of knitting machines <sup>2</sup>	Total production	Number of knitting machines <sup>2</sup>	Total production
	Knit fabrics production, excluding narrow knit fabrics and knit garment lengths, trimmings, and collars . . . . .	16,467	1,865,609	17,561	2,173,770
	Warp knit fabrics yard goods (over 12 inches in width) . . . . .	4,725	450,928	4,925	466,801
3132491121	Pile fabrics (raschel and raschel crochet) . . . . .	1,236	144,412	1,343	142,604
3132491122	Long pile fabrics . . . . .	(X)	53,633	(X)	39,915
3132491123	All acrylic or modacrylic and chiefly acrylic or modacrylic . . . . .	(X)	(D)	(X)	(D)
3132491125	All polyester and chiefly polyester . . . . .	(X)	39,544	(X)	28,254
3132491129	All other fibers . . . . .	(X)	(D)	(X)	(D)
3132491131	Looped pile fabrics (terry cloth) . . . . .	(X)	67,921	(X)	69,630
3132491132	All cotton and chiefly cotton . . . . .	(X)	(D)	(X)	(D)
3132491135	All manmade and chiefly manmade . . . . .	(X)	(D)	(X)	(D)
3132491139	All other fibers . . . . .	(X)	-	(X)	(D)
3132491141	All other pile fabrics (velour, etc.) . . . . .	(X)	22,858	(X)	33,059
3132491143	All cotton and chiefly cotton . . . . .	(X)	(D)	(X)	(D)
3132491146	All manmade and chiefly manmade . . . . .	(X)	20,649	(X)	29,746
3132491149	All other fibers . . . . .	(X)	(D)	(X)	(D)
3132491151	Elastic fabrics (containing by weight 5 percent or more elastomeric yarn or rubber thread) . . . . .	794	35,372	798	35,874
3132491161	All other warp knit fabrics . . . . .	2,695	271,144	2,784	288,323
	By type:				
3132491163	Tricot, simplex and milanese . . . . .	(X)	156,873	(X)	158,532
3132491169	All other . . . . .	(X)	114,271	(X)	129,791
	By fiber:				
3132491171	All cotton and chiefly cotton . . . . .	(X)	16,755	(X)	17,947
3132491174	All wool and chiefly wool . . . . .	(X)	(D)	(X)	(D)
3132491175	All manmade and chiefly manmade . . . . .	(X)	252,090	(X)	267,093
3132491179	All other fibers . . . . .	(X)	(D)	(X)	(D)
	Weft knit yard goods (over 12 inches in width) . . . . .	11,742	1,414,681	12,636	1,706,969
3132411221	Pile fabrics . . . . .	324	33,184	298	34,220
3132411223	Long pile fabrics, including sliver knit . . . . .	(X)	17,706	(X)	17,624
3132411224	All acrylic or modacrylic and chiefly acrylic or modacrylic . . . . .	(X)	(D)	(X)	(D)
3132411225	All polyester and chiefly polyester . . . . .	(X)	(D)	(X)	(D)
3132411226	All other fibers . . . . .	(X)	845	(X)	1,030
2132411229	Looped pile fabrics (terry cloth) . . . . .	(X)	12,317	(X)	12,447
3132411231	All cotton and chiefly cotton . . . . .	(X)	7,875	(X)	7,506
3132411233	All manmade and chiefly manmade . . . . .	(X)	(D)	(X)	4,941
3132411235	All other fibers . . . . .	(X)	(D)	(X)	-
3132411237	All other pile fabrics (velour, etc.) . . . . .	(X)	3,161	(X)	4,149
3132411239	All cotton and chiefly cotton . . . . .	(X)	2,498	(X)	3,074
3132411241	All manmade and chiefly manmade . . . . .	(X)	(D)	(X)	(D)
3132411243	All other fibers . . . . .	(X)	(D)	(X)	(D)
3132411246	Elastic fabrics (containing by weight 5 percent or more elastomeric yarn or rubber thread) . . . . .	128	29,809	139	28,156
3132411251	Single circular knit (except pile and elastic) . . . . .	7,961	1,067,355	8,305	1,303,974
	By type:				
3132411253	Fleece or flannel . . . . .	(X)	318,353	(X)	381,836
3132411255	Underwear and nightwear . . . . .	(X)	280,437	(X)	303,377
3132411257	All other apparel uses . . . . .	(X)	416,339	(X)	513,007
3132411259	All other uses . . . . .	(X)	52,226	(X)	105,754
	By fiber:				
3132411261	All cotton and chiefly cotton . . . . .	(X)	586,253	(X)	696,848
3132411263	All wool and chiefly wool . . . . .	(X)	1,008	(X)	1,114
3132411264	All nylon and chiefly nylon . . . . .	(X)	8,350	(X)	9,573
3132411265	All polyester and chiefly polyester . . . . .	(X)	154,584	(X)	246,391
3132411267	All manmade and chiefly manmade . . . . .	(X)	314,743	(X)	345,995
3132411269	All other fibers . . . . .	(X)	2,417	(X)	4,053
3132411271	Double knit and interlock . . . . .	1,731	201,687	2,031	236,598
	By fiber:				
3132411272	All cotton and chiefly cotton . . . . .	(X)	79,413	(X)	89,405
3132411274	All wool and chiefly wool . . . . .	(X)	665	(X)	495
3132411276	All manmade and chiefly manmade . . . . .	(X)	(D)	(X)	(D)
3132411279	All other fibers . . . . .	(X)	(D)	(X)	(D)

See footnotes at end of table.

Table 38. **Production of Knit Fabrics Off Knitting Machine by Type: 1998 and 1997—Con.**

[Thousands of pounds]

Product code	Product description	1998		1997 <sup>1</sup>	
		Number of knitting machines <sup>2</sup>	Total production	Number of knitting machines <sup>2</sup>	Total production
	Knit fabrics production, excluding narrow knit fabrics and knit garment lengths, trimmings, and collars—Con. Weft knit yard goods (over 12 inches in width)—Con. Double knit and interlock—Con. By type:				
3132411281	Outerwear apparel, other than shirts.....	(X)	64,041	(X)	89,461
3132411283	Outer shirts, blouses, and tops.....	(X)	65,262	(X)	75,442
3132411289	All other uses.....	(X)	72,384	(X)	71,695
3132411291	Rib other than double knit and interlock.....	1,598	82,646	1,863	104,021
3132411292	All cotton and chiefly cotton.....	(X)	41,735	(X)	56,102
3132411293	All wool and chiefly wool.....	(X)	2,184	(X)	2,619
3132411294	All manmade and chiefly manmade.....	(X)	36,432	(X)	42,918
3132411298	All other fibers.....	(X)	2,295	(X)	2,382
	Narrow knit fabrics production.....	1,481	82,760	1,542	84,555
	Narrow warp knit yard goods (12 inches and less in width).....	699	42,195	708	41,020
3132491113	Elastic fabrics.....	365	21,897	377	20,359
3132491116	All other narrow warp knit fabrics.....	334	20,298	331	20,661
	Narrow weft knit fabric yard goods (12 inches or less in width).....	782	40,565	834	43,535
3132411113	Elastic fabrics.....	178	14,986	160	15,066
3132411115	All other narrow knit fabrics.....	604	25,579	674	28,469
	Knit garment lengths, trimmings, and collars <sup>3</sup> .....	2,429	29,908	2,745	32,512
	Knit garment lengths, made on sweater, strip, V-bed, and full-fashioned machines.....	1,153	12,246	1,229	14,511
	Knit trimmings and collars.....	1,276	17,662	1,516	18,001

- Represents zero. D Withheld to avoid disclosing data for individual companies. X Not applicable.

<sup>1</sup>A number of establishments were added to survey based on information in the 1997 Economic Census, Manufacturing sector. Data received from these establishments represent approximately a 7.8 percent increase in total knit fabric production over originally published total for 1997.

<sup>2</sup>Knitting machines operating on last workday of the year.

<sup>3</sup>Quantity produced in thousands of dozens.

**Table 39. Production of Knit Fabrics Off Knitting Machine by Method of Distribution: 1998 and 1997**

[Thousands of pounds]

Product code	Product description	1998			1997 <sup>1</sup>		
		Produced for own use	Produced for sale	Produced on commission	Produced for own use	Produced for sale	Produced on commission
	Knit fabrics production, excluding narrow knit fabrics and knit garment lengths, trimmings, and collars . . . . .	993,086	666,228	206,295	1,121,107	813,125	239,538
3132491121	Warp knit fabrics yard goods (over 12 inches in width) . . . . .	78,065	354,835	18,028	80,990	366,457	19,354
3132491151	Pile fabrics (raschel and raschel crochet) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3132491161	Elastic fabrics (containing by weight 5 percent or more elastomeric yarn or rubber thread) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
	All other warp knit fabrics . . . . .	38,239	221,231	11,674	42,594	233,996	11,733
	Weft knit fabrics yard goods (over 12 inches in width) . . . . .	915,021	311,393	188,267	1,040,117	446,668	220,184
3132411221	Pile fabrics . . . . .	(D)	14,190	(D)	(D)	14,798	(D)
3132411246	Elastic fabrics (containing by weight 5 percent or more elastomeric yarn or rubber thread) . . . . .	(D)	18,698	(D)	(D)	17,853	(D)
3132411251	Single circular knit (except pile and elastic) . . . . .	813,811	173,940	79,604	929,456	282,258	92,260
3132411271	Double knit and interlock . . . . .	38,332	88,521	74,834	44,840	102,111	89,647
3132411291	Rib other than double knit and interlock . . . . .	50,500	16,044	16,102	54,138	29,648	20,235
	Narrow knit fabrics production . . . . .	16,524	53,302	12,934	17,053	53,790	13,712
	Narrow warp knit fabrics yard goods (12 inches or less in width) . . . . .	(D)	29,053	(D)	(D)	27,312	(D)
3132491113	Elastic fabrics . . . . .	(D)	(D)	-	(D)	(D)	-
3132491116	All other narrow warp knit fabrics . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
	Narrow weft knit fabrics yard goods (12 inches or less in width) . . . . .	(D)	24,249	(D)	(D)	26,478	(D)
3132411113	Elastic fabrics . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3132411115	All other narrow weft knit fabrics . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
	Knit garment lengths, trimmings, and collars <sup>2</sup> . . . . .	7,312	14,459	8,137	7,413	16,734	8,365
	Knit garment lengths, made on sweater, strip, V-bed and full-fashioned machines. . . . .	2,942	4,160	5,144	3,379	6,952	4,180
	Knit trimmings and collars . . . . .	4,370	10,299	2,993	4,034	9,782	4,185

- Represents zero. D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>A number of establishments were added to survey based on information in the 1997 Economic Census, Manufacturing sector. Data received from these establishments represent approximately a 7.8 percent increase in total knit fabric production over originally published total for 1997.

<sup>2</sup>Quantity produced in thousands of dozens.

**Table 40. Shipments, Exports, Imports, and Apparent Consumption of Knit Fabrics: 1998**

[Quantity in thousands of kilograms. Value in thousands of dollars]

Product description	Domestic production (quantity)	Exports of domestic merchandise <sup>1</sup>		Percent exports to manufacturers' shipments (quantity)	Imports for consumption <sup>2</sup>		Percent imports to domestic merchandise (quantity)
		Quantity	Value at port		Quantity	Value <sup>3</sup>	
<b>Total</b> .....	<b>883,780</b>	<b>71,174</b>	<b>600,897</b>	<b>8.1</b>	<b>107,877</b>	<b>907,618</b>	<b>12.2</b>
Pile fabrics .....	80,558	20,210	180,668	25.1	35,763	312,688	44.4
Long pile fabrics .....	32,359	2,308	20,794	7.1	2,054	14,662	6.3
Looped pile fabrics .....	36,396	5,667	78,822	15.6	11,694	75,057	32.1
Of cotton fibers .....	(D)	19	244	(D)	788	6,402	(D)
Of manmade fibers .....	(D)	4,362	73,048	(D)	10,486	61,802	(D)
Of other fibers .....	(D)	1,286	5,530	(D)	420	6,853	(D)
Other pile fabrics .....	11,802	12,235	81,052	103.7	22,015	222,969	186.5
Of cotton fibers .....	(D)	1,409	4,580	(D)	722	6,688	(D)
Of manmade fibers .....	(D)	5,022	51,921	(D)	21,207	214,764	(D)
Of other fibers .....	(D)	5,804	24,551	(D)	86	1,517	(D)
Elastic fabrics .....	46,296	10,994	110,955	23.7	13,430	171,645	29.0
12 inches or less in width .....	16,730	8,807	68,502	52.6	961	8,973	5.7
Over 12 inches in width .....	29,566	2,187	42,453	7.4	12,469	162,672	42.2
Other warp knit fabrics .....	122,991	6,395	70,248	5.2	11,659	111,206	9.5
Of cotton fibers .....	7,600	1,795	16,661	23.6	316	3,111	4.2
Of wool fibers .....	(D)	23	427	(D)	10	183	(D)
Of manmade fibers .....	114,348	4,266	49,063	3.7	11,293	106,961	9.9
Of other fibers .....	(D)	311	4,097	(D)	40	951	(D)
Other narrow knit fabrics .....	20,810	2,806	37,816	13.5	1,117	14,094	5.4
Other knit fabrics .....	613,126	30,769	201,210	5.0	45,908	297,985	7.5
Of cotton fibers .....	320,877	14,258	69,772	4.4	32,606	133,253	10.2
Of wool fibers .....	1,750	141	4,053	8.1	73	3,043	4.2
Of manmade fibers .....	(D)	14,782	109,057	(D)	13,145	160,375	(D)
Double knit or interlock <sup>4</sup> .....	(D)	(NA)	(NA)	(NA)	5,682	65,054	(D)
Other <sup>4</sup> .....	233,200	(NA)	(NA)	(NA)	7,463	95,321	3.2
Of other fibers .....	(D)	1,588	18,328	(D)	84	1,314	(D)

D Withheld to avoid disclosing data for individual companies. NA Not available.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

<sup>4</sup>Individual export data are not available for these products; however, export data are available on a total basis.

Note: For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

**HISTORICAL NOTE**

Data on the production of knit fabrics have been collected by the Census Bureau since 1966. Historical data may be obtained from the Current Industrial Reports available at your local Federal Depository Library. Additional information (employment, payroll, cost of materials, capital expenditures, inventories, etc.) on knit fabrics is available in both the census of manufactures and the annual

survey of manufactures. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Kay Hanks, 301-457-4620.

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## APPAREL—MQ315A (FORMERLY MQ23A)

### INTRODUCTION

The statistics in this subsection represent total U.S. production of most major garments. Hosiery, headwear, neckwear, fur garments, leather garments, and accessories are not included in this survey. Data on the quantity and value of shipments of gloves and mittens are collected separately and shown in separate tables at the end of the apparel section.

The apparel industry is characterized by three types of operations — manufacturers, jobbers, and contractors. The functions of the establishments classified as manufacturers include purchasing materials, cutting and sewing the product within the manufacturer's establishment, and selling the finished product. The functions of the jobber, like those of the manufacturer, involve buying raw materials and marketing the finished product. However, unlike the manufacturer, a jobber has a large part of the actual processing of the product done under contract in an outside factory. Finally, the function of a contractor is to make products in his establishment according to clearly defined specifications, from materials owned by others. A contractor, unlike the manufacturer or jobber, does not own the finished product and does not become involved in the actual sale of the finished goods.

The purpose of this survey is to provide the total domestic quantity produced and value of shipments for each type of garment. Since collecting this information from all three types of establishments would result in substantial duplication, only manufacturers and jobbers are surveyed.

One other form of manufacturing apparel that is becoming more and more significant is what we refer to as "9802" (formerly 807) production. For "9802" production, a domestic manufacturer or jobber buys fabrics and cuts a garment domestically, and then exports the cut pieces to be sewn. The completed garment is then imported. Under special tariff provisions, duty is paid only on the value added rather than on the whole garment. The quantity and value of these garments are included in the domestic data, as well as in the import and export data.

### EXPLANATION OF TERMS

See explanation of terms at the beginning of this chapter.

**Table 41. Summary of Quantity of Production and Value for Apparel: 1998 and 1997**

[Quantity in thousands of dozens. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>										
<b>Total</b> .....	<b>5,718,067</b>	<b>43,572.3</b>	<b>1,368,725</b>	<b>10,588.6</b>	<b>1,482,957</b>	<b>11,697.0</b>	<b>1,398,772</b>	<b>10,736.8</b>	<b>1,467,613</b>	<b>10,549.9</b>
Men's and boys' apparel:										
Suits .....	8,885	726.4	1,776	151.6	2,133	193.5	2,237	173.2	2,739	208.1
Coats .....	53,684	1,857.8	14,037	465.1	14,764	547.2	12,240	410.9	12,643	434.6
Tops .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Bottoms .....	(D)	(D)	139,542	1,840.1	140,024	1,916.5	139,557	1,720.8	(D)	(D)
Underwear and nightwear .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other garments .....	82,194	998.8	19,463	229.9	22,380	275.2	19,512	248.1	20,839	245.6
Women's and girls' apparel:										
Dresses .....	198,680	4,660.9	41,861	985.2	47,909	1,190.7	51,539	1,178.1	57,371	1,306.9
Coats .....	46,529	1,630.7	12,091	439.6	14,839	539.0	9,028	312.5	10,571	339.6
Tops .....	604,975	4,756.3	145,274	1,169.6	152,145	1,283.0	(D)	(D)	(D)	(D)
Bottoms .....	(D)	(D)	131,036	1,516.1	148,056	1,776.3	142,583	1,513.5	(D)	(D)
Underwear and nightwear .....	1,026,187	3,793.6	(D)	(D)	266,855	995.0	(D)	(D)	(D)	(D)
Other garments .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Infants' apparel.....	159,157	880.2	51,348	270.8	48,394	279.9	34,202	173.7	25,213	155.8
Coats and jackets .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Dresses .....	4,660	50.0	1,140	12.8	1,308	14.5	891	8.5	1,321	14.2
Knit shirts .....	17,492	62.5	5,888	19.5	4,066	16.8	4,800	15.4	2,738	10.8
Woven shirts.....	275	1.4	(D)	(D)	61	0.3	(D)	(D)	(D)	(D)
Sweaters .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Sets .....	6,399	46.4	1,538	12.1	1,954	14.9	1,404	9.7	1,503	9.7
Pants and shorts .....	12,763	59.2	2,644	12.3	5,309	22.2	2,474	11.9	2,336	12.8
Play clothing.....	29,687	207.6	9,414	63.4	8,052	58.6	6,184	43.0	6,037	42.6
Underwear .....	37,386	114.3	12,291	37.5	10,571	35.7	10,727	25.9	3,797	15.2
Nightwear .....	50,340	335.5	18,373	112.2	17,034	116.0	7,663	58.4	7,270	48.9
<b>1997</b>										
<b>Total</b> .....	<b>6,387,430</b>	<b>45,762.2</b>	<b>1,499,202</b>	<b>11,068.4</b>	<b>1,605,700</b>	<b>12,256.0</b>	<b>1,652,745</b>	<b>11,479.8</b>	<b>1,629,783</b>	<b>10,958.0</b>
Men's and boys' apparel:										
Suits .....	9,282	792.4	2,129	176.7	2,189	189.1	2,458	207.2	2,506	219.4
Coats .....	55,824	1,998.3	15,863	568.6	14,583	530.6	12,769	452.3	12,609	446.8
Tops .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Bottoms .....	607,226	7,894.2	148,108	1,986.6	155,339	2,097.4	159,686	2,028.1	144,093	1,782.1
Underwear and nightwear .....	(D)	(D)	(D)	(D)	357,983	567.8	(D)	(D)	(D)	(D)
Other garments .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Women's and girls' apparel:										
Dresses .....	188,132	4,540.8	42,401	1,010.2	48,988	1,156.4	45,619	1,133.9	51,124	1,240.3
Coats .....	52,651	1,948.2	11,146	432.2	15,045	638.3	12,624	418.4	13,836	459.3
Tops .....	655,868	4,998.7	(D)	(D)	168,335	1,338.4	161,458	1,212.6	(D)	(D)
Bottoms .....	598,825	6,672.0	(D)	(D)	153,969	1,818.7	155,997	1,718.3	(D)	(D)
Underwear and nightwear .....	(D)	(D)	(D)	(D)	282,039	924.9	281,975	934.0	283,289	902.2
Other garments .....	142,227	1,941.5	33,585	458.8	30,336	424.2	35,902	523.2	42,404	535.3
Infants' apparel.....	162,220	767.4	40,334	197.4	43,622	242.7	35,479	159.7	42,785	167.6
Coats and jackets .....	307	7.7	59	0.9	68	1.5	86	2.4	94	2.9
Dresses .....	5,747	59.4	1,420	15.8	1,812	19.3	1,164	10.5	1,351	13.8
Knit shirts .....	13,376	64.5	3,466	18.8	6,004	27.7	1,676	9.1	2,230	8.9
Woven shirts.....	205	1.0	(D)	(D)	26	0.1	16	0.1	(D)	(D)
Sweaters .....	159	1.2	(D)	(D)	34	0.2	37	0.3	(D)	(D)
Sets .....	7,232	50.3	1,275	9.5	1,968	13.2	1,449	10.6	2,540	17.0
Pants and shorts .....	12,277	67.9	2,660	14.5	4,131	20.3	2,531	16.8	2,955	16.3
Play clothing.....	30,043	209.0	7,241	55.8	8,691	58.4	6,405	42.6	7,706	52.2
Underwear .....	29,807	70.5	7,499	17.0	8,106	20.4	7,096	16.5	7,106	16.6
Nightwear .....	63,067	235.9	16,580	64.4	12,782	81.6	15,019	50.8	18,686	39.1

D Withheld to avoid disclosing data for individual companies.

**Table 42. Total Quantity of Production and Value of Shipments of Men's, Junior Boys', and Little Boys' Apparel: 1998 and 1997**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>										
Suits .....	8,885	726.4	1,776	151.6	2,133	193.5	2,237	173.2	2,739	208.1
Trios .....	13	(NA)	1	(NA)	5	(NA)	3	(NA)	4	(NA)
Coats, jackets, and vests:										
Down and feather filled coats, jackets, and vests .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Dress and sport coats (tailored) .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Heavy nontailored coats and jackets .....	13,207	479.3	3,352	127.7	3,574	140.6	3,229	105.8	3,052	105.2
Lightweight nontailored coats and jackets .....	17,701	356.5	5,217	98.9	4,925	99.2	3,966	80.2	3,593	78.2
Overcoats and top coats .....	1,279	79.7	367	20.5	355	26.2	271	16.3	286	16.7
Raincoats .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Separate vests .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Work jackets .....	6,272	178.8	1,933	54.5	1,751	55.9	1,572	45.0	1,016	23.4
Tops:										
Woven dress and business shirts .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Woven sport shirts .....	24,338	270.7	5,237	58.7	6,428	68.3	6,377	70.9	6,296	72.8
Work shirts .....	55,272	540.8	15,547	150.7	13,880	144.3	13,028	125.2	12,817	120.6
Knit T-shirts and tank tops made for outerwear .....	841,371	4,015.1	206,613	887.8	212,765	1,025.2	222,431	1,121.9	199,562	980.2
Sweatshirts .....	155,103	828.9	32,581	202.3	44,738	280.9	38,970	200.5	38,814	145.2
Other knit shirts .....	115,970	892.9	23,561	176.2	31,004	239.4	32,417	254.1	28,988	223.2
Sweaters .....	12,885	186.3	2,637	55.1	4,085	57.0	3,407	42.3	2,756	31.9
Bottoms:										
Dress and sport trousers .....	117,421	2,055.3	29,759	518.1	32,911	609.8	27,864	479.1	26,887	448.3
Junior boys' dress and sport trousers .....	8,113	(NA)	2,125	(NA)	1,997	(NA)	1,782	(NA)	2,209	(NA)
Jeans .....	219,193	3,308.8	61,124	932.8	61,177	939.3	51,787	779.9	45,105	656.8
Junior boys' jeans .....	24,039	(NA)	5,460	(NA)	7,710	(NA)	6,412	(NA)	4,457	(NA)
Jean-cut casual slacks .....	32,899	314.3	7,837	81.4	8,944	84.8	9,286	81.6	6,832	66.5
Junior boys' jean-cut casual slacks .....	6,359	(NA)	1,123	(NA)	1,743	(NA)	2,117	(NA)	1,376	(NA)
Shorts .....	86,941	622.5	18,094	125.0	12,339	70.6	25,263	176.0	31,245	250.9
Athletic shorts .....	28,697	(NA)	6,203	(NA)	5,945	(NA)	8,582	(NA)	7,967	(NA)
Sweatpants .....	(D)	(D)	10,232	53.5	13,220	86.0	13,868	74.1	(D)	(D)
Workpants .....	46,904	516.2	12,496	129.3	11,433	126.0	11,489	130.1	11,486	130.8
Underwear and nightwear:										
Pajamas and nightwear .....	15,138	98.4	4,458	29.7	4,339	28.7	3,690	21.1	2,651	18.9
Junior boys' pajamas and nightwear .....	1,608	(NA)	292	(NA)	473	(NA)	525	(NA)	318	(NA)
Robes .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Underwear total .....	1,007,136	1,506.7	224,499	389.9	268,140	334.1	216,640	449.5	297,857	333.2
Thermal underwear .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Undershirts (1/4 sleeve and athletic types) .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Knit undershorts and briefs .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Woven boxer shorts .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other garments:										
Coveralls, overalls, and jumpsuits .....	19,270	373.0	4,714	89.5	6,518	112.7	3,641	85.4	4,397	85.4
Jumpsuits .....	1,376	(NA)	522	(NA)	396	(NA)	286	(NA)	172	(NA)
Jogging and warmup suits .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Playsuits .....	1,472	15.0	331	2.6	395	4.2	275	2.6	471	5.6
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Swimwear .....	1,444	22.9	351	4.6	242	4.5	350	5.7	501	8.1
Team sports uniforms .....	13,845	169.9	3,514	37.5	2,749	39.8	3,178	43.5	4,404	49.1
Washable service apparel .....	31,751	266.6	7,472	64.6	8,222	65.0	8,077	69.4	7,980	67.6

See footnotes at end of table.

Table 42. **Total Quantity of Production and Value of Shipments of Men's, Junior Boys', and Little Boys' Apparel: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1997</b>										
Suits .....	9,282	792.4	2,129	176.7	2,189	189.1	2,458	207.2	2,506	219.4
Trios .....	73	(NA)	3	(NA)	2	(NA)	-	(NA)	68	(NA)
Coats, jackets, and vests:										
Down and feather filled coats, jackets, and vests .....	(D)	(D)	43	2.4	(D)	(D)	(D)	(D)	48	2.0
Dress and sport coats (tailored) .....	11,786	731.3	2,925	180.4	2,910	184.2	2,900	178.2	3,051	188.5
Heavy nontailored coats and jackets .....	16,470	594.9	4,558	182.7	4,322	164.0	4,011	127.8	3,579	120.4
Lightweight nontailored coats and jackets .....	16,823	372.9	5,254	115.0	4,691	107.3	3,427	78.6	3,451	72.0
Overcoats and top coats .....	1,134	81.4	328	26.4	294	22.3	245	15.4	267	17.3
Raincoats .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Separate vests .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Work jackets .....	4,706	114.3	1,419	37.7	1,232	31.5	1,088	24.0	967	21.1
Tops:										
Woven dress and business shirts .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Woven sport shirts .....	23,793	267.4	6,247	66.7	6,737	76.3	5,255	59.8	5,554	64.6
Work shirts .....	51,709	517.4	13,421	148.5	13,710	142.5	12,475	113.7	12,103	112.7
Knit T-shirts and tank tops made for outerwear .....	853,975	3,979.3	200,177	859.0	191,675	959.4	221,879	1,098.9	240,244	1,062.0
Sweatshirts .....	203,272	996.0	54,110	259.4	51,040	305.4	49,384	244.9	48,738	186.3
Other knit shirts .....	109,876	847.9	25,920	195.9	29,521	227.1	28,511	226.6	25,924	198.3
Sweaters .....	12,472	200.2	3,318	63.6	3,799	68.7	2,984	38.2	2,371	29.7
Bottoms:										
Dress and sport trousers .....	136,407	2,381.4	34,141	572.1	37,865	679.5	33,469	600.5	30,932	529.3
Junior boys' dress and sport trousers .....	10,144	(NA)	3,352	(NA)	2,305	(NA)	2,422	(NA)	2,065	(NA)
Jeans .....	245,086	3,690.1	64,352	993.0	65,154	993.5	64,410	951.8	51,170	751.8
Junior boys' jeans .....	27,694	(NA)	6,343	(NA)	8,123	(NA)	8,019	(NA)	5,209	(NA)
Jean-cut casual slacks .....	28,298	276.9	6,753	66.6	7,909	79.0	7,376	71.1	6,260	60.2
Junior boys' jean-cut casual slacks .....	2,729	(NA)	335	(NA)	875	(NA)	882	(NA)	637	(NA)
Shorts .....	90,892	664.8	16,474	122.1	13,740	80.7	25,746	196.0	34,932	266.0
Athletic shorts .....	34,724	(NA)	5,603	(NA)	7,301	(NA)	10,103	(NA)	11,717	(NA)
Sweatpants .....	60,788	280.7	15,073	78.9	19,423	86.8	16,801	71.0	9,491	44.0
Workpants .....	45,755	600.3	11,315	153.9	11,248	177.9	11,884	137.7	11,308	130.8
Underwear and nightwear:										
Pajamas and nightwear .....	15,094	96.1	4,328	33.0	4,182	26.9	3,516	19.8	3,068	16.4
Junior boys' pajamas and nightwear .....	1,735	(NA)	354	(NA)	387	(NA)	488	(NA)	506	(NA)
Robes .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Underwear total .....	1,395,911	1,809.3	292,412	449.2	352,838	523.1	391,912	493.7	358,749	343.3
Thermal underwear .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Undershirts (1/4 sleeve and athletic types) .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Knit undershorts and briefs .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Woven boxer shorts .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other garments:										
Coveralls, overalls, and jumpsuits .....	14,531	431.7	3,781	132.4	4,449	159.2	3,121	71.9	3,180	68.2
Jumpsuits .....	797	(NA)	184	(NA)	291	(NA)	140	(NA)	182	(NA)
Jogging and warmup suit .....	11,854	86.2	2,623	21.7	4,634	34.6	2,080	14.3	2,517	15.6
Playsuits .....	903	8.7	113	1.0	175	1.3	201	2.4	414	4.0
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Swimwear .....	1,940	32.3	234	3.7	295	2.7	527	7.1	884	18.8
Team sports uniforms .....	16,577	197.5	3,917	48.5	3,919	50.4	3,944	46.1	4,797	52.5
Washable service apparel .....	28,832	241.4	7,489	61.0	6,854	61.2	7,248	62.1	7,241	57.1

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available.



**Table 43. Quantity of Production and Value of Shipments of Men's and Junior Boys' Apparel: 1998 and 1997**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>										
Suits .....	8,116	707.9	1,629	148.7	1,988	188.9	2,047	168.8	2,452	201.5
Coats, jackets, and vests:										
Down and feather filled coats, jackets, and vests .....	191	6.5	48	2.1	43	2.0	50	1.2	50	1.2
Dress and sport coats (tailored) .....	10,535	678.7	2,031	141.5	3,041	201.3	2,251	145.6	3,212	190.3
Heavy nontailored coats and jackets .....	12,337	461.6	3,139	123.9	3,231	134.3	3,016	100.4	2,951	103.0
Lightweight nontailored coats and jackets .....	15,459	330.5	4,624	92.4	4,081	88.7	3,537	75.4	3,217	74.0
Overcoats and top coats .....	1,279	79.7	367	20.5	355	26.2	271	16.3	286	16.7
Raincoats .....	1,405	36.7	318	9.2	349	11.9	366	7.6	372	8.0
Separate vests .....	1,237	26.9	258	5.3	313	6.7	313	6.9	353	8.0
Work jackets .....	6,272	178.8	1,933	54.5	1,751	55.9	1,572	45.0	1,016	23.4
Tops:										
Woven dress and business shirts .....	47,580	656.8	9,758	185.2	11,019	148.4	12,582	149.5	14,221	173.7
Woven sport shirts .....	18,539	233.9	4,024	51.5	4,541	58.3	5,210	60.3	4,764	63.8
Work shirts .....	55,272	540.8	15,547	150.7	13,880	144.3	13,028	125.2	12,817	120.6
Knit T-shirts and tank tops made for outerwear .....	785,475	3,860.6	192,987	852.7	196,728	979.0	209,636	1,083.7	186,124	945.2
Sweatshirts .....	146,131	793.6	30,851	195.1	41,840	269.9	36,908	192.0	36,532	136.6
Other knit shirts .....	93,380	773.3	18,037	150.4	24,446	201.8	27,091	226.5	23,806	194.6
Sweaters .....	11,239	175.2	2,394	53.3	3,694	54.1	2,950	39.7	2,201	28.1
Bottoms:										
Dress and sport trousers .....	105,896	1,979.5	27,115	501.4	29,965	587.8	25,368	463.1	23,448	427.2
Jeans .....	192,846	3,065.4	54,569	874.9	51,884	852.4	45,895	724.2	40,498	613.9
Jean-cut casual slacks .....	29,606	294.3	6,730	75.0	7,724	77.4	8,569	77.0	6,583	64.9
Shorts .....	67,463	518.0	13,646	98.3	9,729	57.0	20,593	153.5	23,495	209.2
Sweatpants .....	40,313	230.6	8,428	47.6	10,405	78.2	11,555	66.9	9,925	37.9
Workpants .....	46,904	516.2	12,496	129.3	11,433	126.0	11,489	130.1	11,486	130.8
Underwear and nightwear:										
Pajamas and nightwear .....	7,835	56.8	2,453	19.2	1,818	15.4	1,892	11.7	1,672	10.5
Robes .....	4,163	52.9	1,569	29.6	1,481	17.3	719	3.0	394	3.0
Underwear total .....	925,387	1,345.3	204,062	356.8	241,976	308.1	199,202	381.0	280,147	299.4
Thermal underwear .....	39,640	130.6	8,508	28.3	9,927	33.0	10,236	33.8	10,969	35.5
Undershirts (1/4 sleeve and athletic types) .....	406,535	488.8	71,246	127.6	118,138	136.1	79,897	119.5	137,254	105.6
Knit undershorts and briefs .....	432,547	608.7	113,277	171.9	102,505	117.0	95,599	196.5	121,166	123.3
Woven boxer shorts .....	46,665	117.2	11,031	29.0	11,406	22.0	13,470	31.2	10,758	35.0
Other garments:										
Coveralls, overalls, and jumpsuits .....	12,515	309.2	3,231	78.4	4,581	92.5	2,389	71.7	2,314	66.6
Jogging and warmup suits .....	3,581	30.6	776	8.1	820	9.3	1,099	7.3	886	5.9
Playsuits .....	39	0.4	6	0.1	11	0.1	13	0.1	9	0.1
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Swimwear .....	1,094	20.4	239	4.0	222	4.4	285	5.4	348	6.6
Team sports uniforms .....	13,535	168.0	3,449	37.2	2,684	39.5	3,112	43.1	4,290	48.2
Washable service apparel .....	31,751	266.6	7,472	64.6	8,222	65.0	8,077	69.4	7,980	67.6

See footnotes at end of table.

Table 43. **Quantity of Production and Value of Shipments of Men's and Junior Boys' Apparel: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1997</b>										
Suits .....	8,653	775.3	1,928	171.8	2,014	184.0	2,333	203.7	2,378	215.8
Coats, jackets, and vests:										
Down and feather filled coats, jackets, and vests .....	194	8.9	43	2.4	48	2.9	55	1.6	48	2.0
Dress and sport coats (tailored) .....	11,455	724.1	2,859	179.0	2,816	182.6	2,802	175.7	2,978	186.8
Heavy nontailored coats and jackets .....	15,255	562.7	4,334	176.6	3,915	151.6	3,601	117.9	3,405	116.6
Lightweight nontailored coats and jackets .....	15,124	356.2	4,795	110.6	4,193	102.5	3,029	74.6	3,107	68.5
Overcoats and top coats .....	1,134	81.4	328	26.4	294	22.3	245	15.4	267	17.3
Raincoats .....	2,133	49.2	578	15.2	502	11.2	526	12.0	527	10.8
Separate vests .....	1,283	39.7	297	7.0	231	5.8	381	13.7	374	13.2
Work jackets .....	4,706	114.3	1,419	37.7	1,232	31.5	1,088	24.0	967	21.1
Tops:										
Woven dress and business shirts .....	55,118	671.3	14,777	171.6	13,797	190.9	13,755	163.5	12,789	145.3
Woven sport shirts .....	19,350	243.5	4,728	58.5	5,338	68.4	4,614	56.2	4,670	60.4
Work shirts .....	51,709	517.4	13,421	148.5	13,710	142.5	12,475	113.7	12,103	112.7
Knit T-shirts and tank tops made for outerwear .....	821,168	3,888.1	191,330	834.1	185,394	937.6	213,839	1,078.3	230,605	1,038.1
Sweatshirts .....	195,399	971.2	52,895	254.5	48,792	298.3	46,524	236.9	47,188	181.5
Other knit shirts .....	93,973	762.4	22,518	176.6	25,038	202.8	24,680	205.1	21,737	177.9
Sweaters .....	10,764	190.3	2,933	61.4	3,279	65.8	2,500	35.1	2,052	28.0
Bottoms:										
Dress and sport trousers .....	124,240	2,298.0	30,773	549.2	34,881	657.8	31,006	583.8	27,580	507.2
Jeans .....	222,109	3,472.3	59,613	950.8	58,524	927.7	57,283	882.0	46,689	711.8
Jean-cut casual slacks .....	25,783	260.5	6,068	62.2	6,720	71.2	6,919	68.2	6,076	58.9
Shorts .....	71,845	574.3	12,531	102.2	11,333	68.9	21,294	174.7	26,687	228.5
Sweatpants .....	53,498	260.4	13,978	74.8	16,958	80.5	14,189	64.9	8,373	40.2
Workpants .....	45,755	600.3	11,315	153.9	11,248	177.9	11,884	137.7	11,308	130.8
Underwear and nightwear:										
Pajamas and nightwear .....	8,063	58.5	2,654	22.9	2,221	15.7	1,699	10.5	1,489	9.4
Robes .....	2,908	57.3	1,249	28.3	943	17.7	467	8.5	249	2.8
Underwear total .....	1,260,363	1,629.4	261,683	414.1	319,254	467.6	355,160	432.2	324,266	315.5
Thermal underwear .....	47,396	162.7	12,180	42.0	(D)	(D)	(D)	(D)	9,313	31.3
Undershirts (1/4 sleeve and athletic types) .....	515,429	681.1	106,110	186.0	127,204	219.3	147,356	172.9	134,759	102.9
Knit undershorts and briefs .....	620,437	623.3	123,318	140.3	(D)	(D)	(D)	(D)	162,591	142.9
Woven boxer shorts .....	77,101	162.3	20,075	45.8	20,856	42.1	18,567	36.0	17,603	38.4
Other garments:										
Coveralls, overalls, and jumpsuits .....	10,392	378.8	2,857	119.7	2,984	140.9	2,393	59.0	2,158	59.2
Jogging and warmup suits .....	3,993	31.5	746	6.9	928	8.9	1,088	7.5	1,231	8.2
Playsuits .....	47	0.4	9	0.1	12	0.1	14	0.1	12	0.1
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Swimwear .....	1,578	28.9	174	3.1	228	2.0	408	6.1	768	17.7
Team sports uniforms .....	16,066	193.8	3,809	47.7	3,818	49.7	3,793	45.0	4,646	51.4
Washable service apparel .....	28,832	241.4	7,489	61.0	6,854	61.2	7,248	62.1	7,241	57.1

D Withheld to avoid disclosing data for individual companies.

**Table 44. Quantity of Production and Value of Shipments of Little Boys' Apparel: 1998 and 1997**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>										
Suits .....	769	18.5	147	2.9	145	4.6	190	4.4	287	6.6
Coats, jackets, and vests:										
Down and feather filled coats, jackets, and vests ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Dress and sport coats (tailored) .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Heavy nontailored coats and jackets .....	870	17.7	213	3.8	343	6.3	213	5.4	101	2.2
Lightweight nontailored coats and jackets .....	2,242	26.0	593	6.5	844	10.5	429	4.8	376	4.2
Overcoats and top coats .....	-	-	-	-	-	-	-	-	-	-
Raincoats .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Separate vests .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Work jackets .....	-	-	-	-	-	-	-	-	-	-
Tops:										
Woven dress and business shirts .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Woven sport shirts .....	5,799	36.8	1,213	7.2	1,887	10.0	1,167	10.6	1,532	9.0
Work shirts .....	-	-	-	-	-	-	-	-	-	-
Knit T-shirts and tank tops made for outerwear ...	55,896	154.5	13,626	35.1	16,037	46.2	12,795	38.2	13,438	35.0
Sweatshirts .....	8,972	35.3	1,730	7.2	2,898	11.0	2,062	8.5	2,282	8.6
Other knit shirts .....	22,590	119.6	5,524	25.8	6,558	37.6	5,326	27.6	5,182	28.6
Sweaters .....	1,646	11.1	243	1.8	391	2.9	457	2.6	555	3.8
Bottoms:										
Dress and sport trousers .....	11,525	75.8	2,644	16.7	2,946	22.0	2,496	16.0	3,439	21.1
Jeans .....	26,347	243.4	6,555	57.9	9,293	86.9	5,892	55.7	4,607	42.9
Jean-cut casual slacks .....	3,293	20.0	1,107	6.4	1,220	7.4	717	4.6	249	1.6
Shorts .....	19,478	104.5	4,448	26.7	2,610	13.6	4,670	22.5	7,750	41.7
Sweatpants .....	(D)	(D)	1,804	5.9	2,815	7.8	2,313	7.2	(D)	(D)
Workpants .....	-	-	-	-	-	-	-	-	-	-
Underwear and nightwear:										
Pajamas and nightwear .....	7,303	41.6	2,005	10.5	2,521	13.3	1,798	9.4	979	8.4
Robes .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Underwear total .....	81,749	161.4	20,437	33.1	26,164	26.0	17,438	68.5	17,710	33.8
Thermal underwear .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Undershirts (1/4 sleeve and athletic types) .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Knit undershorts and briefs .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Woven boxer shorts .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other garments:										
Coveralls, overalls, and jumpsuits .....	6,755	63.8	1,483	11.1	1,937	20.2	1,252	13.7	2,083	18.8
Jogging and warmup suits .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Playsuits .....	1,433	14.6	325	2.5	384	4.1	262	2.5	462	5.5
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Swimwear .....	350	2.5	112	0.6	20	0.1	65	0.3	153	1.5
Team sports uniforms .....	310	1.9	65	0.3	65	0.3	66	0.4	114	0.9
Washable service apparel .....	-	-	-	-	-	-	-	-	-	-

See footnotes at end of table.

Table 44. **Quantity of Production and Value of Shipments of Little Boys' Apparel: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1997</b>										
Suits .....	629	17.1	201	4.9	175	5.1	125	3.5	128	3.6
Coats, jackets, and vests:										
Down and feather filled coats, jackets, and vests .	(D)	(D)	-	-	(D)	(D)	(D)	(D)	-	-
Dress and sport coats (tailored).....	331	7.2	66	1.4	94	1.6	98	2.5	73	1.7
Heavy nontailored coats and jackets .....	1,215	32.2	224	6.1	407	12.4	410	9.9	174	3.8
Lightweight nontailored coats and jackets.....	1,699	16.7	459	4.4	498	4.8	398	4.0	344	3.5
Overcoats and top coats .....	-	-	-	-	-	-	-	-	-	-
Raincoats .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Separate vests .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Work jackets .....	-	-	-	-	-	-	-	-	-	-
Tops:										
Woven dress and business shirts .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Woven sport shirts .....	4,443	23.9	1,519	8.2	1,399	7.9	641	3.6	884	4.2
Work shirts .....	-	-	-	-	-	-	-	-	-	-
Knit T-shirts and tank tops made for outerwear ...	32,807	91.2	8,847	24.9	6,281	21.8	8,040	20.6	9,639	23.9
Sweatshirts.....	7,873	24.8	1,215	4.9	2,248	7.1	2,860	8.0	1,550	4.8
Other knit shirts .....	15,903	85.5	3,402	19.3	4,483	24.3	3,831	21.5	4,187	20.4
Sweaters.....	1,708	9.9	385	2.2	520	2.9	484	3.1	319	1.7
Bottoms:										
Dress and sport trousers.....	12,167	83.4	3,368	22.9	2,984	21.7	2,463	16.7	3,352	22.1
Jeans.....	22,977	217.8	4,739	42.2	6,630	65.8	7,127	69.8	4,481	40.0
Jean-cut casual slacks .....	2,515	16.4	685	4.4	1,189	7.8	457	2.9	184	1.3
Shorts .....	19,047	90.5	3,943	19.9	2,407	11.8	4,452	21.3	8,245	37.5
Sweatpants .....	7,290	20.3	1,095	4.1	2,465	6.3	2,612	6.1	1,118	3.8
Workpants .....	-	-	-	-	-	-	-	-	-	-
Underwear and nightwear:										
Pajamas and nightwear.....	7,031	37.6	1,674	10.1	1,961	11.2	1,817	9.3	1,579	7.0
Robes .....	(D)	(D)	(D)	(D)	20	0.1	(D)	(D)	(D)	(D)
Underwear total.....	135,548	179.9	30,729	35.1	33,584	55.5	36,752	61.5	34,483	27.8
Thermal underwear.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Undershirts (1/4 sleeve and athletic types) .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Knit undershorts and briefs.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Woven boxer shorts .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other garments:										
Coveralls, overalls, and jumpsuits .....	4,139	52.9	924	12.7	1,465	18.3	728	12.9	1,022	9.0
Jogging and warmup suits .....	7,861	54.7	1,877	14.8	3,706	25.7	992	6.8	1,286	7.4
Playsuits .....	856	8.3	104	0.9	163	1.2	187	2.3	402	3.9
Ski apparel.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Swimwear.....	362	3.4	60	0.6	67	0.7	119	1.0	116	1.1
Team sports uniforms.....	511	3.7	108	0.8	101	0.7	151	1.1	151	1.1
Washable service apparel.....	-	-	-	-	-	-	-	-	-	-

- Represents zero. D Withheld to avoid disclosing data for individual companies.

**Table 45. Total Quantity of Production and Value of Shipments of Women's, Misses', Juniors', and Girls' Apparel: 1998 and 1997**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>										
Dresses .....	198,680	4,660.9	41,861	985.2	47,909	1,190.7	51,539	1,178.1	57,371	1,306.9
Coats, jackets, and vests:										
Coats and capes .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Down and feather filled coats, jackets, and vests .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored jackets .....	7,593	186.9	2,429	54.4	2,382	61.1	1,338	35.4	1,444	36.0
Raincoats .....	309	20.2	28	2.2	184	9.1	31	2.5	66	6.4
Separate vests .....	2,621	41.9	526	10.1	657	11.2	694	9.7	744	10.9
Tailored suit-type jackets .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Tops:										
Woven blouses and shirts .....	160,201	1,570.2	36,388	359.2	38,295	386.1	43,899	407.9	41,619	417.0
Knit T-shirts and tank tops made for outerwear .....	230,444	1,188.6	58,299	291.0	51,112	300.4	57,131	299.2	63,902	298.0
Sweatshirts .....	46,075	229.9	10,517	77.2	14,648	75.8	(D)	(D)	(D)	(D)
Other knit blouses and shirts .....	126,892	1,115.2	28,929	250.7	35,930	327.6	31,456	266.9	30,577	270.0
Sweaters, including coat, cardigan, pullover, and vest sweaters .....	41,363	652.4	11,141	191.5	12,160	193.1	7,915	126.6	10,147	141.2
Bottoms:										
Shorts .....	104,408	719.0	21,657	161.4	13,728	115.0	27,975	176.0	41,048	266.6
Skirts and divided skirts .....	76,711	1,116.7	18,224	274.6	21,461	317.9	18,187	251.8	18,839	272.4
Jeans .....	174,567	2,163.6	42,976	527.9	49,595	645.6	44,023	540.7	37,973	449.4
Slacks (except jeans) .....	172,905	2,167.8	38,035	504.0	50,711	639.0	41,301	502.1	42,858	522.7
Sweatpants .....	(D)	(D)	10,144	48.2	12,561	58.8	11,097	42.9	(D)	(D)
Underwear and nightwear:										
Brassieres, bra-lettes, and bandeaux .....	300,221	1,735.4	72,138	410.1	78,443	462.1	78,849	453.9	70,791	409.3
Total produced in Puerto Rico .....	32,719	(NA)	8,136	(NA)	7,654	(NA)	9,386	(NA)	7,543	(NA)
Girdles, corsets, and other foundation garments .....	47,088	226.1	10,219	52.1	12,287	50.2	8,395	45.6	16,187	78.2
Total produced in Puerto Rico .....	323	(NA)	50	(NA)	47	(NA)	124	(NA)	102	(NA)
Nightgowns, pajamas, and other nightwear .....	61,070	553.4	18,131	155.1	17,062	149.1	12,863	122.0	13,014	127.2
Other underwear, including camisoles, teddies, undershirts, and union suits .....	50,325	240.6	14,702	72.2	(D)	(D)	(D)	(D)	(D)	(D)
Panties .....	542,326	832.0	(D)	(D)	(D)	(D)	134,787	208.4	136,201	185.7
Robes and dressing gowns .....	17,369	164.7	5,340	54.8	4,901	46.5	3,406	32.7	3,722	30.7
Slips .....	7,788	41.4	2,079	10.3	1,855	9.5	1,979	11.4	1,875	10.2
Other garments:										
Bodysuits and bodyshirts .....	9,906	86.1	2,355	20.5	2,936	25.2	2,421	21.1	2,194	19.3
Jogging and warmup suits .....	8,623	74.2	1,742	16.7	1,920	19.5	1,819	14.9	3,142	23.1
Overalls, coveralls, and jumpsuits .....	8,752	111.6	2,354	32.0	2,416	33.3	1,665	20.1	2,317	26.2
Playsuits, rompers, halters, etc. ....	10,151	95.7	1,592	14.4	1,912	17.7	2,816	23.9	3,831	39.7
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Suits, including pant suits .....	8,354	306.8	2,067	70.8	2,140	81.3	2,319	80.6	1,828	74.1
Swimwear .....	51,706	805.5	12,790	153.8	6,722	91.8	13,965	251.6	18,229	308.3
Washable service apparel .....	34,371	278.0	8,268	65.6	8,741	68.9	8,523	70.5	8,839	73.0
Smocks and lab coats .....	5,808	(NA)	1,440	(NA)	1,396	(NA)	1,362	(NA)	1,610	(NA)
Uniform dresses .....	4,500	(NA)	938	(NA)	1,089	(NA)	1,149	(NA)	1,324	(NA)
Uniform pant sets .....	3,567	(NA)	1,013	(NA)	989	(NA)	811	(NA)	754	(NA)
All other garment types .....	2,545	(NA)	631	(NA)	642	(NA)	636	(NA)	636	(NA)

See footnotes at end of table.

Table 45. **Total Quantity of Production and Value of Shipments of Women's, Misses', Juniors', and Girls' Apparel: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1997</b>										
Dresses .....	188,132	4,540.8	42,401	1,010.2	48,988	1,156.4	45,619	1,133.9	51,124	1,240.3
Coats, jackets, and vests:										
Coats and capes .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Down and feather filled coats, jackets, and vests .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored jackets .....	6,728	208.0	1,932	57.6	1,928	62.1	1,456	42.6	1,412	45.7
Raincoats .....	364	20.2	105	5.3	79	5.3	90	4.8	90	4.8
Separate vests .....	3,044	54.0	625	11.5	734	14.2	771	13.1	914	15.2
Tailored suit-type jackets .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Tops:										
Woven blouses and shirts .....	183,309	1,816.2	45,245	434.2	43,900	453.8	49,263	457.0	44,901	471.2
Knit T-shirts and tank tops made for outerwear .....	236,598	1,148.3	58,598	274.1	55,905	284.4	58,572	302.5	63,523	287.3
Sweatshirts .....	62,791	234.5	(D)	(D)	21,060	82.9	13,222	53.7	(D)	(D)
Other knit blouses and shirts .....	116,530	1,054.5	31,674	277.7	29,163	284.7	29,139	252.2	26,554	239.9
Sweaters, including coat, cardigan, pullover, and vest sweaters .....	56,640	745.2	16,529	210.8	18,307	232.6	11,262	147.2	10,542	154.6
Bottoms:										
Shorts .....	113,782	770.4	22,283	145.5	18,050	122.8	31,889	225.2	41,560	276.9
Skirts and divided skirts .....	76,529	1,127.8	14,033	215.2	19,490	326.8	20,114	279.8	22,892	306.0
Jeans .....	168,444	2,221.4	41,799	543.5	48,224	637.0	42,783	603.4	35,638	437.5
Slacks (except jeans) .....	189,132	2,343.8	45,379	554.4	53,369	662.8	47,095	563.8	43,289	562.8
Sweatpants .....	50,938	208.6	(D)	(D)	14,836	69.3	14,116	46.1	(D)	(D)
Underwear and nightwear:										
Brassieres, bra-lettes, and bandeaux .....	282,838	1,582.7	69,147	384.1	69,775	389.1	74,574	415.9	69,342	393.6
Total produced in Puerto Rico .....	33,170	(NA)	9,107	(NA)	7,423	(NA)	8,043	(NA)	8,597	(NA)
Girdles, corsets, and other foundation garments .....	78,742	366.8	16,084	75.4	22,348	97.1	20,354	99.1	19,956	95.2
Total produced in Puerto Rico .....	1,646	(NA)	446	(NA)	641	(NA)	349	(NA)	210	(NA)
Nightgowns, pajamas, and other nightwear .....	57,484	487.4	14,216	136.1	14,677	127.9	12,759	100.0	15,832	123.4
Other underwear, including camisoles, teddies, undershirts, and union suits .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Panties .....	615,843	726.3	143,729	172.8	(D)	(D)	(D)	(D)	(D)	(D)
Robes and dressing gowns .....	20,581	216.7	5,498	68.0	5,687	62.2	4,021	44.7	5,375	41.8
Slips .....	8,334	47.1	2,032	11.1	1,815	11.0	1,998	11.1	2,489	13.9
Other garments:										
Bodysuits and bodyshirts .....	17,118	128.9	2,887	25.6	2,819	25.9	5,459	36.7	5,953	40.7
Jogging and warmup suits .....	12,845	91.4	3,004	22.2	4,172	35.4	2,842	17.8	2,827	16.0
Overalls, coveralls, and jumpsuits .....	4,429	58.6	1,215	15.1	1,407	19.9	946	12.9	861	10.7
Playsuits, rompers, halters, etc. ....	8,195	71.6	2,121	16.3	1,773	16.9	1,888	17.6	2,413	20.8
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Suits, including pant suits .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Swimwear .....	51,770	889.9	12,726	214.5	7,281	127.6	12,703	276.3	19,060	271.5
Washable service apparel .....	37,153	302.1	8,840	72.3	9,620	79.3	9,894	79.1	8,799	71.4
Smocks and lab coats .....	5,723	(NA)	1,471	(NA)	1,152	(NA)	1,597	(NA)	1,503	(NA)
Uniform dresses .....	4,443	(NA)	1,227	(NA)	1,120	(NA)	1,220	(NA)	876	(NA)
Uniform pant sets .....	2,428	(NA)	608	(NA)	369	(NA)	878	(NA)	573	(NA)
All other garment types .....	2,834	(NA)	693	(NA)	979	(NA)	532	(NA)	630	(NA)

D Withheld to avoid disclosing data for individual companies. NA Not available.

**Table 46. Quantity of Production and Value of Shipments of Women's, Misses', and Juniors' Apparel: 1998 and 1997**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>										
Dresses .....	156,491	4,217.9	31,799	872.8	36,978	1,071.2	41,931	1,088.1	45,783	1,185.8
Coats, jackets, and vests:										
Coats and capes .....	7,118	409.5	1,742	113.4	2,981	164.8	1,387	75.9	1,008	55.4
Down and feather filled coats, jackets, and vests .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored jackets .....	6,472	171.7	2,156	51.2	1,884	53.6	1,127	32.5	1,305	34.4
Raincoats .....	309	20.2	28	2.2	184	9.1	31	2.5	66	6.4
Separate vests .....	2,461	40.0	500	9.9	618	10.7	670	9.4	673	10.0
Tailored suit-type jackets .....	28,449	944.2	7,247	252.8	8,396	281.5	5,531	184.5	7,275	225.4
Tops:										
Woven blouses and shirts .....	132,633	1,370.6	29,799	308.9	31,861	336.1	35,669	352.6	35,304	373.0
Knit T-shirts and tank tops made for outerwear .....	179,960	1,015.3	44,265	250.3	39,787	256.9	44,709	256.6	51,199	251.5
Sweatshirts .....	34,260	186.6	6,801	63.1	11,129	61.9	6,670	35.1	9,660	26.5
Other knit blouses and shirts .....	92,411	915.5	20,427	205.1	25,038	258.7	23,848	226.5	23,098	225.2
Sweaters, including coat, cardigan, pullover, and vest sweaters .....	36,679	608.4	10,121	180.5	10,504	175.7	6,951	119.8	9,103	132.4
Bottoms:										
Shorts .....	76,549	581.5	14,145	127.9	10,330	91.4	21,908	148.1	30,166	214.1
Skirts and divided skirts .....	65,713	1,044.0	15,755	257.3	18,810	298.9	14,790	231.5	16,358	256.3
Jeans .....	148,599	1,940.0	37,111	481.6	41,278	569.1	37,108	478.5	33,102	410.8
Slacks (except jeans) .....	151,429	2,052.9	34,128	481.1	42,483	597.9	35,364	471.1	39,454	502.8
Sweatpants .....	32,130	141.7	6,114	34.2	9,482	48.5	8,022	34.6	8,512	24.4
Underwear and nightwear:										
Brassieres, bra-lettes, and bandeaux .....	300,221	1,735.4	72,138	410.1	78,443	462.1	78,849	453.9	70,791	409.3
Girdles, corsets, and other foundation garments .....	47,088	226.1	10,219	52.1	12,287	50.2	8,395	45.6	16,187	78.2
Nightgowns, pajamas, and other nightwear .....	40,063	403.3	11,281	115.0	10,026	107.1	9,005	88.1	9,751	93.1
Other underwear, including camisoles, teddies, undershirts, and union suits .....	46,384	233.0	13,662	70.3	11,526	55.2	12,307	57.1	8,889	50.4
Panties .....	407,644	731.7	103,146	199.3	105,856	194.8	93,962	178.6	104,680	159.0
Robes and dressing gowns .....	16,443	160.8	5,172	53.7	4,723	45.6	3,249	32.1	3,299	29.4
Slips .....	6,400	35.7	1,579	8.6	1,574	8.6	1,681	10.1	1,566	8.4
Other garments:										
Bodysuits and bodyshirts .....	8,141	68.8	1,945	16.5	2,495	20.9	1,996	17.0	1,705	14.4
Jogging and warmup suits .....	1,881	24.4	594	7.3	602	6.8	373	5.2	312	5.1
Overalls, coveralls, and jumpsuits .....	3,283	59.4	1,214	23.0	863	17.1	494	8.5	712	10.8
Playsuits, rompers, halters, etc. ....	5,962	59.7	832	9.5	1,307	12.2	1,742	15.7	2,081	22.3
Ski apparel .....	659	29.0	200	7.6	255	14.4	151	5.4	53	1.6
Suits, including pant suits .....	6,240	283.7	1,295	61.7	1,614	75.5	1,716	74.2	1,615	72.3
Swimwear .....	41,477	732.4	10,059	139.1	4,904	81.4	11,825	232.4	14,689	279.5
Washable service apparel .....	34,371	278.0	8,268	65.6	8,741	68.9	8,523	70.5	8,839	73.0

See footnotes at end of table.

**Table 46. Quantity of Production and Value of Shipments of Women's, Misses', and Juniors' Apparel: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1997</b>										
Dresses .....	149,898	4,104.8	31,891	894.8	38,726	1,035.3	37,452	1,052.0	41,829	1,122.7
Coats, jackets, and vests:										
Coats and capes .....	7,063	495.7	1,531	125.0	1,912	169.2	1,978	106.1	1,642	95.4
Down and feather filled coats, jackets, and vests ..	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored jackets .....	6,011	200.2	1,761	55.9	1,714	59.7	1,297	40.7	1,239	43.9
Raincoats .....	364	20.2	105	5.3	79	5.3	90	4.8	90	4.8
Separate vests .....	2,918	52.6	613	11.3	696	13.8	733	12.7	876	14.8
Tailored suit-type jackets .....	35,310	1,152.6	6,925	229.0	10,359	382.4	8,291	248.3	9,735	292.9
Tops:										
Woven blouses and shirts .....	155,122	1,606.7	37,839	376.9	37,331	400.2	41,961	404.5	37,991	425.1
Knit T-shirts and tank tops made for outerwear ...	182,517	961.9	45,912	232.8	43,245	230.3	44,867	253.8	48,493	245.0
Sweatshirts .....	55,318	202.0	15,697	49.3	18,415	71.8	11,718	47.5	9,488	33.4
Other knit blouses and shirts .....	92,386	917.9	25,471	242.6	22,798	245.3	22,806	219.9	21,311	210.1
Sweaters, including coat, cardigan, pullover, and vest sweaters .....	50,451	696.7	14,774	196.8	16,444	219.3	9,655	134.2	9,578	146.4
Bottoms:										
Shorts .....	87,944	652.9	16,664	119.7	14,528	105.6	26,306	198.0	30,446	229.6
Skirts and divided skirts .....	71,173	1,081.9	12,925	205.7	18,104	314.4	18,508	266.9	21,636	294.9
Jeans .....	149,882	2,070.9	37,753	510.6	43,574	597.4	37,114	556.9	31,441	406.0
Slacks (except jeans) .....	169,423	2,231.6	40,405	530.1	47,039	631.1	41,618	526.3	40,361	544.1
Sweatpants .....	42,562	178.6	11,373	41.2	11,840	58.3	12,140	39.7	7,209	39.4
Underwear and nightwear:										
Brassieres, bra-lettes, and bandeaux .....	282,838	1,582.7	69,147	384.1	69,775	389.1	74,574	415.9	69,342	393.6
Girdles, corsets, and other foundation garments .....	78,742	366.8	16,084	75.4	22,348	97.1	20,354	99.1	19,956	95.2
Nightgowns, pajamas, and other nightwear .....	38,179	376.7	9,107	103.8	9,566	96.7	9,541	83.8	9,965	92.4
Other underwear, including camisoles, teddies, undershirts, and union suits .....	43,381	236.6	10,783	58.1	11,658	63.6	11,901	63.5	9,039	51.4
Panties .....	508,099	644.0	114,333	147.7	130,011	150.4	133,173	183.3	130,582	162.6
Robes and dressing gowns .....	19,738	212.7	5,310	67.0	5,380	60.6	3,819	43.8	5,229	41.3
Slips .....	6,630	39.7	1,305	8.9	1,496	9.5	1,685	9.5	2,144	11.8
Other garments:										
Bodysuits and bodyshirts .....	15,280	107.7	2,466	20.9	2,346	20.4	5,001	31.4	5,467	35.0
Jogging and warmup suits .....	1,668	23.6	323	5.2	673	9.6	458	5.6	214	3.2
Overalls, coveralls, and jumpsuits .....	1,954	34.5	623	9.3	652	12.4	385	7.4	294	5.4
Playsuits, rompers, halters, etc. ....	4,775	39.5	1,350	11.5	1,184	9.1	1,217	9.9	1,024	9.0
Ski apparel .....	818	41.6	245	12.9	429	23.1	94	3.7	50	1.9
Suits, including pant suits .....	8,680	346.9	2,149	76.5	2,462	93.0	1,784	76.6	2,285	100.8
Swimwear .....	41,482	797.4	9,791	192.9	5,713	116.0	10,807	256.9	15,171	231.6
Washable service apparel .....	37,153	302.1	8,840	72.3	9,620	79.3	9,894	79.1	8,799	71.4

D Withheld to avoid disclosing data for individual companies.



**Table 47. Quantity of Production and Value of Shipments of Little Girls' Apparel: 1998 and 1997**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>										
Dresses .....	42,189	443.0	10,062	112.4	10,931	119.5	9,608	90.0	11,588	121.1
Coats, jackets, and vests:										
Coats and capes .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Down and feather filled coats, jackets, and vests .....	-	-	-	-	-	-	-	-	-	-
Nontailored jackets .....	1,121	15.2	273	3.2	498	7.5	211	2.9	139	1.6
Raincoats .....	-	-	-	-	-	-	-	-	-	-
Separate vests .....	160	1.9	26	0.2	39	0.5	24	0.3	71	0.9
Tailored suit-type jackets .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Tops:										
Woven blouses and shirts .....	27,568	199.6	6,589	50.3	6,434	50.0	8,230	55.3	6,315	44.0
Knit T-shirts and tank tops made for outerwear .....	50,484	173.3	14,034	40.7	11,325	43.5	12,422	42.6	12,703	46.5
Sweatshirts .....	11,815	43.3	3,716	14.1	3,519	13.9	(D)	(D)	(D)	(D)
Other knit blouses and shirts .....	34,481	199.7	8,502	45.6	10,892	68.9	7,608	40.4	7,479	44.8
Sweaters, including coat, cardigan, pullover, and vest sweaters .....	4,684	44.0	1,020	11.0	1,656	17.4	964	6.8	1,044	8.8
Bottoms:										
Shorts .....	27,859	137.5	7,512	33.5	3,398	23.6	6,067	27.9	10,882	52.5
Skirts and divided skirts .....	10,998	72.7	2,469	17.3	2,651	19.0	3,397	20.3	2,481	16.1
Jeans .....	25,968	223.6	5,865	46.3	8,317	76.5	6,915	62.2	4,871	38.6
Slacks (except jeans) .....	21,476	114.9	3,907	22.9	8,228	41.1	5,937	31.0	3,404	19.9
Sweatpants .....	(D)	(D)	4,030	14.0	3,079	10.3	3,075	8.3	(D)	(D)
Underwear and nightwear:										
Brassieres, bra-lettes, and bandeaux .....	-	-	-	-	-	-	-	-	-	-
Girdles, corsets, and other foundation garments .....	-	-	-	-	-	-	-	-	-	-
Nightgowns, pajamas, and other nightwear .....	21,007	150.1	6,850	40.1	7,036	42.0	3,858	33.9	3,263	34.1
Other underwear, including camisoles, teddies, undershirts, and union suits .....	3,941	7.6	1,040	1.9	(D)	(D)	(D)	(D)	(D)	(D)
Panties .....	134,682	100.3	(D)	(D)	(D)	(D)	40,825	29.8	31,521	26.7
Robes and dressing gowns .....	926	3.9	168	1.1	178	0.9	157	0.6	423	1.3
Slips .....	1,388	5.7	500	1.7	281	0.9	298	1.3	309	1.8
Other garments:										
Bodysuits and bodyshirts .....	1,765	17.3	410	4.0	441	4.3	425	4.1	489	4.9
Jogging and warmup suits .....	6,742	49.8	1,148	9.4	1,318	12.7	1,446	9.7	2,830	18.0
Overalls, coveralls, and jumpsuits .....	5,469	52.2	1,140	9.0	1,553	16.2	1,171	11.6	1,605	15.4
Playsuits, rompers, halters, etc. ....	4,189	36.0	760	4.9	605	5.5	1,074	8.2	1,750	17.4
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Suits, including pant suits .....	2,114	23.1	772	9.1	526	5.8	603	6.4	213	1.8
Swimwear .....	10,229	73.1	2,731	14.7	1,818	10.4	2,140	19.2	3,540	28.8
Washable service apparel .....	-	-	-	-	-	-	-	-	-	-

See footnotes at end of table.

Table 47. **Quantity of Production and Value of Shipments of Little Girls' Apparel: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1997</b>										
Dresses .....	38,234	436.0	10,510	115.4	10,262	121.1	8,167	81.9	9,295	117.6
Coats, jackets, and vests:										
Coats and capes .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Down and feather filled coats, jackets, and vests .....	-	-	-	-	-	-	-	-	-	-
Nontailored jackets .....	717	7.8	171	1.7	214	2.4	159	1.9	173	1.8
Raincoats .....	-	-	-	-	-	-	-	-	-	-
Separate vests .....	126	1.4	12	0.2	38	0.4	38	0.4	38	0.4
Tailored suit-type jackets .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Tops:										
Woven blouses and shirts .....	28,187	209.5	7,406	57.3	6,569	53.6	7,302	52.5	6,910	46.1
Knit T-shirts and tank tops made for outerwear .....	54,081	186.4	12,686	41.3	12,660	54.1	13,705	48.7	15,030	42.3
Sweatshirts .....	7,473	32.5	(D)	(D)	2,645	11.1	1,504	6.2	(D)	(D)
Other knit blouses and shirts .....	24,144	136.6	6,203	35.1	6,365	39.4	6,333	32.3	5,243	29.8
Sweaters, including coat, cardigan, pullover, and vest sweaters .....	6,189	48.5	1,755	14.0	1,863	13.3	1,607	13.0	964	8.2
Bottoms:										
Shorts .....	25,838	117.5	5,619	25.8	3,522	17.2	5,583	27.2	11,114	47.3
Skirts and divided skirts .....	5,356	45.9	1,108	9.5	1,386	12.4	1,606	12.9	1,256	11.1
Jeans .....	18,562	150.5	4,046	32.9	4,650	39.6	5,669	46.5	4,197	31.5
Slacks (except jeans) .....	19,709	112.2	4,974	24.3	6,330	31.7	5,477	37.5	2,928	18.7
Sweatpants .....	8,376	30.0	(D)	(D)	2,996	11.0	1,976	6.4	(D)	(D)
Underwear and nightwear:										
Brassieres, bra-lettes, and bandeaux .....	-	-	-	-	-	-	-	-	-	-
Girdles, corsets, and other foundation garments .....	-	-	-	-	-	-	-	-	-	-
Nightgowns, pajamas, and other nightwear .....	19,305	110.7	5,109	32.3	5,111	31.2	3,218	16.2	5,867	31.0
Other underwear, including camisoles, teddies, undershirts, and union suits .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Panties .....	107,744	82.3	29,396	25.1	(D)	(D)	(D)	(D)	(D)	(D)
Robes and dressing gowns .....	843	4.0	188	1.0	307	1.6	202	0.9	146	0.5
Slips .....	1,704	7.4	727	2.2	319	1.5	313	1.6	345	2.1
Other garments:										
Bodysuits and bodyshirts .....	1,838	21.2	421	4.7	473	5.5	458	5.3	486	5.7
Jogging and warmup suits .....	11,177	67.8	2,681	17.0	3,499	25.8	2,384	12.2	2,613	12.8
Overalls, coveralls, and jumpsuits .....	2,475	24.1	592	5.8	755	7.5	561	5.5	567	5.3
Playsuits, rompers, halters, etc. ....	3,420	32.1	771	4.8	589	7.8	671	7.7	1,389	11.8
Ski apparel .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Suits, including pant suits .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Swimwear .....	10,288	92.5	2,935	21.6	1,568	11.6	1,896	19.4	3,889	39.9
Washable service apparel .....	-	-	-	-	-	-	-	-	-	-

- Represents zero. D Withheld to avoid disclosing data for individual companies.

**Table 48. Quantity of Production of Apparel by Type of Fabrics: 1998**

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>TOTAL</b>							
Men's and boys' garments:							
Suits	8,885	(D)	4,172	1,242	2,320	97	(D)
Coats, jackets, and vests:							
Down and feather filled coats, jackets, and vests	(D)	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored)	(D)	791	5,991	2,441	2,313	1,078	(D)
Heavy nontailored coats and jackets	13,207	2,571	8,879	(NA)	(D)	(D)	1,316
Lightweight nontailored coats and jackets	17,701	6,060	9,298	(NA)	(D)	(D)	1,958
Overcoats and top coats	1,279	(D)	720	(NA)	(D)	(D)	189
Raincoats	(D)	(D)	456	(NA)	(NA)	(D)	634
Separate vests	(D)	(D)	2,269	(NA)	(D)	(D)	327
Work jackets	6,272	(D)	(D)	(NA)	(NA)	(D)	315
Tops:							
Woven dress and business shirts	(D)	25,203	20,865	(NA)	(NA)	(D)	2,400
Woven sport shirts	24,338	17,125	4,880	(NA)	(D)	10	(D)
Work shirts	55,272	8,991	39,253	(NA)	(NA)	-	7,028
Knit T-shirts and tank tops made for outerwear	841,371	723,533	60,645	(NA)	-	(D)	(D)
Sweatshirts	155,103	104,694	45,131	(NA)	-	-	5,278
Other knit shirts	115,970	87,171	21,320	(NA)	-	(D)	(D)
Sweaters	12,885	4,807	5,826	(NA)	435	(D)	(D)
Bottoms:							
Dress and sport trousers	117,421	69,215	33,867	14,349	(D)	1,140	(D)
Jeans	219,193	214,852	(D)	-	-	-	(D)
Jean-cut casual slacks	32,899	24,420	1,674	(NA)	(NA)	(D)	(D)
Shorts	86,941	62,649	13,526	(NA)	(D)	(D)	10,751
Sweatpants	(D)	23,126	(D)	(NA)	(NA)	(D)	2,710
Workpants	46,904	4,820	37,483	(NA)	(NA)	-	4,601
Underwear and nightwear:							
Pajamas and nightwear	15,138	3,073	11,115	(NA)	(NA)	13	937
Robes	(D)	(D)	2,744	(NA)	(NA)	-	445
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts	1,007,136	969,020	33,724	(NA)	(NA)	61	4,331
Other garments:							
Coveralls, overalls, and jumpsuits	19,270	9,287	7,829	(NA)	-	-	2,154
Jogging and warmup suits	(D)	198	8,424	(NA)	(NA)	-	(D)
Playsuits	1,472	(D)	(D)	(NA)	-	(D)	(D)
Ski apparel	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear	1,444	211	(D)	(NA)	(NA)	-	(D)
Team sports uniforms	13,845	432	8,747	(NA)	(D)	-	(D)
Washable service apparel	31,751	12,030	7,773	(NA)	(NA)	-	11,948
Women's and girls' garments:							
Dresses	198,680	47,302	97,039	(NA)	1,489	5,252	47,598
Coats, jackets, and vests:							
Coats and capes	(D)	427	2,901	(D)	3,226	(D)	829
Down and feather filled coats, jackets, and vests	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets	7,593	3,556	2,649	(NA)	(D)	(D)	1,191
Raincoats	309	(D)	(D)	(NA)	(NA)	-	(D)
Separate vests	2,621	780	1,077	(NA)	(D)	(D)	666
Tailored suit-type jackets	(D)	882	15,837	1,155	5,775	1,171	(D)
Tops:							
Woven blouses and shirts	160,201	64,059	66,945	(NA)	188	3,972	25,037
Knit T-shirts and tank tops made for outerwear	230,444	141,868	36,956	(NA)	(NA)	2,999	48,621
Sweatshirts	46,075	(D)	26,214	(NA)	(NA)	-	(D)
Other knit blouses and shirts	126,892	61,393	31,929	(NA)	(D)	4,958	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters	41,363	8,570	23,469	(NA)	577	92	8,655
Bottoms:							
Shorts	104,408	62,599	31,891	(NA)	(NA)	(D)	(D)
Skirts and divided skirts	76,711	11,346	37,914	3,572	5,171	2,695	19,585
Jeans	174,567	161,935	(D)	(D)	-	-	(D)
Slacks (except jeans)	172,905	66,068	70,853	10,445	6,013	1,970	28,001
Sweatpants	(D)	17,153	25,531	(NA)	(NA)	-	(D)
Underwear and nightwear:							
Brassieres, bra-lettes, and bandeaux	300,221	23,182	275,205	(NA)	(NA)	-	1,834
Girdles, corsets, and other foundation garments	47,088	5,230	39,825	(NA)	(NA)	-	2,033
Nightgowns, pajamas, and other nightwear	61,070	12,029	39,697	(NA)	(NA)	(D)	(D)
Panties	542,326	392,901	139,363	(NA)	(NA)	-	10,062
Robes and dressing gowns	17,369	12,690	3,475	(NA)	(NA)	-	1,204
All other underwear, including slips, camisoles, teddies, undershirts, and union suits	58,113	14,407	39,572	(NA)	(NA)	(D)	(D)
Other garments:							
Bodysuits and bodyshirts	9,906	(D)	(D)	(NA)	(NA)	-	2,876
Jogging and warmup suits	8,623	391	6,308	(NA)	(NA)	-	1,924
Overalls, coveralls, and jumpsuits	8,752	6,409	1,738	(NA)	-	-	605
Playsuits, rompers, halters, etc.	10,151	4,873	4,418	(NA)	-	(D)	(D)
Ski apparel	(D)	-	614	(NA)	(NA)	-	(D)
Suits, including pant suits	8,354	107	2,261	743	1,165	(D)	(D)
Swimwear	51,706	6,521	36,971	(NA)	(NA)	-	8,214
Washable service apparel	34,371	(D)	10,602	(NA)	(NA)	-	(D)
Infants' apparel	159,157	115,975	39,724	(NA)	(NA)	(D)	(D)

See footnotes at end of table.

Table 48. **Quantity of Production of Apparel by Type of Fabrics: 1998**—Con.

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>FOURTH QUARTER</b>							
<b>Men's and boys' garments:</b>							
Suits .....	1,776	(D)	813	240	471	22	(D)
<b>Coats, jackets, and vests:</b>							
Down and feather filled coats, jackets, and vests .....	(D)	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored) .....	(D)	146	1,133	473	489	188	(D)
Heavy nontailored coats and jackets .....	3,352	628	2,281	(NA)	107	(D)	(D)
Lightweight nontailored coats and jackets .....	5,217	2,262	2,297	(NA)	(D)	(D)	556
Overcoats and top coats .....	367	(D)	214	(NA)	(D)	(D)	51
Raincoats .....	(D)	-	(D)	(NA)	(NA)	(D)	156
Separate vests .....	(D)	5	576	(NA)	(D)	(D)	84
Work jackets .....	1,933	(D)	(D)	(NA)	(NA)	(D)	78
<b>Tops:</b>							
Woven dress and business shirts .....	(D)	5,375	3,971	(NA)	(NA)	(D)	520
Woven sport shirts .....	5,237	3,681	1,060	(NA)	-	(D)	(D)
Work shirts .....	15,547	2,555	11,001	(NA)	(NA)	-	1,991
Knit T-shirts and tank tops made for outerwear .....	206,613	176,901	15,986	(NA)	-	-	13,726
Sweatshirts .....	32,581	20,781	10,793	(NA)	-	-	1,007
Other knit shirts .....	23,561	17,053	4,970	(NA)	-	(D)	(D)
Sweaters .....	2,637	1,169	987	(NA)	(D)	(D)	377
<b>Bottoms:</b>							
Dress and sport trousers .....	29,759	18,193	8,245	3,288	1,050	239	2,032
Jeans .....	61,124	(D)	(D)	(NA)	(NA)	-	1,169
Jeans-cut casual slacks .....	7,837	5,653	617	(NA)	(NA)	(D)	(D)
Shorts .....	18,094	12,411	3,592	(NA)	(D)	-	(D)
Sweatpants .....	10,232	4,298	5,368	(NA)	(NA)	-	566
Workpants .....	12,496	1,367	9,902	(NA)	(NA)	-	1,227
<b>Underwear and nightwear:</b>							
Pajamas and nightwear .....	4,458	985	3,153	(NA)	(NA)	(D)	(D)
Robes .....	(D)	(D)	(D)	(NA)	(NA)	-	(D)
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts .....	224,499	215,931	7,551	(NA)	(NA)	-	1,017
<b>Other garments:</b>							
Coveralls, overalls, and jumpsuits .....	4,714	2,344	1,817	(NA)	-	-	553
Jogging and warmup suits .....	(D)	(D)	1,819	(NA)	(NA)	-	297
Playsuits .....	331	(D)	(D)	(NA)	-	-	39
Ski apparel .....	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear .....	351	(D)	108	(NA)	(NA)	-	(D)
Team sports uniforms .....	3,514	(D)	2,223	(NA)	(D)	-	1,173
Washable service apparel .....	7,472	2,990	1,664	(NA)	(NA)	-	2,818
<b>Women's and girls' garments:</b>							
Dresses .....	41,861	11,127	19,352	(NA)	244	1,177	9,961
<b>Coats, jackets, and vests:</b>							
Coats and capes .....	(D)	253	541	94	858	6	(D)
Down and feather filled coats, jackets, and vests .....	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets .....	2,429	1,322	677	(NA)	(D)	(D)	386
Raincoats .....	28	-	(D)	(NA)	(NA)	-	(D)
Separate vests .....	526	219	158	(NA)	(D)	(D)	136
Tailored suit-type jackets .....	(D)	227	4,259	223	1,223	328	(D)
<b>Tops:</b>							
Woven blouses and shirts .....	36,388	15,181	14,418	(NA)	(D)	1,022	(D)
Knit T-shirts and tank tops made for outerwear .....	58,299	36,313	9,044	(NA)	(NA)	756	12,186
Sweatshirts .....	10,517	3,923	6,465	(NA)	(NA)	-	129
Other knit blouses and shirts .....	28,929	13,874	7,353	(NA)	(D)	1,100	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters ..	11,141	2,413	6,388	(NA)	136	27	2,177
<b>Bottoms:</b>							
Shorts .....	21,657	12,968	6,777	(NA)	-	53	1,859
Skirts and divided skirts .....	18,224	3,392	8,212	711	1,549	718	4,353
Jeans .....	42,976	39,988	(D)	(D)	-	-	(D)
Slacks (except jeans) .....	38,035	15,793	15,056	1,267	450	367	6,369
Sweatpants .....	10,144	3,532	6,326	(NA)	(NA)	-	286
<b>Underwear and nightwear:</b>							
Brassieres, bra-lettes, and bandeaux .....	72,138	5,161	66,545	(NA)	(NA)	-	432
Girdles, corsets, and other foundation garments .....	10,219	847	8,905	(NA)	(NA)	-	467
Nightgowns, pajamas, and other nightwear .....	18,131	2,918	12,703	(NA)	(NA)	(D)	(D)
Panties .....	(D)	90,966	38,111	(NA)	(NA)	-	(D)
Robes and dressing gowns .....	5,340	4,274	771	(NA)	(NA)	-	295
All other underwear, including slippers, camisoles, teddies, undershirts, and union suits .....	16,781	4,372	11,313	(NA)	(NA)	(D)	(D)
<b>Other garments:</b>							
Bodysuits and bodyshirts .....	2,355	(D)	(D)	(NA)	(NA)	-	682
Jogging and warmup suits .....	1,742	169	1,119	(NA)	(NA)	-	454
Overalls, coveralls, and jumpsuits .....	2,354	1,753	429	(NA)	-	-	172
Playsuits, rompers, halters, etc. .....	1,592	751	726	(NA)	-	(D)	(D)
Ski apparel .....	(D)	-	(D)	(NA)	(NA)	-	(D)
Suits, including pant suits .....	2,067	(D)	612	115	210	(D)	1,157
Swimwear .....	12,790	891	9,609	(NA)	(NA)	-	2,290
Washable service apparel .....	8,268	(D)	2,385	(NA)	(NA)	-	(D)
Infants' apparel .....	51,348	37,273	12,973	(NA)	(NA)	(D)	(D)

See footnotes at end of table.

Table 48. **Quantity of Production of Apparel by Type of Fabrics: 1998**—Con.

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>THIRD QUARTER</b>							
<b>Men's and boys' garments:</b>							
Suits	2,133	(D)	1,006	291	615	21	(D)
<b>Coats, jackets, and vests:</b>							
Down and feather filled coats, jackets, and vests	(D)	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored)	(D)	116	1,728	690	836	279	(D)
Heavy nontailored coats and jackets	3,574	1,019	2,126	(NA)	(D)	(D)	330
Lightweight nontailored coats and jackets	4,925	1,659	2,617	(NA)	(D)	(D)	555
Overcoats and top coats	355	(D)	175	(NA)	104	(D)	50
Raincoats	(D)	(D)	119	(NA)	(NA)	(D)	164
Separate vests	(D)	8	495	(NA)	6	(D)	83
Work jackets	1,751	(D)	(D)	(NA)	(NA)	(D)	73
<b>Tops:</b>							
Woven dress and business shirts	(D)	6,382	4,483	(NA)	(NA)	(D)	574
Woven sport shirts	6,428	4,528	1,326	(NA)	-	(D)	(D)
Work shirts	13,880	2,916	9,199	(NA)	(NA)	-	1,765
Knit T-shirts and tank tops made for outerwear	212,765	180,835	17,303	(NA)	-	-	14,627
Sweatshirts	44,738	27,784	15,365	(NA)	-	-	1,589
Other knit shirts	31,004	22,915	6,084	(NA)	-	(D)	(D)
Sweaters	4,085	1,505	1,866	(NA)	123	(D)	(D)
<b>Bottoms:</b>							
Dress and sport trousers	32,911	19,037	9,828	4,346	(D)	317	(D)
Jeans	61,177	(D)	(D)	(NA)	(NA)	-	1,171
Jeans-cut casual slacks	8,944	6,477	731	(NA)	(NA)	(D)	(D)
Shorts	12,339	7,029	3,219	(NA)	(D)	-	(D)
Sweatpants	13,220	4,749	7,765	(NA)	(NA)	-	706
Workpants	11,433	1,377	8,935	(NA)	(NA)	-	1,121
<b>Underwear and nightwear:</b>							
Pajamas and nightwear	4,339	620	3,441	(NA)	(NA)	(D)	(D)
Robes	(D)	312	(D)	(NA)	(NA)	-	148
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts	268,140	258,013	9,053	(NA)	(NA)	12	1,062
<b>Other garments:</b>							
Coveralls, overalls, and jumpsuits	6,518	3,564	2,175	(NA)	-	-	779
Jogging and warmup suits	(D)	45	2,207	(NA)	(NA)	-	(D)
Playsuits	395	(D)	(D)	(NA)	-	-	46
Ski apparel	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear	242	9	(D)	(NA)	(NA)	-	(D)
Team sports uniforms	2,749	(D)	1,690	(NA)	(D)	-	927
Washable service apparel	8,222	(D)	1,964	(NA)	(NA)	-	(D)
<b>Women's and girls' garments:</b>							
Dresses	47,909	12,777	22,130	(NA)	498	1,130	11,374
<b>Coats, jackets, and vests:</b>							
Coats and capes	(D)	116	1,788	(D)	967	9	305
Down and feather filled coats, jackets, and vests	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets	2,382	1,320	675	(NA)	(D)	(D)	336
Raincoats	184	-	(D)	(NA)	(NA)	-	(D)
Separate vests	657	187	271	(NA)	(D)	(D)	163
Tailored suit-type jackets	(D)	218	3,574	285	2,868	333	(D)
<b>Tops:</b>							
Woven blouses and shirts	38,295	15,252	15,749	(NA)	38	1,198	6,058
Knit T-shirts and tank tops made for outerwear	51,112	30,802	8,903	(NA)	(NA)	802	10,605
Sweatshirts	14,648	7,021	(D)	(NA)	(NA)	-	(D)
Other knit blouses and shirts	35,930	18,144	8,494	(NA)	(D)	1,472	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters	12,160	2,498	7,037	(NA)	150	(D)	(D)
<b>Bottoms:</b>							
Shorts	13,728	6,994	4,894	(NA)	-	(D)	(D)
Skirts and divided skirts	21,461	2,619	10,643	829	2,181	745	5,273
Jeans	49,595	45,952	(D)	(D)	-	-	(D)
Slacks (except jeans)	50,711	19,029	20,522	3,439	2,540	558	8,062
Sweatpants	12,561	(D)	6,813	(NA)	(NA)	-	(D)
<b>Underwear and nightwear:</b>							
Brassieres, bra-lettes, and bandeaux	78,443	6,769	71,204	(NA)	(NA)	-	470
Girdles, corsets, and other foundation garments	12,287	966	10,757	(NA)	(NA)	-	564
Nightgowns, pajamas, and other nightwear	17,062	3,038	11,617	(NA)	(NA)	(D)	(D)
Panties	(D)	100,691	36,443	(NA)	(NA)	-	(D)
Robes and dressing gowns	4,901	3,667	953	(NA)	(NA)	-	281
All other underwear, including slippers, camisoles, teddies, undershirts, and union suits	(D)	3,365	10,088	(NA)	(NA)	(D)	982
<b>Other garments:</b>							
Bodysuits and bodyshirts	2,936	(D)	(D)	(NA)	(NA)	-	807
Jogging and warmup suits	1,920	63	1,359	(NA)	(NA)	-	498
Overalls, coveralls, and jumpsuits	2,416	1,797	455	(NA)	-	-	164
Playsuits, rompers, halters, etc.	1,912	964	752	(NA)	-	(D)	(D)
Ski apparel	(D)	-	238	(NA)	(NA)	-	(D)
Suits, including pant suits	2,140	(D)	536	140	338	(D)	1,195
Swimwear	6,722	512	4,896	(NA)	(NA)	-	1,314
Washable service apparel	8,741	(D)	2,613	(NA)	(NA)	-	(D)
Infants' apparel	48,394	36,563	10,807	(NA)	(NA)	(D)	(D)

See footnotes at end of table.

Table 48. **Quantity of Production of Apparel by Type of Fabrics: 1998**—Con.

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>SECOND QUARTER</b>							
Men's and boys' garments:							
Suits	2,237	(D)	1,060	292	589	27	(D)
Coats, jackets, and vests:							
Down and feather filled coats, jackets, and vests	(D)	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored)	(D)	199	1,253	519	449	298	(D)
Heavy nontailored coats and jackets	3,229	592	2,199	(NA)	83	(D)	(D)
Lightweight nontailored coats and jackets	3,966	1,105	2,298	(NA)	(D)	(D)	463
Overcoats and top coats	271	(D)	161	(NA)	20	(D)	43
Raincoats	(D)	(D)	115	(NA)	(NA)	(D)	158
Separate vests	(D)	(D)	318	(NA)	3	(D)	74
Work jackets	1,572	(D)	(D)	(NA)	(NA)	(D)	99
Tops:							
Woven dress and business shirts	(D)	6,122	6,023	(NA)	(NA)	(D)	634
Woven sport shirts	6,377	4,416	1,309	(NA)	-	(D)	(D)
Work shirts	13,028	1,889	9,489	(NA)	(NA)	-	1,650
Knit T-shirts and tank tops made for outerwear	222,431	194,078	13,317	(NA)	-	-	15,036
Sweatshirts	38,970	26,437	11,198	(NA)	-	-	1,335
Other knit shirts	32,417	24,425	5,926	(NA)	-	(D)	(D)
Sweaters	3,407	1,093	1,748	(NA)	(D)	(D)	446
Bottoms:							
Dress and sport trousers	27,864	16,646	7,608	3,261	1,071	315	2,224
Jeans	51,787	50,742	(D)	(NA)	(NA)	-	(D)
Jeans-cut casual slacks	9,286	7,125	192	(NA)	(NA)	(D)	(D)
Shorts	25,263	18,914	3,387	(NA)	-	-	2,962
Sweatpants	13,868	6,733	6,359	(NA)	(NA)	-	776
Workpants	11,489	1,192	9,169	(NA)	(NA)	-	1,128
Underwear and nightwear:							
Pajamas and nightwear	3,690	786	2,700	(NA)	(NA)	(D)	(D)
Robes	(D)	141	(D)	(NA)	(NA)	-	72
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts	216,640	203,719	11,788	(NA)	(NA)	47	1,086
Other garments:							
Coveralls, overalls, and jumpsuits	3,641	1,492	1,739	(NA)	-	-	410
Jogging and warmup suits	(D)	(D)	2,221	(NA)	(NA)	-	411
Playsuits	275	(D)	(D)	(NA)	-	(D)	33
Ski apparel	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear	350	28	149	(NA)	(NA)	-	173
Team sports uniforms	3,178	(D)	2,015	(NA)	-	-	(D)
Washable service apparel	8,077	(D)	2,022	(NA)	(NA)	-	(D)
Women's and girls' garments:							
Dresses	51,539	11,311	26,270	(NA)	380	1,113	12,465
Coats, jackets, and vests:							
Coats and capes	(D)	38	248	132	914	12	(D)
Down and feather filled coats, jackets, and vests	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets	1,338	517	552	(NA)	(D)	(D)	225
Raincoats	31	-	(D)	(NA)	(NA)	-	(D)
Separate vests	694	(D)	330	(NA)	(D)	(D)	174
Tailored suit-type jackets	(D)	164	3,289	347	946	198	(D)
Tops:							
Woven blouses and shirts	43,899	17,108	19,042	(NA)	92	897	6,760
Knit T-shirts and tank tops made for outerwear	57,131	34,369	10,014	(NA)	(NA)	672	12,076
Sweatshirts	(D)	3,086	(D)	(NA)	(NA)	-	122
Other knit blouses and shirts	31,456	14,837	8,016	(NA)	(D)	1,192	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters	7,915	1,656	4,370	(NA)	171	(D)	(D)
Bottoms:							
Shorts	27,975	17,063	8,277	(NA)	-	147	2,488
Skirts and divided skirts	18,187	2,588	9,056	1,112	793	762	4,988
Jeans	44,023	40,806	(D)	(D)	-	-	(D)
Slacks (except jeans)	41,301	15,394	17,145	2,982	1,604	660	6,498
Sweatpants	11,097	(D)	(D)	(NA)	(NA)	-	343
Underwear and nightwear:							
Brassieres, bra-lettes, and bandeaux	78,849	6,155	72,214	(NA)	(NA)	-	480
Girdles, corsets, and other foundation garments	8,395	1,037	6,865	(NA)	(NA)	-	493
Nightgowns, pajamas, and other nightwear	12,863	2,818	7,913	(NA)	(NA)	(D)	(D)
Panties	134,787	98,074	34,236	(NA)	(NA)	-	2,477
Robes and dressing gowns	3,406	2,346	842	(NA)	(NA)	-	218
All other underwear, including slips, camisoles, teddies, undershirts, and union suits	(D)	2,903	11,085	(NA)	(NA)	(D)	1,028
Other garments:							
Bodysuits and bodyshirts	2,421	(D)	(D)	(NA)	(NA)	-	698
Jogging and warmup suits	1,819	69	1,349	(NA)	(NA)	-	401
Overalls, coveralls, and jumpsuits	1,665	1,170	382	(NA)	-	-	113
Playsuits, rompers, halters, etc.	2,816	1,284	1,217	(NA)	-	(D)	(D)
Ski apparel	(D)	-	142	(NA)	(NA)	-	(D)
Suits, including pant suits	2,319	32	693	225	304	(D)	(D)
Swimwear	13,965	2,160	9,887	(NA)	(NA)	-	1,918
Washable service apparel	8,523	(D)	2,695	(NA)	(NA)	-	(D)
Infants' apparel	34,202	25,973	7,443	(NA)	(NA)	(D)	(D)

See footnotes at end of table.

Table 48. **Quantity of Production of Apparel by Type of Fabrics: 1998**—Con.

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>FIRST QUARTER</b>							
Men's and boys' garments:							
Suits	2,739	(D)	1,293	419	645	27	(D)
Coats, jackets, and vests:							
Down and feather filled coats, jackets, and vests	(D)	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored)	(D)	330	1,877	759	539	313	(D)
Heavy nontailored coats and jackets	3,052	332	2,273	(NA)	95	(D)	(D)
Lightweight nontailored coats and jackets	3,593	1,034	2,086	(NA)	(D)	(D)	384
Overcoats and top coats	286	(D)	170	(NA)	19	(D)	45
Raincoats	(D)	(D)	(D)	(NA)	(NA)	(D)	156
Separate vests	(D)	7	880	(NA)	4	(D)	86
Work jackets	1,016	(D)	(D)	(NA)	(NA)	(D)	65
Tops:							
Woven dress and business shirts	(D)	7,324	6,388	(NA)	(NA)	(D)	672
Woven sport shirts	6,296	4,500	1,185	(NA)	(D)	-	(D)
Work shirts	12,817	1,631	9,564	(NA)	(NA)	-	1,622
Knit T-shirts and tank tops made for outerwear	199,562	171,719	14,039	(NA)	-	(D)	(D)
Sweatshirts	38,814	29,692	7,775	(NA)	-	-	1,347
Other knit shirts	28,988	22,778	4,340	(NA)	-	(D)	(D)
Sweaters	2,756	1,040	1,225	(NA)	(D)	(D)	397
Bottoms:							
Dress and sport trousers	26,887	15,339	8,186	3,454	975	269	2,118
Jeans	45,105	(D)	(D)	(NA)	(NA)	-	916
Jeans-cut casual slacks	6,832	5,165	134	(NA)	(NA)	(D)	(D)
Shorts	31,245	24,295	3,328	(NA)	-	(D)	(D)
Sweatpants	(D)	7,346	(D)	(NA)	(NA)	-	662
Workpants	11,486	884	9,477	(NA)	(NA)	-	1,125
Underwear and nightwear:							
Pajamas and nightwear	2,651	682	1,821	(NA)	(NA)	-	148
Robes	(D)	100	255	(NA)	(NA)	-	(D)
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts	297,857	291,357	5,332	(NA)	(NA)	2	1,166
Other garments:							
Coveralls, overalls, and jumpsuits	4,397	1,887	2,098	(NA)	-	-	412
Jogging and warmup suits	(D)	(D)	2,177	(NA)	(NA)	-	244
Playsuits	471	(D)	(D)	(NA)	-	-	(D)
Ski apparel	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear	501	(D)	159	(NA)	(NA)	-	(D)
Team sports uniforms	4,404	144	2,819	(NA)	-	-	1,441
Washable service apparel	7,980	(D)	2,123	(NA)	(NA)	-	(D)
Women's and girls' garments:							
Dresses	57,371	12,087	29,287	(NA)	367	1,832	13,798
Coats, jackets, and vests:							
Coats and capes	(D)	20	324	261	487	(D)	160
Down and feather filled coats, jackets, and vests	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets	1,444	397	745	(NA)	(D)	(D)	244
Raincoats	66	(D)	(D)	(NA)	(NA)	-	(D)
Separate vests	744	(D)	318	(NA)	(D)	(D)	193
Tailored suit-type jackets	(D)	273	4,715	300	738	312	(D)
Tops:							
Woven blouses and shirts	41,619	16,518	17,736	(NA)	(D)	855	(D)
Knit T-shirts and tank tops made for outerwear	63,902	40,384	8,995	(NA)	(NA)	769	13,754
Sweatshirts	(D)	(D)	(D)	(NA)	(NA)	-	146
Other knit blouses and shirts	30,577	14,538	8,066	(NA)	(D)	1,194	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters	10,147	2,003	5,674	(NA)	120	9	2,341
Bottoms:							
Shorts	41,048	25,574	11,943	(NA)	-	100	3,431
Skirts and divided skirts	18,839	2,747	10,003	920	648	470	4,971
Jeans	37,973	35,189	(D)	(D)	-	-	(D)
Slacks (except jeans)	42,858	15,852	18,130	2,757	1,419	385	7,072
Sweatpants	(D)	(D)	(D)	(NA)	(NA)	-	363
Underwear and nightwear:							
Brassieres, bra-lettes, and bandeaux	70,791	5,097	65,242	(NA)	(NA)	-	452
Girdles, corsets, and other foundation garments	16,187	2,380	13,298	(NA)	(NA)	-	509
Nightgowns, pajamas, and other nightwear	13,014	3,255	7,464	(NA)	(NA)	(D)	(D)
Panties	136,201	103,170	30,573	(NA)	(NA)	-	2,458
Robes and dressing gowns	3,722	2,403	909	(NA)	(NA)	-	410
All other underwear, including slips, camisoles, teddies, undershirts, and union suits	(D)	3,767	7,086	(NA)	(NA)	(D)	831
Other garments:							
Bodysuits and bodyshirts	2,194	(D)	(D)	(NA)	(NA)	-	689
Jogging and warmup suits	3,142	90	2,481	(NA)	(NA)	-	571
Overalls, coveralls, and jumpsuits	2,317	1,689	472	(NA)	-	-	156
Playsuits, rompers, halters, etc.	3,831	1,874	1,723	(NA)	-	(D)	(D)
Ski apparel	(D)	-	(D)	(NA)	(NA)	-	(D)
Suits, including pant suits	1,828	9	420	263	313	(D)	(D)
Swimwear	18,229	2,958	12,579	(NA)	(NA)	-	2,692
Washable service apparel	8,839	(D)	2,909	(NA)	(NA)	-	(D)
Infants' apparel	25,213	16,166	8,501	(NA)	(NA)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available.

**Table 49. Quantity of Production of Apparel by Type of Fabrics: 1997**

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>TOTAL</b>							
Men's and boys' garments:							
Suits	9,282	546	4,052	1,357	2,474	124	2,086
Coats, jackets, and vests:							
Down and feather filled coats, jackets, and vests	(D)	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored)	11,786	507	7,064	2,768	2,559	862	794
Heavy nontailored coats and jackets	16,470	3,576	10,841	(NA)	794	(D)	(D)
Lightweight nontailored coats and jackets	16,823	4,159	8,685	(NA)	(D)	(D)	3,630
Overcoats and top coats	1,134	(D)	453	(NA)	(D)	(D)	184
Raincoats	(D)	(D)	1,111	(NA)	(NA)	(D)	(D)
Separate vests	(D)	85	1,877	(NA)	(D)	(D)	429
Work jackets	4,706	(D)	(D)	(NA)	(NA)	(D)	315
Tops:							
Woven dress and business shirts	(D)	30,347	23,803	(NA)	(NA)	(D)	2,603
Woven sport shirts	23,793	15,619	5,461	(NA)	132	(D)	(D)
Work shirts	51,709	10,350	36,283	(NA)	(NA)	-	5,076
Knit T-shirts and tank tops made for outerwear	853,975	692,697	99,406	(NA)	-	12	61,860
Sweatshirts	203,272	139,620	59,557	(NA)	-	-	4,095
Other knit shirts	109,876	74,544	25,559	(NA)	-	(D)	(D)
Sweaters	12,472	4,988	4,702	(NA)	(D)	-	(D)
Bottoms:							
Dress and sport trousers	136,407	79,571	40,388	19,192	4,651	1,195	10,602
Jeans	245,086	241,439	(D)	-	-	(D)	(D)
Jean-cut casual slacks	28,298	19,226	2,384	(NA)	(NA)	278	6,410
Shorts	90,892	60,778	16,790	(NA)	(D)	(D)	(D)
Sweatpants	60,788	31,846	28,561	(NA)	(NA)	-	381
Workpants	45,755	3,723	40,160	(NA)	(NA)	-	1,872
Underwear and nightwear:							
Pajamas and nightwear	15,094	1,772	12,674	(NA)	(NA)	(D)	(D)
Robes	(D)	819	1,683	(NA)	(NA)	-	(D)
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts	1,395,911	1,352,020	41,197	(NA)	(NA)	86	2,608
Other garments:							
Coveralls, overalls, and jumpsuits	14,531	4,089	8,329	(NA)	-	-	2,113
Jogging and warmup suits	11,854	(D)	8,441	(NA)	(NA)	-	(D)
Playsuits	903	250	547	(NA)	-	5	101
Ski apparel	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear	1,940	172	(D)	(NA)	(NA)	-	(D)
Team sports uniforms	16,577	(D)	11,237	(NA)	(D)	-	4,994
Washable service apparel	28,832	10,751	8,588	(NA)	(NA)	-	9,493
Women's and girls' garments:							
Dresses	188,132	36,127	93,788	(NA)	2,849	5,220	50,148
Coats, jackets, and vests:							
Coats and capes	(D)	125	1,798	1,289	4,140	(D)	(D)
Down and feather filled coats, jackets, and vests	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets	6,728	1,724	2,810	(NA)	(D)	(D)	1,637
Raincoats	364	(D)	(D)	(NA)	(NA)	-	(D)
Separate vests	3,044	114	1,993	(NA)	17	185	735
Tailored suit-type jackets	(D)	1,548	19,414	3,091	8,624	1,696	(D)
Tops:							
Woven blouses and shirts	183,309	69,937	77,049	(NA)	144	5,501	30,678
Knit T-shirts and tank tops made for outerwear	236,598	149,542	33,007	(NA)	(NA)	(D)	(D)
Sweatshirts	62,791	29,332	31,832	(NA)	(NA)	-	1,627
Other knit blouses and shirts	116,530	49,048	36,366	(NA)	(D)	4,877	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters	56,640	17,253	26,795	(NA)	751	78	11,763
Bottoms:							
Shorts	113,782	66,366	33,902	(NA)	(NA)	1,203	12,311
Skirts and divided skirts	76,529	10,323	38,592	(D)	10,359	2,873	(D)
Jeans	168,444	154,181	(D)	(D)	32	(D)	13,914
Slacks (except jeans)	189,132	67,408	83,222	9,510	10,592	2,035	25,875
Sweatpants	50,938	(D)	30,701	(NA)	(NA)	-	(D)
Underwear and nightwear:							
Brassieres, bra-lettes, and bandeaux	282,838	18,299	261,334	(NA)	(NA)	-	3,205
Girdles, corsets, and other foundation garments	78,742	(D)	66,473	(NA)	(NA)	-	(D)
Nightgowns, pajamas, and other nightwear	57,484	10,580	39,451	(NA)	(NA)	(D)	(D)
Panties	615,843	474,091	131,410	(NA)	(NA)	-	10,342
Robes and dressing gowns	20,581	4,833	12,056	(NA)	(NA)	(D)	(D)
All other underwear, including slippers, camisoles, teddies, undershirts, and union suits	(D)	10,722	37,730	(NA)	(NA)	96	(D)
Other garments:							
Bodysuits and bodyshirts	17,118	(D)	5,686	(NA)	(NA)	177	(D)
Jogging and warmup suits	12,845	1,160	9,693	(NA)	(NA)	-	1,992
Overalls, coveralls, and jumpsuits	4,429	1,855	1,949	(NA)	216	-	409
Playsuits, rompers, halters, etc.	8,195	3,307	3,854	(NA)	-	(D)	(D)
Ski apparel	(D)	-	751	(NA)	(NA)	-	(D)
Suits, including pant suits	(D)	510	2,815	(D)	1,768	(D)	4,573
Swimwear	51,770	4,476	38,176	(NA)	(NA)	-	9,118
Washable service apparel	37,153	(D)	13,617	(NA)	(NA)	-	(D)
Infants' apparel	162,220	114,922	41,537	(NA)	(NA)	(D)	(D)

See footnotes at end of table.



Table 49. **Quantity of Production of Apparel by Type of Fabrics: 1997—Con.**

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>FOURTH QUARTER</b>							
Men's and boys' garments:							
Suits .....	2,129	(D)	(D)	268	622	31	463
Coats, jackets, and vests:							
Down and feather filled coats, jackets, and vests .....	43	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored) .....	2,925	178	1,640	647	683	227	197
Heavy nontailored coats and jackets .....	4,558	1,016	2,984	(NA)	183	(D)	(D)
Lightweight nontailored coats and jackets .....	5,254	1,112	2,917	(NA)	(D)	(D)	1,119
Overcoats and top coats .....	328	(D)	110	(NA)	127	(D)	49
Raincoats .....	(D)	(D)	290	(NA)	(NA)	(D)	203
Separate vests .....	(D)	12	588	(NA)	(D)	(D)	104
Work jackets .....	1,419	(D)	(D)	(NA)	(NA)	(D)	95
Tops:							
Woven dress and business shirts .....	(D)	8,600	5,842	(NA)	(NA)	(D)	677
Woven sport shirts .....	6,247	4,421	1,194	(NA)	-	(D)	(D)
Work shirts .....	13,421	3,129	8,993	(NA)	(NA)	-	1,299
Knit T-shirts and tank tops made for outerwear .....	200,177	161,994	23,062	(NA)	-	(D)	(D)
Sweatshirts .....	54,110	39,099	14,099	(NA)	-	-	912
Other knit shirts .....	25,920	17,704	5,885	(NA)	-	(D)	(D)
Sweaters .....	3,318	1,207	1,401	(NA)	(D)	-	(D)
Bottoms:							
Dress and sport trousers .....	34,141	20,321	10,024	4,542	1,197	295	2,304
Jeans .....	64,352	(D)	(D)	(NA)	(NA)	(D)	658
Jeans-cut casual slacks .....	6,753	4,798	180	(NA)	(NA)	(D)	(D)
Shorts .....	16,474	11,736	2,325	(NA)	(D)	-	(D)
Sweatpants .....	15,073	8,462	6,525	(NA)	(NA)	-	86
Workpants .....	11,315	1,067	9,801	(NA)	(NA)	-	447
Underwear and nightwear:							
Pajamas and nightwear .....	4,328	596	3,576	(NA)	(NA)	(D)	(D)
Robes .....	(D)	367	698	(NA)	(NA)	-	(D)
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts .....	292,412	281,659	10,148	(NA)	(NA)	9	596
Other garments:							
Coveralls, overalls, and jumpsuits .....	3,781	1,267	1,948	(NA)	-	-	566
Jogging and warmup suits .....	2,623	(D)	1,689	(NA)	(NA)	-	(D)
Playsuits .....	113	(D)	(D)	(NA)	-	(D)	20
Ski apparel .....	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear .....	234	33	110	(NA)	(NA)	-	91
Team sports uniforms .....	3,917	(D)	2,676	(NA)	(D)	-	1,166
Washable service apparel .....	7,489	(D)	2,068	(NA)	(NA)	-	(D)
Women's and girls' garments:							
Dresses .....	42,401	8,603	20,308	(NA)	913	1,074	11,503
Coats, jackets, and vests:							
Coats and capes .....	(D)	30	710	551	588	8	(D)
Down and feather filled coats, jackets, and vests .....	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets .....	1,932	423	943	(NA)	(D)	(D)	443
Raincoats .....	105	(D)	(D)	(NA)	(NA)	-	(D)
Separate vests .....	625	11	368	(NA)	(D)	(D)	169
Tailored suit-type jackets .....	(D)	441	3,680	504	1,676	350	(D)
Tops:							
Woven blouses and shirts .....	45,245	19,860	15,687	(NA)	(D)	1,556	(D)
Knit T-shirts and tank tops made for outerwear .....	58,598	37,912	7,406	(NA)	(NA)	732	12,548
Sweatshirts .....	(D)	(D)	8,170	(NA)	(NA)	-	455
Other knit blouses and shirts .....	31,674	13,066	10,614	(NA)	(D)	1,044	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters ..	16,529	4,428	8,417	(NA)	190	24	3,470
Bottoms:							
Shorts .....	22,283	11,959	7,685	(NA)	-	156	2,483
Skirts and divided skirts .....	14,033	2,272	7,583	911	600	747	2,831
Jeans .....	41,799	38,303	(D)	(D)	(D)	(D)	3,435
Slacks (except jeans) .....	45,379	17,638	18,684	1,311	2,350	500	6,207
Sweatpants .....	(D)	(D)	8,037	(NA)	(NA)	-	232
Underwear and nightwear:							
Brassieres, bra-lettes, and bandeaux .....	69,147	4,565	63,788	(NA)	(NA)	-	794
Girdles, corsets, and other foundation garments .....	16,084	(D)	13,934	(NA)	(NA)	-	(D)
Nightgowns, pajamas, and other nightwear .....	14,216	2,919	9,664	(NA)	(NA)	(D)	(D)
Panties .....	143,729	107,737	33,488	(NA)	(NA)	-	2,504
Robes and dressing gowns .....	5,498	1,055	3,472	(NA)	(NA)	-	971
All other underwear, including slips, camisoles, teddies, undershirts, and union suits .....	(D)	2,596	9,741	(NA)	(NA)	7	(D)
Other garments:							
Bodysuits and bodyshirts .....	2,887	(D)	(D)	(NA)	(NA)	(D)	820
Jogging and warmup suits .....	3,004	189	2,341	(NA)	(NA)	-	474
Overalls, coveralls, and jumpsuits .....	1,215	671	398	(NA)	(D)	-	(D)
Playsuits, rompers, halters, etc. ....	2,121	744	1,141	(NA)	-	(D)	(D)
Ski apparel .....	(D)	-	(D)	(NA)	(NA)	-	(D)
Suits, including pant suits .....	(D)	30	675	292	480	(D)	1,221
Swimwear .....	12,726	1,617	8,091	(NA)	(NA)	-	3,018
Washable service apparel .....	8,840	(D)	2,896	(NA)	(NA)	-	(D)
Infants' apparel .....	40,334	28,140	11,175	(NA)	(NA)	-	1,019

See footnotes at end of table.

Table 49. **Quantity of Production of Apparel by Type of Fabrics: 1997—Con.**

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>THIRD QUARTER</b>							
Men's and boys' garments:							
Suits	2,189	(D)	(D)	290	595	36	465
Coats, jackets, and vests:							
Down and feather filled coats, jackets, and vests	(D)	(D)	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored)	2,910	93	1,725	692	705	189	198
Heavy nontailored coats and jackets	4,322	1,244	2,461	(NA)	277	(D)	(D)
Lightweight nontailored coats and jackets	4,691	1,516	2,102	(NA)	(D)	(D)	1,014
Overcoats and top coats	294	(D)	94	(NA)	(D)	(D)	48
Raincoats	(D)	(D)	(D)	(NA)	(NA)	(D)	175
Separate vests	(D)	14	453	(NA)	8	(D)	82
Work jackets	1,232	(D)	(D)	(NA)	(NA)	(D)	83
Tops:							
Woven dress and business shirts	(D)	7,705	5,809	(NA)	(NA)	(D)	653
Woven sport shirts	6,737	4,735	1,316	(NA)	(D)	(D)	648
Work shirts	13,710	3,539	8,877	(NA)	(NA)	-	1,294
Knit T-shirts and tank tops made for outerwear	191,675	154,691	22,696	(NA)	-	(D)	(D)
Sweatshirts	51,040	31,379	18,602	(NA)	-	-	1,059
Other knit shirts	29,521	20,559	6,339	(NA)	-	(D)	(D)
Sweaters	3,799	1,585	1,391	(NA)	(D)	-	(D)
Bottoms:							
Dress and sport trousers	37,865	22,877	10,958	5,329	1,191	291	2,548
Jeans	65,154	(D)	(D)	(NA)	(NA)	(D)	657
Jeans-cut casual slacks	7,909	5,614	537	(NA)	(NA)	(D)	(D)
Shorts	13,740	7,740	3,306	(NA)	(D)	(D)	(D)
Sweatpants	19,423	9,892	9,414	(NA)	(NA)	-	117
Workpants	11,248	865	9,923	(NA)	(NA)	-	460
Underwear and nightwear:							
Pajamas and nightwear	4,182	421	3,494	(NA)	(NA)	(D)	(D)
Robes	963	272	551	(NA)	(NA)	-	140
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts	352,838	340,454	11,729	(NA)	(NA)	19	636
Other garments:							
Coveralls, overalls, and jumpsuits	4,449	1,360	2,480	(NA)	-	-	609
Jogging and warmup suits	4,634	(D)	3,390	(NA)	(NA)	-	(D)
Playsuits	175	32	(D)	(NA)	-	-	(D)
Ski apparel	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear	295	30	(D)	(NA)	(NA)	-	(D)
Team sports uniforms	3,919	(D)	2,633	(NA)	(D)	-	1,167
Washable service apparel	6,854	2,252	2,267	(NA)	(NA)	-	2,335
Women's and girls' garments:							
Dresses	48,988	10,602	23,416	(NA)	870	1,368	12,732
Coats, jackets, and vests:							
Coats and capes	(D)	35	451	275	1,143	(D)	285
Down and feather filled coats, jackets, and vests	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets	1,928	488	834	(NA)	(D)	129	(D)
Raincoats	79	(D)	-	(NA)	(NA)	-	(D)
Separate vests	734	34	477	(NA)	(D)	53	(D)
Tailored suit-type jackets	(D)	306	4,186	852	4,138	541	(D)
Tops:							
Woven blouses and shirts	43,900	16,197	18,882	(NA)	(D)	1,301	(D)
Knit T-shirts and tank tops made for outerwear	55,905	33,987	9,015	(NA)	(NA)	865	12,038
Sweatshirts	21,060	(D)	10,342	(NA)	(NA)	-	(D)
Other knit blouses and shirts	29,163	11,695	9,649	(NA)	(D)	1,258	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters	18,307	6,593	7,837	(NA)	218	35	3,624
Bottoms:							
Shorts	18,050	8,935	6,474	(NA)	-	446	2,195
Skirts and divided skirts	19,490	2,638	10,171	1,048	2,495	727	3,459
Jeans	48,224	44,429	(D)	(D)	(D)	(D)	3,708
Slacks (except jeans)	53,369	19,238	22,234	3,320	4,129	524	7,244
Sweatpants	14,836	(D)	10,312	(NA)	(NA)	-	(D)
Underwear and nightwear:							
Brassieres, bra-lettes, and bandeaux	69,775	5,032	63,949	(NA)	(NA)	-	794
Girdles, corsets, and other foundation garments	22,348	(D)	18,862	(NA)	(NA)	-	(D)
Nightgowns, pajamas, and other nightwear	14,677	2,821	10,061	(NA)	(NA)	(D)	(D)
Panties	(D)	122,721	30,170	(NA)	(NA)	-	(D)
Robes and dressing gowns	5,687	1,181	3,527	(NA)	(NA)	-	979
All other underwear, including slips, camisoles, teddies, undershirts, and union suits	(D)	2,402	10,082	(NA)	(NA)	6	(D)
Other garments:							
Bodysuits and bodyshirts	2,819	(D)	(D)	(NA)	(NA)	(D)	818
Jogging and warmup suits	4,172	561	3,075	(NA)	(NA)	-	536
Overalls, coveralls, and jumpsuits	1,407	523	584	(NA)	(D)	-	(D)
Playsuits, rompers, halters, etc.	1,773	892	657	(NA)	-	(D)	(D)
Ski apparel	(D)	-	391	(NA)	(NA)	-	(D)
Suits, including pant suits	(D)	(D)	759	370	558	(D)	1,201
Swimwear	7,281	358	5,346	(NA)	(NA)	-	1,577
Washable service apparel	9,620	(D)	4,009	(NA)	(NA)	-	(D)
Infants' apparel	43,622	30,376	11,516	(NA)	(NA)	(D)	(D)

See footnotes at end of table.

Table 49. **Quantity of Production of Apparel by Type of Fabrics: 1997—Con.**

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>SECOND QUARTER</b>							
Men's and boys' garments:							
Suits .....	2,458	(D)	(D)	424	631	29	572
Coats, jackets, and vests:							
Down and feather filled coats, jackets, and vests .....	(D)	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored) .....	2,900	104	1,802	746	600	203	191
Heavy nontailored coats and jackets .....	4,011	803	2,740	(NA)	189	(D)	(D)
Lightweight nontailored coats and jackets .....	3,427	774	1,769	(NA)	(D)	(D)	733
Overcoats and top coats .....	245	(D)	119	(NA)	36	(D)	42
Raincoats .....	(D)	(D)	(D)	(NA)	(NA)	(D)	(D)
Separate vests .....	(D)	36	303	(NA)	9	(D)	108
Work jackets .....	1,088	(D)	(D)	(NA)	(NA)	(D)	73
Tops:							
Woven dress and business shirts .....	(D)	7,329	6,217	(NA)	(NA)	(D)	651
Woven sport shirts .....	5,255	2,982	1,582	(NA)	(D)	(D)	625
Work shirts .....	12,475	1,881	9,336	(NA)	(NA)	-	1,258
Knit T-shirts and tank tops made for outerwear .....	221,879	178,650	27,123	(NA)	-	-	16,106
Sweatshirts .....	49,384	32,544	15,809	(NA)	-	-	1,031
Other knit shirts .....	28,511	18,809	7,200	(NA)	-	(D)	(D)
Sweaters .....	2,984	1,069	1,246	(NA)	(D)	-	(D)
Bottoms:							
Dress and sport trousers .....	33,469	18,956	9,808	5,129	(D)	289	(D)
Jeans .....	64,410	63,216	(D)	(NA)	(NA)	(D)	(D)
Jeans-cut casual slacks .....	7,376	4,861	854	(NA)	(NA)	-	1,661
Shorts .....	25,746	16,673	5,432	(NA)	-	(D)	(D)
Sweatpants .....	16,801	8,188	8,508	(NA)	(NA)	-	105
Workpants .....	11,884	992	10,415	(NA)	(NA)	-	477
Underwear and nightwear:							
Pajamas and nightwear .....	3,516	397	3,000	(NA)	(NA)	(D)	(D)
Robes .....	(D)	101	302	(NA)	(NA)	-	(D)
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts .....	391,912	381,219	9,926	(NA)	(NA)	48	719
Other garments:							
Coveralls, overalls, and jumpsuits .....	3,121	851	1,777	(NA)	-	-	493
Jogging and warmup suits .....	2,080	(D)	1,501	(NA)	(NA)	-	(D)
Playsuits .....	201	94	(D)	(NA)	-	(D)	25
Ski apparel .....	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear .....	527	40	299	(NA)	(NA)	-	188
Team sports uniforms .....	3,944	(D)	2,655	(NA)	(D)	-	1,208
Washable service apparel .....	7,248	(D)	2,148	(NA)	(NA)	-	(D)
Women's and girls' garments:							
Dresses .....	45,619	8,039	23,598	(NA)	580	1,219	12,183
Coats, jackets, and vests:							
Coats and capes .....	(D)	30	359	277	1,314	(D)	287
Down and feather filled coats, jackets, and vests .....	(D)	(D)	(D)	(NA)	-	(D)	2
Heavy nontailored coats and jackets .....	1,456	398	545	(NA)	(D)	131	(D)
Raincoats .....	90	(D)	-	(NA)	(NA)	-	(D)
Separate vests .....	771	29	518	(NA)	(D)	(D)	192
Tailored suit-type jackets .....	(D)	245	4,836	669	1,941	270	(D)
Tops:							
Woven blouses and shirts .....	49,263	18,305	21,583	(NA)	37	1,219	8,119
Knit T-shirts and tank tops made for outerwear .....	58,572	36,021	8,992	(NA)	(NA)	(D)	(D)
Sweatshirts .....	13,222	5,048	(D)	(NA)	(NA)	-	(D)
Other knit blouses and shirts .....	29,139	12,248	9,127	(NA)	(D)	1,278	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters ..	11,262	3,502	5,027	(NA)	143	5	2,585
Bottoms:							
Shorts .....	31,889	18,244	9,935	(NA)	-	402	3,308
Skirts and divided skirts .....	20,114	2,468	10,600	1,788	2,677	644	3,725
Jeans .....	42,783	39,130	72	(D)	-	(D)	3,579
Slacks (except jeans) .....	47,095	16,916	20,521	2,216	2,713	492	6,453
Sweatpants .....	14,116	(D)	(D)	(NA)	(NA)	-	299
Underwear and nightwear:							
Brassieres, bra-lettes, and bandeaux .....	74,574	4,569	69,169	(NA)	(NA)	-	836
Girdles, corsets, and other foundation garments .....	20,354	(D)	16,887	(NA)	(NA)	-	(D)
Nightgowns, pajamas, and other nightwear .....	12,759	2,202	8,662	(NA)	(NA)	(D)	(D)
Panties .....	(D)	119,736	33,824	(NA)	(NA)	-	(D)
Robes and dressing gowns .....	4,021	739	2,546	(NA)	(NA)	-	736
All other underwear, including slips, camisoles, teddies, undershirts, and union suits .....	(D)	2,567	10,262	(NA)	(NA)	31	(D)
Other garments:							
Bodysuits and bodyshirts .....	5,459	(D)	1,832	(NA)	(NA)	-	(D)
Jogging and warmup suits .....	2,842	300	2,041	(NA)	(NA)	-	501
Overalls, coveralls, and jumpsuits .....	946	374	475	(NA)	(D)	-	(D)
Playsuits, rompers, halters, etc. ....	1,888	879	708	(NA)	-	(D)	(D)
Ski apparel .....	(D)	-	(D)	(NA)	(NA)	-	(D)
Suits, including pant suits .....	(D)	(D)	586	308	331	10	931
Swimwear .....	12,703	748	10,011	(NA)	(NA)	-	1,944
Washable service apparel .....	9,894	(D)	3,393	(NA)	(NA)	-	(D)
Infants' apparel .....	35,479	25,310	8,722	(NA)	(NA)	(D)	(D)

See footnotes at end of table.

Table 49. **Quantity of Production of Apparel by Type of Fabrics: 1997—Con.**

[Quantity in thousands of units]

Product description	Total	Cotton	Manmade		Wool	Other	Not specified by kind (n.s.k)
			Total	Wool blends			
<b>FIRST QUARTER</b>							
Men's and boys' garments:							
Suits	2,506	150	1,116	375	626	28	586
Coats, jackets, and vests:							
Down and feather filled coats, jackets, and vests	48	-	(D)	(NA)	-	-	(D)
Dress and sport coats (tailored)	3,051	132	1,897	683	571	243	208
Heavy nontailored coats and jackets	3,579	513	2,656	(NA)	145	(D)	(D)
Lightweight nontailored coats and jackets	3,451	757	1,897	(NA)	(D)	(D)	764
Overcoats and top coats	267	(D)	130	(NA)	40	(D)	45
Raincoats	(D)	(D)	(D)	(NA)	(NA)	(D)	(D)
Separate vests	(D)	23	533	(NA)	5	(D)	135
Work jackets	967	(D)	(D)	(NA)	(NA)	(D)	64
Tops:							
Woven dress and business shirts	(D)	6,713	5,935	(NA)	(NA)	(D)	622
Woven sport shirts	5,554	3,481	1,369	(NA)	(D)	(D)	634
Work shirts	12,103	1,801	9,077	(NA)	(NA)	-	1,225
Knit T-shirts and tank tops made for outerwear	240,244	197,362	26,525	(NA)	-	-	16,357
Sweatshirts	48,738	36,598	11,047	(NA)	-	-	1,093
Other knit shirts	25,924	17,472	6,135	(NA)	-	(D)	(D)
Sweaters	2,371	1,127	664	(NA)	(D)	-	(D)
Bottoms:							
Dress and sport trousers	30,932	17,417	9,598	4,192	(D)	320	(D)
Jeans	51,170	(D)	(D)	(NA)	(NA)	(D)	1,079
Jeans-cut casual slacks	6,260	3,953	813	(NA)	(NA)	-	1,494
Shorts	34,932	24,629	5,727	(NA)	-	(D)	(D)
Sweatpants	9,491	5,304	4,114	(NA)	(NA)	-	73
Workpants	11,308	799	10,021	(NA)	(NA)	-	488
Underwear and nightwear:							
Pajamas and nightwear	3,068	358	2,604	(NA)	(NA)	(D)	(D)
Robes	(D)	79	132	(NA)	(NA)	-	(D)
All other underwear, including thermal underwear, undershirts, knit undershorts, and woven boxer shorts	358,749	348,688	9,394	(NA)	(NA)	10	657
Other garments:							
Coveralls, overalls, and jumpsuits	3,180	611	2,124	(NA)	-	-	445
Jogging and warmup suits	2,517	(D)	1,861	(NA)	(NA)	-	(D)
Playsuits	414	(D)	295	(NA)	-	-	(D)
Ski apparel	(D)	-	(D)	(NA)	(NA)	-	(D)
Swimwear	884	69	523	(NA)	(NA)	-	292
Team sports uniforms	4,797	(D)	3,273	(NA)	(D)	-	1,453
Washable service apparel	7,241	(D)	2,105	(NA)	(NA)	-	(D)
Women's and girls' garments:							
Dresses	51,124	8,883	26,466	(NA)	486	1,559	13,730
Coats, jackets, and vests:							
Coats and capes	(D)	30	278	186	1,095	(D)	247
Down and feather filled coats, jackets, and vests	(D)	(D)	(D)	(NA)	-	(D)	(D)
Heavy nontailored coats and jackets	1,412	415	488	(NA)	(D)	133	(D)
Raincoats	90	(D)	-	(NA)	(NA)	-	(D)
Separate vests	914	40	630	(NA)	1	(D)	(D)
Tailored suit-type jackets	(D)	556	6,712	1,066	869	535	(D)
Tops:							
Woven blouses and shirts	44,901	15,575	20,897	(NA)	36	1,425	6,968
Knit T-shirts and tank tops made for outerwear	63,523	41,622	7,594	(NA)	(NA)	636	13,671
Sweatshirts	(D)	4,571	(D)	(NA)	(NA)	-	280
Other knit blouses and shirts	26,554	12,039	6,976	(NA)	(D)	1,297	(D)
Sweaters, including coat, cardigan, pullover, and vest sweaters	10,542	2,730	5,514	(NA)	200	14	2,084
Bottoms:							
Shorts	41,560	27,228	9,808	(NA)	-	199	4,325
Skirts and divided skirts	22,892	2,945	10,238	880	(D)	755	(D)
Jeans	35,638	32,319	(D)	(D)	-	(D)	3,192
Slacks (except jeans)	43,289	13,616	21,783	2,663	1,400	519	5,971
Sweatpants	(D)	(D)	(D)	(NA)	(NA)	-	176
Underwear and nightwear:							
Brassieres, bra-lettes, and bandeaux	69,342	4,133	64,428	(NA)	(NA)	-	781
Girdles, corsets, and other foundation garments	19,956	(D)	16,790	(NA)	(NA)	-	(D)
Nightgowns, pajamas, and other nightwear	15,832	2,638	11,064	(NA)	(NA)	(D)	(D)
Panties	(D)	123,897	33,928	(NA)	(NA)	-	(D)
Robes and dressing gowns	5,375	1,858	2,511	(NA)	(NA)	(D)	(D)
All other underwear, including slips, camisoles, teddies, undershirts, and union suits	(D)	3,157	7,645	(NA)	(NA)	52	(D)
Other garments:							
Bodysuits and bodyshirts	5,953	(D)	1,973	(NA)	(NA)	-	(D)
Jogging and warmup suits	2,827	110	2,236	(NA)	(NA)	-	481
Overalls, coveralls, and jumpsuits	861	287	492	(NA)	-	-	82
Playsuits, rompers, halters, etc.	2,413	792	1,348	(NA)	-	(D)	(D)
Ski apparel	(D)	-	45	(NA)	(NA)	-	(D)
Suits, including pant suits	(D)	16	795	(D)	399	9	1,220
Swimwear	19,060	1,753	14,728	(NA)	(NA)	-	2,579
Washable service apparel	8,799	(D)	3,319	(NA)	(NA)	-	(D)
Infants' apparel	42,785	31,096	10,124	(NA)	(NA)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available.

**Table 50. Shipments, Exports, Imports, and Apparent Consumption of Selected Apparel Items: 1998 and 1997**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		"9802" imports <sup>2</sup>			Imports for consumption <sup>5</sup>		Apparent consumption <sup>7</sup>		Percent imports to apparent consumption	
	Quantity	Value f.o.b. plant	Quantity	Value at port	Quantity	Value U.S. content <sup>3</sup>	Total value <sup>4</sup>	Quantity	Value <sup>6</sup>	Quantity	Value	Quantity	Value
<b>1998</b>													
Men's and boys' apparel:													
Sweaters.....	12,885	186.3	58,956	167.5	1,008	1.4	8.2	61,776	802.8	15,705	821.6	393.4	97.7
Tops (except sweaters).....	(D)	(D)	510,000	1,172.2	853,968	1,633.8	2,268.8	1,946,256	10,110.7	(D)	(D)	(D)	(D)
Bottoms.....	(D)	(D)	300,984	1,107.6	369,120	1,422.8	2,552.6	797,808	5,986.5	(D)	(D)	(D)	(D)
Coats.....	53,684	1,857.8	19,068	138.8	17,328	184.1	329.4	164,436	3,020.0	199,052	4,739.0	82.6	63.7
Suit type, dress and sport.....	(D)	(D)	5,352	47.3	7,620	111.1	194.9	14,892	579.5	(D)	(D)	(D)	(D)
Other coats.....	(D)	(D)	13,716	91.5	9,708	73.0	134.5	149,544	2,440.5	(D)	(D)	(D)	(D)
Suits.....	8,885	726.4	1,704	25.2	943	18.9	50.2	97,464	752.1	104,645	1,453.3	93.1	51.8
Swimwear.....	1,444	22.9	1,548	7.6	672	1.7	2.7	43,992	185.1	43,888	200.4	100.2	92.4
Women's and girls' apparel:													
Sweaters.....	41,363	652.4	2,196	10.7	2,016	4.8	20.9	229,584	2,715.4	268,751	3,357.1	85.4	80.9
Dresses.....	198,680	4,660.9	21,504	123.5	38,232	105.3	255.4	219,252	2,263.2	396,428	6,800.6	55.3	33.3
Tops (except sweaters).....	563,612	4,103.9	226,020	460.4	283,908	534.1	883.3	1,429,104	8,612.0	1,766,696	12,255.5	80.9	70.3
Skirts.....	76,711	1,116.7	12,780	65.6	66,792	220.7	440.5	143,940	1,245.5	207,871	2,296.6	69.2	54.2
Coats and jackets..	46,529	1,630.7	18,888	154.2	34,740	202.3	426.2	157,944	2,965.0	185,585	4,441.5	85.1	66.8
Bottoms (except skirts).....	(D)	(D)	179,280	606.7	238,116	782.6	1,442.9	687,612	5,098.7	(D)	(D)	(D)	(D)
Suits.....	8,354	306.8	8,112	61.8	7,894	54.7	125.0	131,040	456.5	131,282	701.5	99.8	65.1
Swimwear.....	51,706	805.5	13,452	58.5	18,060	69.0	98.1	46,788	293.5	85,042	1,040.5	55.0	28.2
Other apparel (men's/women's):													
Playsuits.....	11,623	110.7	-	-	6,348	13.4	26.4	23,148	103.5	34,771	214.2	66.6	48.3
Coveralls, etc.....	28,022	484.6	18,792	36.1	9,348	40.8	66.9	90,384	703.8	99,614	1,152.3	90.7	61.1
Robes and dressing gowns.....	(D)	(D)	10,560	24.5	27,948	61.6	129.0	55,572	486.6	(D)	(D)	(D)	(D)
Pajamas and other nightwear.....	76,208	651.8	30,912	80.3	467,184	388.4	616.8	207,036	1,233.4	252,332	1,804.9	82.0	68.3
Underwear (except foundation garments).....	1,607,575	2,620.7	846,876	854.6	1,322,256	990.7	1,414.2	2,367,828	2,793.9	3,128,527	4,560.0	75.7	61.3
Foundation garments.....	347,309	1,961.5	329,208	464.6	194,796	381.3	563.7	396,996	1,199.7	415,097	2,696.6	95.6	44.5
Infants' apparel.....	159,157	880.2	145,956	205.3	114,839	154.8	252.1	614,496	1,630.9	627,697	2,305.8	97.9	70.7
<b>1997</b>													
Men's and boys' apparel:													
Sweaters.....	12,472	200.2	52,452	168.7	936	1.5	5.8	45,576	571.7	27,631	580.5	128.7	80.4
Tops (except sweaters).....	(D)	(D)	525,192	1,261.7	683,892	1,403.0	1,907.4	1,620,516	7,710.3	(D)	(D)	(D)	(D)
Bottoms.....	607,226	7,894.2	300,120	1,172.7	346,080	1,306.1	2,299.4	715,920	4,703.3	983,479	10,907.5	62.1	36.0
Coats.....	55,824	1,998.3	23,088	155.2	14,040	167.1	291.2	158,844	2,806.3	191,580	4,649.4	82.9	60.4
Suit type, dress and sport.....	11,786	731.3	5,976	61.2	6,828	106.6	181.7	14,160	494.3	15,984	1,075.4	71.8	38.5
Other coats.....	44,038	1,267.0	17,112	94.0	7,212	60.5	109.5	144,684	2,312.0	149,981	3,208.3	78.4	57.4
Suits.....	9,282	792.4	3,768	41.8	824	19.3	44.2	83,940	582.9	84,223	1,349.6	94.5	39.4
Swimwear.....	1,940	32.3	876	4.2	780	2.2	3.3	43,608	151.1	43,408	164.6	97.8	90.6
Women's and girls' apparel:													
Sweaters.....	56,640	745.2	2,808	15.1	1,512	1.3	35.1	193,344	2,056.6	197,789	2,230.9	76.9	71.8
Dresses.....	188,132	4,540.8	28,896	147.7	35,832	105.5	261.9	200,736	1,980.3	355,226	6,268.6	53.4	30.8
Tops (except sweaters).....	599,228	4,253.5	220,632	469.8	230,460	440.8	723.0	1,194,240	6,437.9	1,434,764	9,166.4	70.7	59.3
Skirts.....	76,529	1,127.8	11,496	53.3	25,884	65.2	157.1	125,004	978.2	213,735	2,265.3	64.5	46.9

See footnotes at end of table.

**Table 50. Shipments, Exports, Imports, and Apparent Consumption of Selected Apparel Items: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		"9802" imports <sup>2</sup>			Imports for consumption <sup>5</sup>		Apparent consumption <sup>7</sup>		Percent imports to apparent consumption	
	Quantity	Value f.o.b. plant	Quantity	Value at port	Quantity	Value U.S. content <sup>3</sup>	Total value <sup>4</sup>	Quantity	Value <sup>6</sup>	Quantity	Value	Quantity	Value
<b>1997—Con.</b>													
Women's and girls' apparel:—Con.													
Coats and jackets ..	52,651	1,948.2	19,224	155.3	33,348	250.4	553.7	152,628	2,696.6	161,837	4,620.3	78.8	61.6
Bottoms (except skirts) .....	522,296	5,544.2	159,960	543.9	242,723	798.9	1,433.7	590,628	4,082.9	953,702	8,445.5	62.6	45.0
Suits .....	(D)	(D)	7,008	60.7	1,193	17.9	34.1	111,192	347.8	(D)	(D)	(D)	(D)
Swimwear .....	51,770	889.9	12,264	56.5	19,332	73.5	99.1	41,448	237.1	75,301	908.8	40.9	20.8
Other apparel (men's/women's):													
Playsuits .....	9,098	80.3	-	-	4,500	4.0	6.3	29,508	121.8	54,655	266.9	65.0	54.3
Coveralls, etc. ....	18,960	490.3	13,236	35.0	10,476	48.1	79.2	75,564	600.0	69,436	872.4	77.2	49.0
Robes and dressing gowns .....	(D)	(D)	13,032	28.5	14,832	39.5	79.2	46,908	401.0	(D)	(D)	(D)	(D)
Pajamas and other nightwear .....	72,578	583.5	26,784	75.1	55,500	110.2	213.3	170,076	968.5	213,732	1,496.6	72.1	60.5
Underwear (except foundation garments) .....	(D)	(D)	929,088	876.1	1,502,964	1,002.4	1,415.6	2,148,408	2,348.4	(D)	(D)	(D)	(D)
Foundation garments .....	361,580	1,949.5	293,892	468.2	220,560	424.6	620.4	363,336	970.1	410,613	2,384.4	85.9	36.4
Infants' apparel .....	162,220	767.4	135,828	163.3	114,036	158.7	234.5	501,336	1,231.5	471,235	1,683.6	90.0	61.8

- Represents zero. D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Represents apparel that is cut in the United States, sent outside the country to be sewn, and then returned to the United States under 9802 (formerly 807) of Chapter 98, Special Classification Provisions of the Harmonized Tariff Schedules of the United States, and is included in domestic output, imports, and exports. Because 9802 garments are exported in pieces, the export quantity data may be overstated since some data may be reported in pieces rather than in completed garments.

<sup>3</sup>Represents value of the U.S. fabricated components.

<sup>4</sup>Represents total c.i.f. (cost, insurance, and freight) value of article, which includes value of the U.S. fabricated components and foreign processing.

<sup>5</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>6</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>7</sup>Apparent consumption represents new domestic supply and is derived by subtracting exports from sum of manufacturers' shipments plus imports.

Note: For comparison of SIC-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of subsection MA315D (MA23D), Gloves and Mittens, page 2-81.

## GLOVES AND MITTENS—MA315D (FORMERLY MA23D)

**Table 51. Quantity and Value of Shipments of Gloves and Mittens: 1998 and 1997**

[Quantity in thousand dozen pairs. Value in millions of dollars]

Product description	1998		1997	
	Quantity	Value	Quantity	Value
Gloves and mittens.....	170,147	893,776	209,357	949,447
All fabrics gloves and mittens.....	41,267	387,315	39,653	383,084
All leather and leather and fabrics combination gloves and mittens.....	1,306	115,754	<sup>1</sup> 1,462	123,377
All plastics gloves.....	39,678	53,117	41,312	58,595
All rubber gloves.....	87,896	337,590	<sup>1</sup> 126,930	<sup>1</sup> 384,391
Of total:				
Dress/casual gloves and mittens.....	201	16,711	252	18,428
Work/chore gloves and mittens.....	169,946	877,065	209,105	931,019

<sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 52. Quantity and Value of Shipments of Gloves and Mittens: 1998 and 1997**

[Quantity in thousand dozen pairs. Value in millions of dollars]

Product description	1998		1997	
	Quantity	Value	Quantity	Value
<b>All fabrics gloves and mittens.....</b>	<b>41,267</b>	<b>387,315</b>	<b>39,653</b>	<b>383,084</b>
Woven fabrics gloves and mittens.....	3,340	59,032	3,580	61,544
Impregnated with rubber or plastics.....	423	7,053	370	5,909
Greater than 50 percent plastics or rubber.....	(D)	(D)	(D)	(D)
Cotton.....	229	3,499	(D)	(D)
Manmade.....	(D)	(D)	-	-
Other.....	-	-	-	-
Nonimpregnated.....	2,917	51,979	3,210	55,635
Cotton.....	<sup>a</sup> 2,753	<sup>a</sup> 43,244	2,907	44,750
Manmade.....	105	<sup>b</sup> 3,492	243	5,502
Wool.....	(D)	(D)	(D)	(D)
Other.....	(D)	(D)	(D)	(D)
Knit fabrics gloves and mittens.....	37,927	328,283	36,073	321,540
Impregnated with rubber or plastics.....	7,432	125,677	7,015	118,303
Greater than 50 percent plastics or rubber.....	3,064	<sup>a</sup> 67,079	3,196	67,762
Cotton.....	<sup>b</sup> 3,426	39,212	2,899	32,203
Manmade.....	(D)	(D)	(D)	(D)
Other.....	(D)	(D)	(D)	(D)
Nonimpregnated.....	30,495	202,606	<sup>1</sup> 29,058	<sup>1</sup> 203,237
Cotton.....	28,698	184,830	<sup>1</sup> 27,844	<sup>1</sup> 186,560
Terry/looped pile.....	(D)	(D)	(D)	(D)
Jersey, brushed, napped.....	(D)	(D)	(D)	(D)
Lisle (no nap or brush).....	1,663	6,273	1,790	6,567
Other.....	22,726	98,351	<sup>1</sup> 22,224	<sup>1</sup> 106,428
Manmade.....	1,618	10,484	<sup>1</sup> 1,010	<sup>1</sup> 9,284
Wool.....	(D)	(D)	(D)	(D)
Other.....	(D)	(D)	(D)	(D)

See footnotes at end of table.

Table 52. **Quantity and Value of Shipments of Gloves and Mittens: 1998 and 1997**—Con.

[Quantity in thousand dozen pairs. Value in millions of dollars]

Product description	1998		1997	
	Quantity	Value	Quantity	Value
Leather and fabrics combination gloves . . . . .	<sup>a</sup> 324	<sup>b</sup> 25,875	372	29,468
All leather gloves and mittens . . . . .	982	89,879	<sup>r</sup> 1,090	93,909
All grain leather . . . . .	667	66,217	711	64,561
All split leather . . . . .	(D)	(D)	(D)	(D)
All other leather gloves . . . . .	(D)	(D)	(D)	(D)
All plastics gloves . . . . .	39,678	53,117	41,312	58,595
Medical and surgical . . . . .	(D)	(D)	(D)	(D)
All other . . . . .	(D)	(D)	(D)	(D)
All rubber gloves . . . . .	87,896	337,590	<sup>r</sup> 126,930	<sup>r</sup> 384,391
Medical and surgical . . . . .	<sup>b</sup> 63,885	<sup>b</sup> 199,684	<sup>a</sup> <sup>r</sup> 106,347	<sup>a</sup> <sup>r</sup> 264,219
All other . . . . .	<sup>a</sup> 24,011	137,906	<sup>r</sup> 20,583	120,172

- Represents zero. D Withheld to avoid disclosing data for individual companies. <sup>r</sup>Revised by 5 percent or more from previously published data.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 19 percent of this item is estimated. <sup>b</sup>20 to 49 percent of this item is estimated.

Table 53. **Shipments, Exports, Imports, and Apparent Consumption of Gloves and Mittens: 1998 and 1997**

[Quantity in thousand dozen pairs. Value and calculated import duty in millions of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Percent exports to manufacturers' shipments		Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup>		Percent imports to apparent consumption	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value <sup>3</sup>	Quantity	Value	Quantity	Value
<b>1998</b>													
3159921	Knitted, not coated or impregnated gloves and mittens . . . . .	30,495	202,606	1,037	14,620	3.4	7.2	42,150	233,432	71,608	421,418	58.9	55.4
3159921	Knitted, plastics or rubber, coated or impregnated gloves and mittens . . . . .	7,432	125,677	2,209	28,542	29.7	22.7	9,532	85,268	14,755	182,403	64.6	46.7
3159921	Woven, nonimpregnated gloves and mittens . . . . .	2,917	51,979	1,131	17,449	38.8	33.6	10,150	63,636	11,936	98,166	85.0	64.8
3159921	Woven impregnated gloves and mittens . . . . .	423	7,053	121	1,823	28.6	25.8	1,441	9,015	1,743	14,245	82.7	63.3
3159923, 25	All leather and leather and fabrics combination gloves and mittens . . . . .	1,306	115,754	231	7,246	17.7	6.3	16,493	330,081	17,568	438,589	93.9	75.3
3262995	Rubber, surgical and medical gloves . . . . .	63,885	199,684	14,424	32,085	22.6	16.1	1,053,546	874,921	1,103,007	1,042,520	95.5	83.9
3262995	Rubber, other gloves . . . . .	24,011	137,906	4,343	29,131	18.1	21.1	151,612	188,729	171,280	297,504	88.5	63.4
3261996	Plastics gloves, including surgical, medical, and other . . . . .	39,678	53,117	9,359	62,044	23.6	116.8	489,796	191,267	520,115	182,340	94.2	104.9
<b>1997</b>													
3159921	Knitted, not coated or impregnated gloves and mittens . . . . .	<sup>r</sup> 29,058	<sup>r</sup> 203,237	886	13,873	3.0	6.8	38,660	235,911	66,832	425,275	57.8	55.5
3159921	Knitted, plastics or rubber, coated or impregnated gloves and mittens . . . . .	7,015	118,303	1,465	24,390	20.9	20.6	7,566	72,334	13,116	166,247	57.7	43.5
3159921	Woven, nonimpregnated gloves and mittens . . . . .	3,210	55,635	1,208	15,404	37.6	27.7	10,554	68,266	12,556	108,497	84.1	62.9
3159921	Woven impregnated gloves and mittens . . . . .	370	5,909	110	1,420	29.7	24.0	1,419	9,300	1,679	13,789	84.5	67.4

See footnotes at end of table.



**Table 53. Shipments, Exports, Imports, and Apparent Consumption of Gloves and Mittens: 1998 and 1997—Con.**

[Quantity in thousand dozen pairs. Value and calculated import duty in millions of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Percent exports to manufacturers' shipments		Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup>		Percent imports to apparent consumption	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value <sup>3</sup>	Quantity	Value	Quantity	Value
	<b>1997—Con.</b>												
3159923, 25	All leather and leather and fabrics combination gloves and mittens. . . . .	'1,462	123,377	216	6,562	14.8	5.3	16,324	359,165	17,570	475,980	92.9	75.5
3262995	Rubber, surgical and medical gloves. . . . .	'106,347	'264,219	13,724	38,308	12.9	14.5	862,610	762,557	955,233	988,468	90.3	77.1
3262995	Rubber, other gloves. . . . .	'20,583	120,172	3,274	27,897	15.9	23.2	97,299	168,648	114,608	260,923	84.9	64.6
3261996	Plastics gloves, including surgical, medical, and other	41,312	58,595	8,369	56,386	20.3	96.2	387,144	156,652	420,087	158,861	92.2	98.6

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>4</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>5</sup>Apparent consumption represents new domestic supply and is derived by subtracting exports from total of manufacturers' shipments plus imports.

Note: Export and import data include glove linings that are not available by separate classification; however, this item is not included in manufacturers' shipments. For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

## HISTORICAL NOTE

Data on apparel have been collected by the Census Bureau since 1923. In 1955, the MA23A apparel series consolidated, on an annual basis, five separate series that were formerly conducted independently (between 1923 and 1954). The 1968 apparel report was the first in this series to show quantity and value for each major product description. Previously, only product code values and/or production data were published.

For the years 1980 through 1985, similar data were published separately as MA23E, Men's and Boys' Outerwear, MA23F, Women's and Children's Outerwear, and MA23G, Underwear and Nightwear. Prior to 1984, data on foundation garments were published separately as MA23J, Foundation Garments.

The data were again published on an annual basis from 1986 through 1989 as the MA23A. Since 1990, the data

have been published quarterly as the MQ23A. The annual summary (published as MQ315A for 1998) shows any revisions to the quarterly data.

Data on gloves and mittens have also been collected since 1923. They are collected on MA315D (MA23D), Gloves and Mittens.

Additional information for the apparel industry (employment, payroll, cost of materials, capital expenditures, inventories, etc.) is also collected by the Census Bureau and is shown in the census of manufactures and the annual survey of manufactures series.

## CONTACT FOR DATA USERS

For additional information on these data, contact Matt Gaines, 301-457-4642.

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## BED AND BATH FURNISHINGS—MQ314X (FORMERLY MQ23X)

### INTRODUCTION

The data shown for sheets, pillowcases, and towels are for finished products. They do not include sheeting fabrics that may be used later in items such as comforter sets. However, included is a category for terry towel blanks, which are generally sold for further embellishment.

### EXPLANATION OF TERMS

#### Distribution Channels

**Branded retail.** Sales of company brands, including premium goods, drops (closeouts), and seconds sold to domestic consumers through all types of retailers.

**Private ticket retail.** Sales with retail identification, with or without a manufacturer's corporate identification, but not with a manufacturer's brand name.

**Other (institutional).** Includes domestic distribution only and includes all federal and state contract business, commercial accounts (e.g., hotels) that are sold on a contract basis, and shipments to dealers who are involved in resale to the institutional trade.

**Exports.** Includes only direct company shipments for export, usually through a domestic international sales corporation, regardless of put-up or packaging. Export shipments through jobbers or distributors are included in the other categories (e.g., branded or private ticket).

**Inventories.** Represents the quantity of finished goods on hand, plus those held at private or public warehouses by the manufacturers who own the goods.

#### Products

**Sheets.** Excludes bedsheets fabrics used for bedspreads, shower curtains, tablecloths, piece goods, etc.

**Sheet sets.** Packages of at least two sheets and one pillowcase that may contain additional sheets, pillowcases, or other items.

**Kitchen accessories.** Includes items such as terry cloth aprons, pot holders, dish cloths, and toaster covers.

**Towel blanks.** Includes towels sold for further processing elsewhere. The figure reported for finished terry woven towels includes towel blanks; thus, both sets of data are not additive.

#### Types of Finish

**Solids (sheets).** Includes solid color sheets with attached hems or piping.

**Fancies.** Towels include jacquards, mixed color or pattern weaves, prints, embroidered, and attached or embellished hems. Excludes solid color, white doobby, and white cam. Sheets include prints and solids with embroidery, lace, or other embellishments, except attached hems or piping.

**Table 54. Summary of Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1991 to 1998**

[Quantity in thousands of dozens. Value in thousands of dollars]

Year and quarter	Sheets, flat and fitted <sup>1</sup>			Pillowcases			Terry towels		
	Production (quantity)	Shipments		Production (quantity)	Shipments		Production (quantity)	Shipments	
		Quantity	Value		Quantity	Value		Quantity	Value
<b>1998, total</b> .....	19,749	20,095	1,389,609	17,956	18,473	429,269	45,866	43,084	1,313,403
Fourth quarter .....	5,392	5,044	340,708	4,974	4,668	103,454	10,745	10,695	321,274
Third quarter .....	4,791	5,356	368,630	4,674	5,083	118,642	11,501	10,781	332,751
Second quarter .....	4,485	4,898	344,161	3,896	4,459	104,610	11,681	10,829	326,826
First quarter .....	5,081	4,797	336,110	4,412	4,263	102,563	11,939	10,779	332,552
<b>1997, total</b> .....	19,810	19,745	1,432,566	15,549	17,520	434,012	46,173	44,980	1,308,816
Fourth quarter .....	4,508	4,747	361,932	3,939	4,293	98,487	11,818	11,156	331,301
Third quarter .....	4,991	5,498	389,375	4,209	4,892	125,311	11,006	11,068	326,724
Second quarter .....	5,271	4,982	340,586	3,728	4,356	104,142	11,698	11,344	327,461
First quarter .....	5,040	4,518	340,673	3,673	3,979	106,072	11,651	11,412	323,330
1996 .....	19,257	16,108	1,344,525	14,192	14,234	398,722	45,323	46,991	1,224,654
1995 .....	18,302	15,282	1,242,271	13,901	14,232	388,185	49,084	47,939	1,147,510
1994 .....	17,906	16,190	1,230,863	13,701	14,622	372,227	48,974	48,348	1,130,082
1993 .....	16,826	16,331	1,197,095	12,304	14,464	370,620	48,529	47,161	1,071,837
1992 .....	14,908	15,300	1,129,122	12,528	12,945	322,304	48,789	46,885	1,053,042
1991 .....	13,851	14,505	1,076,310	11,301	12,082	302,073	43,158	43,596	991,756

<sup>1</sup>Excludes crib sheets.

Note: For 1993, a number of companies were added based on information in the 1992 Census of Manufactures. Data were received from these companies for 1993; therefore, information shown for years prior to 1993 may not be directly comparable. These changes represent approximately 2.0 percent of total value of shipments for sheets, pillowcases, and towels.

**Table 55. Inventories and Unfilled Orders of Sheets, Pillowcases, and Finished Terry Towels: 1998 and 1997**

[Thousands of dozens]

Year and quarter	Inventories			Unfilled orders		
	Sheets, flat and fitted <sup>1</sup>	Pillowcases	Terry towels	Sheets, flat and fitted <sup>1</sup>	Pillowcases	Terry towels
<b>1998</b>						
Fourth quarter .....	2,846	2,639	7,218	117,995	33,835	(D)
Third quarter .....	2,739	2,457	8,871	122,035	36,125	(D)
Second quarter .....	3,025	2,600	8,348	142,166	40,572	(D)
First quarter .....	2,952	2,524	8,135	134,577	38,062	(D)
<b>1997</b>						
Fourth quarter .....	2,712	2,416	7,187	121,449	32,511	(D)
Third quarter .....	2,694	2,346	6,570	114,151	34,259	(D)
Second quarter .....	2,882	2,499	8,647	148,437	45,012	(D)
First quarter .....	2,754	2,322	7,301	132,181	40,374	(D)

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Excludes crib sheets.

**Table 56. Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1998 and 1997**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	1998			1997		
	Production (quantity)	Quantity	Value	Production (quantity)	Quantity	Value
<b>TOTAL</b>						
Sheets and pillowcases.....	38,542	39,394	1,852,139	36,301	38,205	1,905,586
Crib size sheets and pillowcases.....	837	826	33,261	942	940	39,008
Sheets, excluding crib.....	19,749	20,095	1,389,609	19,810	19,745	1,432,566
By type:						
Flat sheets.....	10,063	10,000	684,086	10,372	10,152	734,704
Fitted sheets.....	8,104	8,565	554,685	8,128	8,285	583,716
Not specified by kind (n.s.k.).....	1,582	1,530	150,838	1,310	1,308	114,146
By thread count:						
195 and over.....	4,414	4,686	472,962	4,747	4,411	498,786
180 to 194.....	7,474	7,418	478,540	7,455	7,549	516,148
135 to 179.....	1,282	1,591	53,398	1,362	1,337	45,083
125 to 134.....	2,737	2,612	93,590	2,491	2,752	107,204
Under 125.....	2,260	2,258	140,281	2,445	2,388	151,199
Not specified by kind (n.s.k.).....	1,582	1,530	150,838	1,310	1,308	114,146
By fabrics:						
Chiefly polyester blends with cotton.....	11,939	12,566	667,225	11,913	11,824	678,675
All cotton and chiefly cotton.....	7,577	7,299	718,309	(D)	(D)	(D)
All other fabrics.....	233	230	4,075	(D)	(D)	(D)
By size:						
King.....	(X)	2,553	272,763	(X)	2,595	294,321
Queen.....	(X)	4,150	397,925	(X)	4,122	422,420
Full.....	(X)	5,375	283,258	(X)	5,118	293,743
Twin.....	(X)	6,123	266,051	(X)	6,241	288,824
Single and smaller.....	(X)	364	18,774	(X)	361	19,112
Not specified by kind (n.s.k.).....	(X)	1,530	150,838	(X)	1,308	114,146
Flannel sheets.....	(D)	(D)	(D)	(D)	(D)	(D)
Pillowcases, excluding crib size.....	17,956	18,473	429,269	15,549	17,520	434,012
By thread count:						
195 and over.....	4,444	4,734	187,489	3,802	4,351	184,346
180 to 194.....	7,181	7,378	146,559	6,447	7,491	155,144
135 to 179.....	882	1,176	12,918	898	945	9,264
125 to 134.....	2,034	1,927	14,773	1,812	2,096	22,093
Under 125.....	2,130	1,967	47,159	2,016	2,069	42,993
Not specified by kind (n.s.k.).....	1,285	1,291	20,371	574	568	20,172
By fabrics:						
Chiefly polyester blends with cotton.....	11,011	11,591	197,577	10,312	10,570	200,833
All cotton and chiefly cotton.....	6,922	6,859	231,225	5,210	6,923	232,157
All other fabrics.....	23	23	467	27	27	1,022
Flannel pillowcases.....	(D)	(D)	(D)	(D)	(D)	(D)
Branded retail shipments of sheets and pillowcases (except crib).....	(X)	21,328	1,146,157	(X)	21,744	1,224,576
Upstairs brand.....	(X)	10,229	647,637	(X)	10,763	712,253
Open brand.....	(X)	11,099	498,520	(X)	10,981	512,323
Sheet sets, excluding waterbed sheet sets.....	(X)	3,321	684,144	(X)	3,125	674,558
Waterbed sheet sets.....	(X)	(D)	(D)	(X)	(D)	(D)
Finished towels.....	45,866	43,084	1,313,403	46,173	44,980	1,308,816
By type:						
Sheared.....	2,304	2,019	51,696	3,180	3,007	59,159
Nonsheared.....	36,284	34,005	1,108,926	35,403	34,545	1,072,370
Not specified by kind (n.s.k.).....	7,278	7,060	152,781	7,590	7,428	177,287
By end use:						
Kitchen.....	1,411	1,228	27,205	2,637	2,541	49,306
Bath.....	26,585	24,749	870,247	24,586	23,667	833,737
Hand, face, guest, and fingertip.....	14,384	13,915	279,677	15,105	15,322	285,731
Bath/tub mats.....	1,168	1,027	34,633	1,060	1,002	32,539
All other types, including larger than bath (queen/king size bath towels, bath sheets, beach towels, and bath mats).....	2,318	2,165	101,641	2,785	2,448	107,503
Not specified by kind (n.s.k.).....	-	-	-	-	-	-

See footnotes at end of table.

Table 56. **Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1998 and 1997—Con.**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	1998			1997		
	Production (quantity)	Quantity	Value	Production (quantity)	Quantity	Value
<b>TOTAL—Con.</b>						
Terry towels sold for further processing . . . . .	(X)	619	5,791	(X)	1,184	12,888
Washcloths . . . . .	28,127	28,726	239,710	28,658	28,747	235,933
Branded shipments of towels and washcloths . . . . .	(X)	40,367	956,899	(X)	40,194	896,515
Upstairs brand . . . . .	(X)	7,821	286,236	(X)	7,833	271,362
Open brand . . . . .	(X)	32,546	670,663	(X)	32,361	625,153
Huck and crash towels . . . . .	1,798	1,746	20,167	(D)	(D)	(D)
Other terry products:						
Terry cloth sold by the yard <sup>1</sup> . . . . .	1,533	1,347	5,053	2,398	2,483	9,634
Pot holders, aprons, dishcloths, etc. . . . .	(X)	483	4,573	(X)	1,371	10,752
Knit and/or crocheted bedspreads . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
Tailored bedspreads (except knit) . . . . .	623	673	130,383	691	733	138,483
Quilted:						
All cotton and chiefly cotton . . . . .	267	316	58,173	223	263	47,831
All manmade and chiefly manmade . . . . .	299	300	61,220	431	433	81,625
Nonquilted:						
All cotton and chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
All manmade and chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored bedspreads . . . . .	126	120	31,157	171	283	61,572
All cotton and chiefly cotton . . . . .	94	91	22,062	48	158	32,008
All manmade and chiefly manmade . . . . .	32	29	9,095	123	125	29,564
Comforters and quilts . . . . .	2,930	2,883	992,021	2,688	2,689	935,668
All cotton and chiefly cotton . . . . .	806	715	296,997	634	627	255,726
All manmade and chiefly manmade . . . . .	1,866	1,914	551,192	1,829	1,842	562,193
Downfilled . . . . .	258	254	143,832	225	220	117,749
Blankets . . . . .	3,391	3,191	419,102	3,322	3,330	481,076
<b>FOURTH QUARTER</b>						
Sheets and pillowcases . . . . .	10,564	9,911	451,525	8,668	9,259	469,896
Crib size sheets and pillowcases . . . . .	198	199	7,363	221	219	9,477
Sheets, excluding crib . . . . .	5,392	5,044	340,708	4,508	4,747	361,932
By type:						
Flat sheets . . . . .	2,719	2,396	162,571	2,314	2,395	185,305
Fitted sheets . . . . .	2,291	2,251	139,220	1,885	2,048	151,170
Not specified by kind (n.s.k.) . . . . .	382	397	38,917	309	304	25,457
By thread count:						
195 and over . . . . .	1,356	1,342	120,370	910	955	115,942
180 to 194 . . . . .	2,016	1,730	110,437	1,723	1,821	132,478
135 to 179 . . . . .	331	405	13,486	298	299	10,557
125 to 134 . . . . .	735	673	25,570	577	648	28,209
Under 125 . . . . .	572	497	31,928	691	720	49,289
Not specified by kind (n.s.k.) . . . . .	382	397	38,917	309	304	25,457
By fabrics:						
Chiefly polyester blends with cotton . . . . .	3,080	3,180	163,171	2,896	2,803	166,268
All cotton and chiefly cotton . . . . .	2,250	1,800	176,321	(D)	(D)	(D)
All other fabrics . . . . .	62	64	1,216	(D)	(D)	(D)
By size:						
King . . . . .	(X)	632	68,003	(X)	635	77,528
Queen . . . . .	(X)	1,033	99,511	(X)	1,015	109,687
Full . . . . .	(X)	1,362	67,357	(X)	1,201	72,518
Twin . . . . .	(X)	1,521	61,916	(X)	1,508	72,287
Single and smaller . . . . .	(X)	99	5,004	(X)	84	4,455
Not specified by kind (n.s.k.) . . . . .	(X)	397	38,917	(X)	304	25,457
Flannel sheets . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
Pillowcases, excluding crib size . . . . .	4,974	4,668	103,454	3,939	4,293	98,487
By thread count:						
195 and over . . . . .	1,297	1,277	46,296	968	1,042	40,473
180 to 194 . . . . .	1,959	1,748	33,322	1,658	1,797	34,652
135 to 179 . . . . .	229	294	3,276	200	217	2,037
125 to 134 . . . . .	571	496	3,798	424	510	4,741
Under 125 . . . . .	499	416	10,933	558	593	12,406
Not specified by kind (n.s.k.) . . . . .	419	437	5,829	131	134	4,178

See footnotes at end of table.

Table 56. **Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1998 and 1997—Con.**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	1998			1997		
	Production (quantity)	Quantity	Value	Production (quantity)	Quantity	Value
<b>FOURTH QUARTER—Con.</b>						
Sheets and pillowcases—Con.						
Pillowcases, excluding crib size—Con.						
By fabrics:						
Chiefly polyester blends with cotton . . . . .	2,836	3,025	48,785	2,540	2,564	43,597
All cotton and chiefly cotton . . . . .	2,131	1,636	54,542	1,391	1,721	54,540
All other fabrics . . . . .	7	7	127	8	8	350
Flannel pillowcases . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
Branded retail shipments of sheets and pillowcases (except crib) . . . . .						
Upstairs brand . . . . .	(X)	5,221	268,349	(X)	5,238	302,203
Open brand . . . . .	(X)	2,760	162,610	(X)	2,632	178,846
Sheet sets, excluding waterbed sheet sets . . . . .	(X)	2,461	105,739	(X)	2,606	123,357
Waterbed sheet sets . . . . .	(X)	803	169,692	(X)	824	182,570
Waterbed sheet sets . . . . .	(X)	(D)	(D)	(X)	(D)	(D)
Finished towels . . . . .	10,745	10,695	321,274	11,818	11,156	331,301
By type:						
Sheared . . . . .	448	413	12,793	604	480	12,058
Nonsheared . . . . .	8,324	8,343	269,997	9,482	8,958	279,432
Not specified by kind (n.s.k.) . . . . .	1,973	1,939	38,484	1,732	1,718	39,811
By end use:						
Kitchen . . . . .	295	270	5,126	697	592	13,236
Bath . . . . .	6,553	6,221	211,281	6,405	5,968	212,838
Hand, face, guest, and fingertip . . . . .	3,060	3,394	70,452	3,783	3,781	71,869
Bath/tub mats . . . . .	272	250	8,154	287	258	8,458
All other types, including larger than bath (queen/king size bath towels, bath sheets, beach towels, and bath mats) . . . . .	565	560	26,261	646	557	24,900
Not specified by kind (n.s.k.) . . . . .	-	-	-	-	-	-
Terry towels sold for further processing . . . . .	(X)	92	780	(X)	129	1,783
Washcloths . . . . .	6,655	6,669	57,423	7,352	7,393	59,379
Branded shipments of towels and washcloths . . . . .						
Upstairs brand . . . . .	(X)	9,440	226,630	(X)	10,548	235,082
Open brand . . . . .	(X)	1,580	57,763	(X)	1,665	53,192
Huck and crash towels . . . . .	(X)	7,860	168,867	(X)	8,883	181,890
Huck and crash towels . . . . .	468	480	5,519	(D)	(D)	(D)
Other terry products:						
Terry cloth sold by the yard <sup>1</sup> . . . . .	153	134	465	526	436	1,668
Pot holders, aprons, dishcloths, etc. . . . .	(X)	58	512	(X)	326	2,571
Knit and/or crocheted bedspreads . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
Tailored bedspreads (except knit) . . . . .	146	163	30,755	186	200	32,878
Quilted:						
All cotton and chiefly cotton . . . . .	64	79	14,076	52	65	11,514
All manmade and chiefly manmade . . . . .	68	70	13,953	124	125	19,054
Nonquilted:						
All cotton and chiefly cotton . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
All manmade and chiefly manmade . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored bedspreads . . . . .	27	26	7,740	38	92	16,758
All cotton and chiefly cotton . . . . .	19	19	5,510	10	65	9,576
All manmade and chiefly manmade . . . . .	8	7	2,230	28	27	7,182
Comforters and quilts . . . . .	714	707	263,423	709	730	259,066
All cotton and chiefly cotton . . . . .	191	176	73,502	159	169	64,696
All manmade and chiefly manmade . . . . .	446	454	136,243	464	477	147,872
Downfilled . . . . .	77	77	53,678	86	84	46,498
Blankets . . . . .	878	1,179	158,280	917	1,169	176,559

See footnotes at end of table.

Table 56. **Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1998 and 1997—Con.**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	1998			1997		
	Production (quantity)	Quantity	Value	Production (quantity)	Quantity	Value
<b>THIRD QUARTER</b>						
Sheets and pillowcases.....	9,666	10,641	495,869	9,429	10,629	524,516
Crib size sheets and pillowcases .....	201	202	8,597	229	239	9,830
Sheets, excluding crib .....	4,791	5,356	368,630	4,991	5,498	389,375
By type:						
Flat sheets .....	2,472	2,710	185,639	2,606	2,799	199,871
Fitted sheets .....	1,949	2,278	145,740	2,031	2,355	160,343
Not specified by kind (n.s.k.) .....	370	368	37,251	354	344	29,161
By thread count:						
195 and over .....	1,017	1,295	125,441	987	1,221	138,294
180 to 194 .....	1,803	1,945	122,534	1,850	2,055	137,867
135 to 179 .....	303	456	18,272	405	395	11,111
125 to 134 .....	665	630	24,451	742	773	26,443
Under 125 .....	633	662	40,681	653	710	46,499
Not specified by kind (n.s.k.) .....	370	368	37,251	354	344	29,161
By fabrics:						
Chiefly polyester blends with cotton .....	2,878	3,297	172,335	3,184	3,309	172,741
All cotton and chiefly cotton .....	1,859	2,006	195,475	(D)	(D)	(D)
All other fabrics .....	54	53	820	(D)	(D)	(D)
By size:						
King .....	(X)	662	69,131	(X)	728	80,927
Queen .....	(X)	1,099	104,679	(X)	1,144	114,971
Full .....	(X)	1,493	77,961	(X)	1,455	80,560
Twin .....	(X)	1,626	74,066	(X)	1,736	78,739
Single and smaller .....	(X)	108	5,542	(X)	91	5,017
Not specified by kind (n.s.k.) .....	(X)	368	37,251	(X)	344	29,161
Flannel sheets .....	(D)	(D)	(D)	(D)	(D)	(D)
Pillowcases, excluding crib size .....	4,674	5,083	118,642	4,209	4,892	125,311
By thread count:						
195 and over .....	1,047	1,301	50,874	922	1,194	52,705
180 to 194 .....	1,768	1,898	38,152	1,785	2,064	44,237
135 to 179 .....	190	341	4,533	259	280	2,175
125 to 134 .....	486	473	3,993	561	596	5,739
Under 125 .....	638	537	15,054	552	619	13,937
Not specified by kind (n.s.k.) .....	545	533	6,036	130	139	6,518
By fabrics:						
Chiefly polyester blends with cotton .....	2,998	3,232	52,390	2,742	2,923	55,590
All cotton and chiefly cotton .....	1,671	1,846	66,159	1,461	1,963	69,525
All other fabrics .....	5	5	93	6	6	196
Flannel pillowcases .....	(D)	(D)	(D)	(D)	(D)	(D)
Branded retail shipments of sheets and pillowcases (except crib) .....	(X)	5,587	310,370	(X)	5,897	340,330
Upstairs brand .....	(X)	2,624	173,762	(X)	2,788	190,624
Open brand .....	(X)	2,963	136,608	(X)	3,109	149,706
Sheet sets, excluding waterbed sheet sets .....	(X)	876	177,341	(X)	856	184,276
Waterbed sheet sets .....	(X)	(D)	(D)	(X)	(D)	(D)
Finished towels .....	11,501	10,781	332,751	11,006	11,068	326,724
By type:						
Sheared .....	574	525	13,442	619	633	14,251
Nonsheared .....	8,897	8,264	280,918	8,656	8,754	273,129
Not specified by kind (n.s.k.) .....	2,030	1,992	38,391	1,731	1,681	39,344
By end use:						
Kitchen .....	308	258	5,269	616	543	10,754
Bath .....	6,796	6,338	221,611	5,857	5,827	206,157
Hand, face, guest, and fingertip .....	3,548	3,388	70,768	3,594	3,832	73,649
Bath/tub mats .....	322	275	9,877	277	271	8,820
All other types, including larger than bath (queen/king size bath towels, bath sheets, beach towels, and bath mats) .....	527	522	25,226	662	595	27,344
Not specified by kind (n.s.k.) .....	-	-	-	-	-	-

See footnotes at end of table.

Table 56. **Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1998 and 1997—Con.**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	1998			1997		
	Production (quantity)	Quantity	Value	Production (quantity)	Quantity	Value
<b>THIRD QUARTER—Con.</b>						
Terry towels sold for further processing .....	(X)	166	1,445	(X)	219	2,571
Washcloths .....	7,664	7,324	62,255	6,686	6,954	60,344
Branded shipments of towels and washcloths .....	(X)	10,034	244,502	(X)	9,264	221,111
Upstairs brand .....	(X)	2,023	76,344	(X)	2,193	76,409
Open brand .....	(X)	8,011	168,158	(X)	7,071	144,702
Huck and crash towels .....	361	413	4,878	(D)	(D)	(D)
Other terry products:						
Terry cloth sold by the yard <sup>1</sup> .....	287	278	1,153	629	646	2,534
Pot holders, aprons, dishcloths, etc.....	(X)	116	1,256	(X)	318	2,408
Knit and/or crocheted bedspreads .....	(D)	(D)	(D)	(D)	(D)	(D)
Tailored bedspreads (except knit) .....	154	169	32,826	186	201	44,024
Quilted:						
All cotton and chiefly cotton .....	66	76	14,265	58	74	13,505
All manmade and chiefly manmade .....	74	79	15,828	119	118	28,281
Nonquilted:						
All cotton and chiefly cotton .....	(D)	(D)	(D)	(D)	(D)	(D)
All manmade and chiefly manmade .....	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored bedspreads .....	34	33	7,776	39	70	15,891
All cotton and chiefly cotton .....	27	26	5,679	14	43	8,955
All manmade and chiefly manmade .....	7	7	2,097	25	27	6,936
Comforters and quilts .....	728	748	260,288	680	678	246,112
All cotton and chiefly cotton .....	201	179	77,021	158	150	63,908
All manmade and chiefly manmade .....	443	482	133,057	450	457	141,606
Downfilled .....	84	87	50,210	72	71	40,598
Blankets .....	922	880	128,831	798	900	158,491
<b>SECOND QUARTER</b>						
Sheets and pillowcases .....	8,595	9,565	457,201	9,253	9,581	454,693
Crib size sheets and pillowcases .....	214	208	8,430	254	243	9,965
Sheets, excluding crib .....	4,485	4,898	344,161	5,271	4,982	340,586
By type:						
Flat sheets .....	2,295	2,541	173,363	2,808	2,619	176,668
Fitted sheets .....	1,800	2,004	136,434	2,145	2,035	135,142
Not specified by kind (n.s.k.) .....	390	353	34,364	318	328	28,776
By thread count:						
195 and over .....	942	1,090	118,417	1,415	1,078	116,869
180 to 194 .....	1,691	1,942	126,262	1,960	1,907	123,444
135 to 179 .....	314	378	11,817	357	362	10,649
125 to 134 .....	657	636	21,093	658	781	30,286
Under 125 .....	491	499	32,208	563	526	30,562
Not specified by kind (n.s.k.) .....	390	353	34,364	318	328	28,776
By fabrics:						
Chiefly polyester blends with cotton .....	2,904	3,107	171,259	2,953	3,021	160,708
All cotton and chiefly cotton .....	1,522	1,734	171,847	(D)	(D)	(D)
All other fabrics .....	59	57	1,055	(D)	(D)	(D)
By size:						
King .....	(X)	633	66,791	(X)	634	66,079
Queen .....	(X)	1,031	100,557	(X)	1,004	97,056
Full .....	(X)	1,282	69,620	(X)	1,320	71,255
Twin .....	(X)	1,509	68,146	(X)	1,591	71,999
Single and smaller .....	(X)	90	4,683	(X)	105	5,421
Not specified by kind (n.s.k.) .....	(X)	353	34,364	(X)	328	28,776
Flannel sheets .....	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.



Table 56. **Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1998 and 1997—Con.**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	1998			1997		
	Production (quantity)	Quantity	Value	Production (quantity)	Quantity	Value
<b>SECOND QUARTER—Con.</b>						
Sheets and pillowcases—Con.						
Pillowcases, excluding crib size .....	3,896	4,459	104,610	3,728	4,356	104,142
By thread count:						
195 and over .....	951	1,105	45,774	891	1,017	43,937
180 to 194 .....	1,576	1,968	38,419	1,551	1,898	38,828
135 to 179 .....	230	278	2,767	235	246	1,831
125 134 .....	476	452	3,183	466	596	6,228
Under 125 .....	505	498	10,239	452	462	9,261
Not specified by kind (n.s.k.) .....	158	158	4,228	133	137	4,057
By fabrics:						
Chiefly polyester blends with cotton .....	2,520	2,740	50,051	2,493	2,629	47,806
All cotton and chiefly cotton .....	1,371	1,714	54,454	1,228	1,720	56,090
All other fabrics .....	5	5	105	7	7	246
Flannel pillowcases .....	(D)	(D)	(D)	(D)	(D)	(D)
Branded retail shipments of sheets and pillowcases (except crib) .....	(X)	5,415	287,633	(X)	5,109	286,112
Upstairs brand .....	(X)	2,499	159,189	(X)	2,464	163,897
Open brand .....	(X)	2,916	128,444	(X)	2,645	122,215
Sheet sets, excluding waterbed sheet sets .....	(X)	818	167,203	(X)	764	159,375
Waterbed sheet sets .....	(X)	(D)	(D)	(X)	(D)	(D)
Finished towels .....	11,681	10,829	326,826	11,698	11,344	327,461
By type:						
Sheared .....	541	500	11,982	1,040	893	17,086
Nonsheared .....	9,480	8,758	279,104	8,955	8,737	271,027
Not specified by kind (n.s.k.) .....	1,660	1,571	35,740	1,703	1,714	39,348
By end use:						
Kitchen .....	425	321	6,364	543	540	9,828
Bath .....	6,561	6,162	217,386	6,150	5,954	208,911
Hand, face, guest, and fingertip .....	3,810	3,541	68,699	4,041	3,993	73,042
Bath/tub mats .....	263	256	8,410	264	252	8,108
All other types, including larger than bath (queen/king size bath towels, bath sheets, beach towels, and bath mats) .....	622	549	25,967	700	605	27,572
Not specified by kind (n.s.k.) .....	-	-	-	-	-	-
Terry towels sold for further processing .....	(X)	161	1,399	(X)	401	4,226
Washcloths .....	7,053	7,498	60,242	7,252	7,297	57,383
Branded shipments of towels and washcloths .....	(X)	10,295	238,294	(X)	10,423	224,002
Upstairs brand .....	(X)	2,180	76,646	(X)	2,272	78,023
Open brand .....	(X)	8,115	161,648	(X)	8,151	145,979
Huck and crash towels .....	497	410	4,736	(D)	(D)	(D)
Other terry products:						
Terry cloth sold by the yard <sup>1</sup> .....	288	269	1,253	629	613	2,156
Pot holders, aprons, dishcloths, etc. ....	(X)	113	1,216	(X)	308	2,395
Knit and/or crocheted bedspreads .....	(D)	(D)	(D)	(D)	(D)	(D)
Tailored bedspreads (except knit) .....	160	173	34,080	167	178	33,417
Quilted:						
All cotton and chiefly cotton .....	67	81	15,417	58	68	12,176
All manmade and chiefly manmade .....	78	77	15,876	100	101	19,002
Nonquilted:						
All cotton and chiefly cotton .....	(D)	(D)	(D)	(D)	(D)	(D)
All manmade and chiefly manmade .....	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored bedspreads .....	32	30	7,602	49	81	17,754
All cotton and chiefly cotton .....	24	23	5,449	12	38	8,758
All manmade and chiefly manmade .....	8	7	2,153	37	43	8,996
Comforters and quilts .....	698	650	233,401	678	653	218,919
All cotton and chiefly cotton .....	193	162	67,788	159	176	68,499
All manmade and chiefly manmade .....	455	444	144,951	482	441	134,990
Downfilled .....	50	44	20,662	37	36	15,430
Blankets .....	800	523	59,388	692	613	78,864

See footnotes at end of table.

Table 56. **Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1998 and 1997—Con.**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	1998			1997		
	Production (quantity)	Quantity	Value	Production (quantity)	Quantity	Value
<b>FIRST QUARTER</b>						
Sheets and pillowcases.....	9,717	9,277	447,544	8,951	8,736	456,481
Crib size sheets and pillowcases.....	224	217	8,871	238	239	9,736
Sheets, excluding crib.....	5,081	4,797	336,110	5,040	4,518	340,673
By type:						
Flat sheets.....	2,577	2,353	162,513	2,644	2,339	172,860
Fitted sheets.....	2,064	2,032	133,291	2,067	1,847	137,061
Not specified by kind (n.s.k.).....	440	412	40,306	329	332	30,752
By thread count:						
195 and over.....	1,099	959	108,734	1,435	1,157	127,681
180 to 194.....	1,964	1,801	119,307	1,922	1,766	122,359
135 179.....	334	352	9,823	302	281	12,766
125 to 134.....	680	673	22,476	514	550	22,266
Under 125.....	564	600	35,464	538	432	24,849
Not specified by kind (n.s.k.).....	440	412	40,306	329	332	30,752
By fabrics:						
Chiefly polyester blends with cotton.....	3,077	2,982	160,460	2,880	2,691	178,958
All cotton and chiefly cotton.....	1,946	1,759	174,666	(D)	(D)	(D)
All other fabrics.....	58	56	984	(D)	(D)	(D)
By size:						
King.....	(X)	626	68,838	(X)	598	69,787
Queen.....	(X)	987	93,178	(X)	959	100,706
Full.....	(X)	1,238	68,320	(X)	1,142	69,410
Twin.....	(X)	1,467	61,923	(X)	1,406	65,799
Single and smaller.....	(X)	67	3,545	(X)	81	4,219
Not specified by kind (n.s.k.).....	(X)	412	40,306	(X)	332	30,752
Flannel sheets.....	(D)	(D)	(D)	(D)	(D)	(D)
Pillowcases, excluding crib size.....	4,412	4,263	102,563	3,673	3,979	106,072
By thread count:						
195 and over.....	1,149	1,051	44,545	1,021	1,098	47,231
180 to 194.....	1,878	1,764	36,666	1,453	1,732	37,427
135 to 179.....	233	263	2,342	204	202	3,221
125 to 134.....	501	506	3,799	361	394	5,385
Under 125.....	488	516	10,933	454	395	7,389
Not specified by kind (n.s.k.).....	163	163	4,278	180	158	5,419
By fabrics:						
Chiefly polyester blends with cotton.....	2,657	2,594	46,351	2,537	2,454	53,840
All cotton and chiefly cotton.....	1,749	1,663	56,070	1,130	1,519	52,002
All other fabrics.....	6	6	142	6	6	230
Flannel pillowcases.....	(D)	(D)	(D)	(D)	(D)	(D)
Branded retail shipments of sheets and pillowcases (except crib).....	(X)	5,105	279,805	(X)	5,500	295,931
Upstairs brand.....	(X)	2,346	152,076	(X)	2,879	178,886
Open brand.....	(X)	2,759	127,729	(X)	2,621	117,045
Sheet sets, excluding waterbed sheet sets.....	(X)	824	169,908	(X)	681	148,337
Waterbed sheet sets.....	(X)	(D)	(D)	(X)	(D)	(D)
Finished towels.....	11,939	10,779	332,552	11,651	11,412	323,330
By type:						
Sheared.....	741	581	13,479	917	1,001	15,764
Nonsheared.....	9,583	8,640	278,907	8,310	8,096	248,782
Not specified by kind (n.s.k.).....	1,615	1,558	40,166	2,424	2,315	58,784
By end use:						
Kitchen.....	383	379	10,446	781	866	15,488
Bath.....	6,675	6,028	219,969	6,174	5,918	205,831
Hand, face, guest, and fingertip.....	3,966	3,592	69,758	3,687	3,716	67,171
Bath/tub mats.....	311	246	8,192	232	221	7,153
All other types, including larger than bath (queen/king size bath towels, bath sheets, beach towels, and bath mats).....	604	534	24,187	777	691	27,687
Not specified by kind (n.s.k.).....	-	-	-	-	-	-

See footnotes at end of table.

Table 56. **Production and Shipments of Sheets, Pillowcases, and Terry Towels: 1998 and 1997—Con.**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	1998			1997		
	Production (quantity)	Quantity	Value	Production (quantity)	Quantity	Value
<b>FIRST QUARTER—Con.</b>						
Terry towels sold for further processing .....	(X)	200	2,167	(X)	435	4,308
Washcloths .....	6,755	7,235	59,790	7,368	7,103	58,827
Branded shipments of towels and washcloths .....	(X)	10,598	247,473	(X)	9,959	216,320
Upstairs brand .....	(X)	2,038	75,483	(X)	1,703	63,738
Open brand .....	(X)	8,560	171,990	(X)	8,256	152,582
Huck and crash towels .....	472	443	5,034	(D)	(D)	(D)
Other terry products:						
Terry cloth sold by the yard <sup>1</sup> .....	805	666	2,182	614	788	3,276
Pot holders, aprons, dish cloths, etc. ....	(X)	196	1,589	(X)	419	3,378
Knit and/or crocheted bedspreads .....	(D)	(D)	(D)	(D)	(D)	(D)
Tailored bedspreads (except knit) .....	163	168	32,722	152	154	28,164
Quilted:						
All cotton and chiefly cotton .....	70	80	14,415	55	56	10,636
All manmade and chiefly manmade .....	79	74	15,563	88	89	15,288
Nonquilted:						
All cotton and chiefly cotton .....	(D)	(D)	(D)	(D)	(D)	(D)
All manmade and chiefly manmade .....	(D)	(D)	(D)	(D)	(D)	(D)
Nontailored bedspreads .....	33	31	8,039	45	40	11,169
All cotton and chiefly cotton .....	24	23	5,424	12	12	4,719
All manmade and chiefly manmade .....	9	8	2,615	33	28	6,450
Comforters and quilts .....	790	778	234,909	621	628	211,571
All cotton and chiefly cotton .....	221	198	78,686	158	132	58,623
All manmade and chiefly manmade .....	522	534	136,941	433	467	137,725
Downfilled .....	47	46	19,282	30	29	15,223
Blankets .....	791	609	72,603	915	648	67,162

- Represents zero.    D Withheld to avoid disclosing data for individual companies.    n.s.k. Not specified by kind.    X Not applicable.

<sup>1</sup>To extent that terry cloth yard goods are fabricated into towels and washcloths, duplication exists in production of these items.

**Table 57. Quantity and Value of Shipments of Sheets, Pillowcases, and Terry Towels by Distribution Channel: 1998**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	Total		Fourth quarter		Third quarter		Second quarter		First quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Sheets, flat and fitted (except crib) .....	20,095	1,389,609	5,044	340,708	5,356	368,630	4,898	344,161	4,797	336,110
By distribution channel:										
Branded retail .....	10,592	846,862	2,603	199,424	2,763	226,651	2,791	213,699	2,435	207,088
Private ticket retail .....	2,632	199,554	742	54,205	735	52,681	635	46,595	520	46,073
Exports .....	575	42,706	164	13,000	125	10,448	154	9,005	132	10,253
Institutional .....	4,766	149,649	1,138	35,162	1,365	41,599	965	40,498	1,298	32,390
N.s.k. ....	1,530	150,838	397	38,917	368	37,251	353	34,364	412	40,306
By type of finish:										
White .....	2,162	134,744	529	31,294	609	40,021	547	34,829	477	28,600
Solid colors .....	5,255	387,885	1,315	95,280	1,412	103,824	1,265	95,165	1,263	93,616
Fancies <sup>1</sup> .....	11,148	716,142	2,803	175,217	2,967	187,534	2,733	179,803	2,645	173,588
N.s.k. ....	1,530	150,838	397	38,917	368	37,251	353	34,364	412	40,306
Pillowcases (except crib) .....	18,473	429,269	4,668	103,454	5,083	118,642	4,459	104,610	4,263	102,563
By distribution channel:										
Branded retail .....	10,736	299,295	2,618	68,925	2,824	83,719	2,624	73,934	2,670	72,717
Private ticket retail .....	2,608	60,831	763	16,645	744	15,997	524	13,884	577	14,305
Exports .....	520	11,387	146	3,409	110	2,863	136	2,168	128	2,947
Institutional .....	3,318	37,385	704	8,646	872	10,027	1,017	10,396	725	8,316
N.s.k. ....	1,291	20,371	437	5,829	533	6,036	158	4,228	163	4,278
By type of finish:										
White .....	2,347	39,165	547	8,812	639	11,449	635	10,277	526	8,627
Solid colors .....	4,961	135,341	1,208	32,705	1,334	37,547	1,242	32,681	1,177	32,408
Fancies <sup>1</sup> .....	9,874	234,392	2,476	56,108	2,577	63,610	2,424	57,424	2,397	57,250
N.s.k. ....	1,291	20,371	437	5,829	533	6,036	158	4,228	163	4,278
Towels .....	43,084	1,313,403	10,695	321,274	10,781	332,751	10,829	326,826	10,779	332,552
By distribution channel:										
Branded retail .....	23,781	804,766	5,687	191,263	5,808	204,841	6,111	200,960	6,175	207,702
Private ticket retail .....	5,249	173,359	1,502	51,611	1,345	43,448	1,308	42,798	1,094	35,502
Exports .....	950	32,343	216	8,593	211	7,360	239	7,553	284	8,837
Institutional .....	6,044	150,154	1,351	31,323	1,425	38,711	1,600	39,775	1,668	40,345
N.s.k. ....	7,060	152,781	1,939	38,484	1,992	38,391	1,571	35,740	1,558	40,166
By type of finish:										
White .....	9,356	212,701	2,063	48,532	2,407	55,976	2,485	56,596	2,401	51,597
Solid colors .....	23,994	854,858	6,067	211,215	5,798	217,943	6,116	212,383	6,013	213,317
Fancies <sup>1</sup> .....	2,674	93,063	626	23,043	584	20,441	657	22,107	807	27,472
N.s.k. ....	7,060	152,781	1,939	38,484	1,992	38,391	1,571	35,740	1,558	40,166
Washcloths .....	28,726	239,710	6,669	57,423	7,324	62,255	7,498	60,242	7,235	59,790
By distribution channel:										
Branded retail .....	16,586	152,133	3,753	35,367	4,226	39,661	4,184	37,334	4,423	39,771
Private ticket retail .....	1,911	25,145	624	7,892	502	6,585	466	6,337	319	4,331
Exports .....	286	3,185	56	600	62	606	67	673	101	1,306
Institutional .....	5,511	26,769	1,158	5,664	1,411	7,207	1,672	7,733	1,270	6,165
N.s.k. ....	4,432	32,478	1,078	7,900	1,123	8,196	1,109	8,165	1,122	8,217

n.s.k Not specified by kind.

<sup>1</sup>Prints, special hems, jacquards, etc.

**Table 58. Quantity and Value of Shipments of Sheets, Pillowcases, and Terry Towels by Distribution Channel: 1997**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	Total shipments		Branded retail		Private ticket retail		Export		Institutional and other		Total n.s.k. shipments	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>TOTAL</b>												
Sheets, flat and fitted (except crib) . . . . .	19,745	1,432,566	10,670	919,697	2,385	203,662	519	40,557	4,863	154,504	1,308	114,146
Less than 180 count . . . . .	6,477	303,486	3,024	194,823	527	35,592	253	16,005	2,673	57,066	-	-
180 count and greater . . . . .	11,960	1,014,934	7,646	724,874	1,858	168,070	266	24,552	2,190	97,438	-	-
Not specified by kind (n.s.k.) . . . . .	1,308	114,146	-	-	-	-	-	-	-	-	1,308	114,146
Pillowcases (except crib) . . . . .	17,520	434,012	11,074	304,879	2,432	61,839	490	9,851	2,956	37,271	568	20,172
Less than 180 count . . . . .	5,110	74,350	3,192	52,445	591	8,557	261	3,900	1,066	9,448	-	-
180 count and greater . . . . .	11,842	339,490	7,882	252,434	1,841	53,282	229	5,951	1,890	27,823	-	-
Not specified by kind (n.s.k.) . . . . .	568	20,172	-	-	-	-	-	-	-	-	568	20,172
Terry towels . . . . .	44,980	1,308,816	23,963	753,283	4,338	187,402	950	32,642	8,301	158,202	7,428	177,287
Washcloths, terry . . . . .	28,747	235,933	16,231	143,232	1,954	27,265	418	4,262	5,754	26,492	4,390	34,682
<b>FOURTH QUARTER</b>												
Sheets, flat and fitted (except crib) . . . . .	4,747	361,932	2,567	235,842	605	54,415	126	9,846	1,145	36,372	304	25,457
Less than 180 count . . . . .	1,667	88,055	859	61,973	117	9,046	63	4,064	628	12,972	-	-
180 count and greater . . . . .	2,776	248,420	1,708	173,869	488	45,369	63	5,782	517	23,400	-	-
Not specified by kind (n.s.k.) . . . . .	304	25,457	-	-	-	-	-	-	-	-	304	25,457
Pillowcases (except crib) . . . . .	4,293	98,487	2,671	66,361	620	16,175	122	2,463	746	9,310	134	4,178
Less than 180 count . . . . .	1,320	19,184	820	13,387	148	2,311	66	1,051	286	2,435	-	-
180 count and greater . . . . .	2,839	75,125	1,851	52,974	472	13,864	56	1,412	460	6,875	-	-
Not specified by kind (n.s.k.) . . . . .	134	4,178	-	-	-	-	-	-	-	-	134	4,178
Terry towels . . . . .	11,156	331,301	6,123	197,297	1,079	44,200	216	7,445	2,020	42,548	1,718	39,811
Washcloths . . . . .	7,393	59,379	4,425	37,785	430	6,300	85	994	1,442	6,606	1,011	7,694
<b>THIRD QUARTER</b>												
Sheets, flat and fitted (except crib) . . . . .	5,498	389,375	2,818	251,784	674	57,368	125	9,885	1,537	41,177	344	29,161
Less than 180 count . . . . .	1,878	84,053	780	54,125	167	11,795	52	3,228	879	14,905	-	-
180 count and greater . . . . .	3,276	276,161	2,038	197,659	507	45,573	73	6,657	658	26,272	-	-
Not specified by kind (n.s.k.) . . . . .	344	29,161	-	-	-	-	-	-	-	-	344	29,161
Pillowcases (except crib) . . . . .	4,892	125,311	3,079	88,546	694	17,730	126	2,725	854	9,792	139	6,518
Less than 180 count . . . . .	1,495	21,851	901	15,546	175	2,851	62	962	357	2,492	-	-
180 count and greater . . . . .	3,258	96,942	2,178	73,000	519	14,879	64	1,763	497	7,300	-	-
Not specified by kind (n.s.k.) . . . . .	139	6,518	-	-	-	-	-	-	-	-	139	6,518
Terry towels . . . . .	11,068	326,724	5,631	185,209	1,252	56,268	205	6,869	2,299	39,034	1,681	39,344
Washcloths . . . . .	6,954	60,344	3,633	35,902	545	7,221	76	809	1,662	7,818	1,038	8,594
<b>SECOND QUARTER</b>												
Sheets, flat and fitted (except crib) . . . . .	4,982	340,586	2,456	212,630	481	45,511	140	10,600	1,577	43,069	328	28,776
Less than 180 count . . . . .	1,669	71,497	622	42,368	93	8,814	73	4,674	881	15,641	-	-
180 count and greater . . . . .	2,985	240,313	1,834	170,262	388	36,697	67	5,926	696	27,428	-	-
Not specified by kind (n.s.k.) . . . . .	328	28,776	-	-	-	-	-	-	-	-	328	28,776
Pillowcases (except crib) . . . . .	4,356	104,142	2,653	73,482	538	13,656	135	2,606	893	10,341	137	4,057
Less than 180 count . . . . .	1,304	17,320	764	11,591	139	2,050	75	1,075	326	2,604	-	-
180 count and greater . . . . .	2,915	82,765	1,889	61,891	399	11,606	60	1,531	567	7,737	-	-
Not specified by kind (n.s.k.) . . . . .	137	4,057	-	-	-	-	-	-	-	-	137	4,057
Terry towels . . . . .	11,344	327,461	6,120	189,184	1,098	49,969	273	9,719	2,139	39,241	1,714	39,348
Washcloths . . . . .	7,297	57,383	4,303	34,818	451	6,751	132	1,336	1,351	6,307	1,060	8,171
<b>FIRST QUARTER</b>												
Sheets, flat and fitted (except crib) . . . . .	4,518	340,673	2,829	219,441	625	46,368	128	10,226	604	33,886	332	30,752
Less than 180 count . . . . .	1,263	59,881	763	36,357	150	5,937	65	4,039	285	13,548	-	-
180 count and greater . . . . .	2,923	250,040	2,066	183,084	475	40,431	63	6,187	319	20,338	-	-
Not specified by kind (n.s.k.) . . . . .	332	30,752	-	-	-	-	-	-	-	-	332	30,752
Pillowcases (except crib) . . . . .	3,979	106,072	2,671	76,490	580	14,278	107	2,057	463	7,828	158	5,419
Less than 180 count . . . . .	991	15,995	707	11,921	129	1,345	58	812	97	1,917	-	-
180 count and greater . . . . .	2,830	84,658	1,964	64,569	451	12,933	49	1,245	366	5,911	-	-
Not specified by kind (n.s.k.) . . . . .	158	5,419	-	-	-	-	-	-	-	-	158	5,419
Terry towels . . . . .	11,412	323,330	6,089	181,593	909	36,965	256	8,609	1,843	37,379	2,315	58,784
Washcloths . . . . .	7,103	58,827	3,870	34,727	528	6,993	125	1,123	1,299	5,761	1,281	10,223

- Represents zero. n.s.k. Not specified by kind.

**Table 59. Quantity and Value of Shipments of Sheets, Pillowcases, and Terry Towels by Type and Finish: 1997**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product description	Total shipments		White		Solid colors		Fancies <sup>1</sup>		Total n.s.k. shipments	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>TOTAL</b>										
Sheets, flat and fitted (except crib) . . . . .	19,745	1,432,566	2,280	147,118	5,342	410,987	10,815	760,315	1,308	114,146
Less than 180 count . . . . .	6,477	303,486	562	25,962	1,439	70,797	4,476	206,727	-	-
180 count and greater . . . . .	11,960	1,014,934	1,718	121,156	3,903	340,190	6,339	553,588	-	-
Not specified by kind (n.s.k.) . . . . .	1,308	114,146	-	-	-	-	-	-	1,308	114,146
Pillowcases (except crib) . . . . .	17,520	434,012	2,407	41,548	4,878	136,622	9,667	235,670	568	20,172
Less than 180 count . . . . .	5,110	74,350	498	6,527	1,164	21,583	3,448	46,240	-	-
180 count and greater . . . . .	11,842	339,490	1,909	35,021	3,714	115,039	6,219	189,430	-	-
Not specified by kind (n.s.k.) . . . . .	568	20,172	-	-	-	-	-	-	568	20,172
Terry towels . . . . .	44,980	1,308,816	9,480	213,725	23,481	792,402	4,591	125,402	7,428	177,287
Washcloths, terry . . . . .	28,747	235,933	-	-	-	-	-	-	(X)	(X)
<b>FOURTH QUARTER</b>										
Sheets, flat and fitted (except crib) . . . . .	4,747	361,932	537	35,907	1,273	99,785	2,633	200,783	304	25,457
Less than 180 count . . . . .	1,667	88,055	124	5,529	410	20,718	1,133	61,808	-	-
180 count and greater . . . . .	2,776	248,420	413	30,378	863	79,067	1,500	138,975	-	-
Not specified by kind (n.s.k.) . . . . .	304	25,457	-	-	-	-	-	-	304	25,457
Pillowcases (except crib) . . . . .	4,293	98,487	616	9,927	1,170	29340	2,373	55,042	134	4,178
Less than 180 count . . . . .	1,320	19,184	137	1,519	358	5,677	825	11,988	-	-
180 count and greater . . . . .	2,839	75,125	479	8,408	812	23,663	1,548	43,054	-	-
Not specified by kind (n.s.k.) . . . . .	134	4,178	-	-	-	-	-	-	134	4,178
Terry towels . . . . .	11,156	331,301	2,568	56,400	5,892	205,865	978	29,225	1,718	39,811
Washcloths, terry . . . . .	7,393	59,379	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
<b>THIRD QUARTER</b>										
Sheets, flat and fitted (except crib) . . . . .	5,498	389,375	636	37,615	1,478	115,086	3,040	207,513	344	29,161
Less than 180 count . . . . .	1,878	84,053	163	6,639	439	20,579	1,276	56,835	-	-
180 count and greater . . . . .	3,276	276,161	473	30,976	1,039	94,507	1,764	150,678	-	-
Not specified by kind (n.s.k.) . . . . .	344	29,161	-	-	-	-	-	-	344	29,161
Pillowcases (except crib) . . . . .	4,892	125,311	651	10,475	1,374	40,280	2,728	68,038	139	6,518
Less than 180 count . . . . .	1,495	21,851	130	1,486	361	6,131	1,004	14,234	-	-
180 count and greater . . . . .	3,258	96,942	521	8,989	1,013	34,149	1,724	53,804	-	-
Not specified by kind (n.s.k.) . . . . .	139	6,518	-	-	-	-	-	-	139	6,518
Terry towels . . . . .	11,068	326,724	2,078	55,412	6,062	202,671	1,247	29,297	1,681	39,344
Washcloths, terry . . . . .	6,954	60,344	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
<b>SECOND QUARTER</b>										
Sheets, flat and fitted (except crib) . . . . .	4,982	340,586	580	36,817	1,312	92,544	2,762	182,449	328	28,776
Less than 180 count . . . . .	1,669	71,497	148	6,739	346	15,222	1,175	49,536	-	-
180 count and greater . . . . .	2,985	240,313	432	30,078	966	77,322	1,587	132,913	-	-
Not specified by kind (n.s.k.) . . . . .	328	28,776	-	-	-	-	-	-	328	28,776
Pillowcases (except crib) . . . . .	4,356	104,142	620	10,422	1,161	30,271	2,438	59,392	137	4,057
Less than 180 count . . . . .	1,304	17,320	125	1,517	257	4,520	922	11,283	-	-
180 count and greater . . . . .	2,915	82,765	495	8,905	904	25,751	1,516	48,109	-	-
Not specified by kind (n.s.k.) . . . . .	137	4,057	-	-	-	-	-	-	137	4,057
Terry towels . . . . .	11,344	327,461	2,529	53,080	6,129	206,734	972	28,299	1,714	39,348
Washcloths, terry . . . . .	7,297	57,383	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
<b>FIRST QUARTER</b>										
Sheets, flat and fitted (except crib) . . . . .	4,518	340,673	527	36,779	1,279	103,572	2,380	169,570	332	30,752
Less than 180 count . . . . .	1,263	59,881	127	7,055	244	14,278	892	38,548	-	-
180 count and greater . . . . .	2,923	250,040	400	29,724	1,035	89,294	1,488	131,022	-	-
Not specified by kind (n.s.k.) . . . . .	332	30,752	-	-	-	-	-	-	332	30,752
Pillowcases (except crib) . . . . .	3,979	106,072	520	10,724	1,173	36,731	2,128	53,198	158	5,419
Less than 180 count . . . . .	991	15,995	106	2,005	188	5,255	697	8,735	-	-
180 count and greater . . . . .	2,830	84,658	414	8,719	985	31,476	1,431	44,463	-	-
Not specified by kind (n.s.k.) . . . . .	158	5,419	-	-	-	-	-	-	158	5,419
Terry towels . . . . .	11,412	323,330	2,305	48,833	5,398	177,132	1,394	38,581	2,315	58,784
Washcloths, terry . . . . .	7,103	58,827	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)

- Represents zero. n.s.k. Not specified by kind. X Not applicable.

Table 60. **Shipments, Exports, Imports, and Apparent Consumption of Sheets, Pillowcases, and Terry Towels: 1998 and 1997**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Percent exports to manufacturers' shipments		Imports for consumption <sup>2</sup>		Apparent consumption		Percent imports to apparent consumption	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>													
<b>TOTAL</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	39,394	1,852,139	1,005	86,218	2.6	4.7	8,314	416,105	46,703	2,182,026	17.8	19.1
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths .....	71,810	1,553,113	1,838	77,748	2.6	5.0	73,513	511,899	143,485	1,987,264	51.2	25.8
<b>FOURTH QUARTER</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	9,911	451,525	330	27,374	3.3	6.1	1,830	90,577	11,411	514,728	16.0	17.6
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths .....	17,364	378,697	512	21,242	2.9	5.6	16,955	115,264	33,807	472,719	50.2	24.4
<b>THIRD QUARTER</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	10,641	495,869	303	24,718	2.8	5.0	2,356	124,462	12,694	595,613	18.6	20.9
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths .....	18,105	395,006	475	20,553	2.6	5.2	19,541	123,003	37,171	497,456	52.6	24.7
<b>SECOND QUARTER</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	9,565	457,201	164	14,909	1.7	3.3	2,228	110,686	11,629	552,978	19.2	20.0
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths .....	18,327	387,068	434	18,538	2.4	4.8	19,385	126,638	37,278	495,168	52.0	25.6
<b>FIRST QUARTER</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	9,277	447,544	208	19,217	2.2	4.3	1,900	90,380	10,969	518,707	17.3	17.4
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths .....	18,014	392,342	417	17,415	2.3	4.4	17,632	146,994	35,229	521,921	50.0	28.2
<b>1997</b>													
<b>TOTAL</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	38,205	1,905,586	747	67,970	2.0	3.6	6,697	308,233	44,155	2,145,849	15.2	14.4
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths .....	73,727	1,544,749	1,673	73,032	2.3	4.7	62,087	387,405	134,141	1,859,122	46.3	20.8

See footnotes at end of table.

Table 60. **Shipments, Exports, Imports, and Apparent Consumption of Sheets, Pillowcases, and Terry Towels: 1998 and 1997—Con.**

[Quantity in thousands of dozens. Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Percent exports to manufacturers' shipments		Imports for consumption <sup>2</sup>		Apparent consumption		Percent imports to apparent consumption	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1997—Con.</b>													
<b>FOURTH QUARTER</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	9,259	469,896	205	19,406	2.2	4.1	1,840	94,459	10,894	544,949	16.9	17.3
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths.....	18,549	390,680	453	19,571	2.4	5.0	18,745	107,844	36,841	478,953	50.9	22.5
<b>THIRD QUARTER</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	10,629	524,516	213	20,414	2.0	3.9	1,990	95,076	12,406	599,178	16.0	15.9
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths.....	18,022	387,068	473	21,551	2.6	5.6	17,307	95,629	34,856	461,146	49.7	20.7
<b>SECOND QUARTER</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	9,581	454,693	162	13,642	1.7	3.0	1,508	67,669	10,927	508,720	13.8	13.3
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths.....	18,641	384,844	388	16,373	2.1	4.3	13,046	88,119	31,299	456,590	41.7	19.3
<b>FIRST QUARTER</b>													
2221K 00, 23922 00, 2211H00 pt.	Sheets and pillowcases .....	8,736	456,481	167	14,508	1.9	3.2	1,359	51,029	9,928	493,002	13.7	10.4
221G00, 2392300, 2221M00 pt.	Terry woven towels and washcloths.....	18,515	382,157	359	15,537	1.9	4.1	12,989	95,813	31,145	462,433	41.7	20.7

pt. Partial.

<sup>1</sup>Source: 1998 edition, Harmonized System-Based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States. For further information, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Harmonized Tariff Schedule of the United States, Annotated (1998). For further information, see "Contact for Data Users" at end of this subsection.

#### HISTORICAL NOTE

Data on sheets, pillowcases, and towels have been collected by the Census Bureau since 1960. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

#### CONTACT FOR DATA USERS

For additional information about these data, contact Kay Hanks, 301-457-4620.



## CARPET AND RUGS—MA314Q (FORMERLY MA22Q)

### INTRODUCTION

The data shown for carpet and rugs represent primary production and shipments of carpet and rugs. Data are not included for those rugs or carpet tiles that are cut from purchased roll goods. Data from those establishments that are dyeing and/or finishing carpets or rugs only are

excluded also. Data are shown for type of carpet or rug and by fiber of face yarn for woven carpet and rugs and for tufted roll goods.

### EXPLANATION OF TERMS

See explanation of terms at the beginning of this chapter.

**Table 61. Shipments of Carpet and Rugs: 1989 to 1998**

[Millions of dollars]

Year	Rugs, carpet, and carpeting	Woven carpet and rugs	Tufted carpet and rugs	Other carpet and rugs
1998.....	10,853.0	437.8	9,976.1	439.1
1997.....	10,263.9	346.7	9,494.1	423.1
1996.....	10,148.2	289.9	9,430.6	427.7
1995.....	9,769.6	311.2	9,100.1	358.3
1994.....	9,530.6	307.3	8,885.9	337.4
1993.....	9,282.6	281.6	8,653.2	347.8
1992.....	8,749.3	301.1	8,135.9	312.3
1991.....	7,980.4	295.6	7,407.3	277.5
1990.....	8,527.1	293.2	7,977.5	256.4
1989.....	8,431.1	299.0	7,932.8	199.3

**Table 62. Shipments, Exports, Imports, and Apparent Consumption of Carpet and Rugs: 1998 and 1997**

[Quantity in millions of square meters. Value in millions of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Percent exports to manufacturers' shipments		Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup>		Percent imports to apparent consumption	
		Quantity	Value	Quantity	Value at port	Quantity	Value	Quantity	Value <sup>3</sup>	Quantity	Value	Quantity	Value
<b>1998</b>													
3141101	Carpet and rugs .....	1,532.0	10,853.0	112.3	826.0	7.3	7.6	71.2	1,013.7	1,490.9	11,040.7	4.8	9.2
3141101	Woven carpet and rugs ..	30.6	437.8	7.0	67.6	22.8	15.4	37.0	376.4	60.6	746.6	61.0	50.4
3141103	Tufted carpet and rugs ..	1,377.0	9,976.1	74.2	581.2	5.4	5.8	17.3	140.5	1,320.1	9,535.4	1.3	1.5
3141105	Other carpet and rugs ..	124.4	439.1	31.1	177.2	25.0	40.4	16.9	496.8	110.2	758.7	15.3	65.5
<b>1997</b>													
3141101	Carpet and rugs .....	1,417.7	10,263.9	119.5	858.1	8.4	8.4	68.8	870.6	1,367.0	10,276.4	5.0	8.5
3141101	Woven carpet and rugs ..	22.5	346.7	8.5	72.0	37.7	20.8	37.3	328.8	51.3	603.5	72.7	54.5
3141103	Tufted carpet and rugs ..	1,281.8	9,494.1	82.2	606.3	6.4	6.4	17.4	142.1	1,217.0	9,029.9	1.4	1.6
3141105	Other carpet and rugs ..	113.4	423.1	28.8	179.8	25.4	42.5	14.1	399.7	98.7	643.0	14.3	62.2

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>4</sup>Apparent consumption is derived by subtracting exports from total manufacturers' shipments plus imports.

Note: For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

**Table 63. Shipments of Carpet and Rugs: 1998 and 1997**

[Quantity in thousands of square yards. Value in thousands of dollars]

Product code	Product description	1998		1997	
		Quantity	Value	Quantity	Value
	<b>Total.....</b>	<b>1,832,500</b>	<b>10,853,016</b>	<b>1,695,804</b>	<b>10,263,916</b>
3141101000	Woven carpet and rugs .....	36,656	437,822	26,954	346,687
	By fiber of face yarn:				
3141101002	Cotton .....	(D)	(D)	(D)	(D)
3141101004	Manmade .....	31,233	295,690	22,726	233,248
3141101006	Wool .....	(D)	(D)	(D)	(D)
3141101008	Other .....	(D)	(D)	(D)	(D)
3141103110	Tufted carpet and rugs .....	1,647,092	9,976,133	1,533,252	9,494,106
	By type:				
3141103112	Washable scatter rugs, bathmats, and sets (rugs 6' x 9' and smaller) .....	99,686	769,711	92,015	721,845
3141103114	Hard-backed nonwashable accent/area rugs (6' x 9' and smaller) .....	23,312	134,888	20,373	117,614
3141103116	Room size rugs over 6' x 9' .....	3,914	57,832	3,686	53,273
3141103118	Roll goods, 6' and larger excluding artificial grass ...	1,431,216	8,528,670	1,308,707	8,080,546
314110311A	Tufted artificial grass for nonathletic surface .....	33,013	68,046	26,631	60,005
314110311C	Automobile and aircraft carpeting .....	55,951	416,986	81,840	460,823
	By fiber of face yarn:				
314110311E	Nylon .....	1,007,756	6,791,882	998,260	6,855,674
314110311G	Polyester .....	131,595	708,296	74,723	415,422
314110311J	Polypropylene .....	388,285	1,752,755	353,368	1,586,411
314110311L	All other .....	119,456	723,200	106,901	636,599
	Other carpet and rugs .....	148,752	439,061	135,598	423,123
3141105002	Knitted .....	(D)	(D)	(D)	(D)
3141105004	Needle punched .....	129,910	265,634	118,779	251,475
3141105006	Felt .....	(D)	(D)	(D)	(D)
3141105008	Braided, hooked, and other carpet and rugs, n.e.c. ....	15,265	142,235	13,889	135,050

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. †Revised by 5 percent or more from previously published data.

**HISTORICAL NOTE**

The annual MA22Q, Carpet and Rugs, was published for 6 years, 1962 to 1967. The semiannual, M22L, Tufted Textile Products, was initiated in 1951 and was published for 17 consecutive years. Both of these surveys were discontinued at the end of 1967 when the quarterly survey, MQ22Q, was established. The collection of data on a quarterly basis, for this series, began with the first quarter of 1968 and continued until 1985. (Also, for the years 1988

and 1989, the quarterly survey was conducted.) Since 1986, the series has been published as an annual, MA22Q, Carpet and Rugs. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Robert Lee, 301-457-4637.

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## FOOTWEAR—MA316A (FORMERLY MQ31A/MA31A)

### INTRODUCTION

The "Footwear" series includes data on the production, quantity, and value of shipments for various types of footwear. Included in these data are footwear that are cut in the United States, exported for sewing, and imported under special tariff provisions number 9802.

These data are intended to represent domestic manufacturing. In some cases, domestic manufacturers who also import completed products have difficulty separating their shipment data. Every effort is made to ensure that the shipment data include only domestically manufactured footwear, but the data user should be aware that the shipment data could include some imported footwear.

### SUMMARY OF FINDINGS

Nonrubber footwear production for 1998 totaled 109.2 million pairs, a 13-percent decrease from the 1997 production of 124.4 million pairs. Of the total 1998 production, 36.3 million pairs were men's, 0.3 million pairs were youth's and boys', 25.6 million were women's, 0.08 million were misses', and 1.0 million were children's shoes.

In 1998, 36.2 million pairs of slippers were produced, an 8.0-percent decrease from the 1997 production of 40.0 million pairs.

### EXPLANATION OF TERMS

**Athletic shoes.** Includes skating shoes, shoes with cleats, and joggers whether for organized sports or street wear.

#### Footwear With Rubber or Plastics Soles/Fabrics Uppers

*Fabrics upper espadrilles.* Footwear with open toes or open heels, or of the slip on type, that is, held to the foot without the use of laces or buckles or other fasteners, except footwear having foxing or foxing-like band that is wholly or almost wholly of rubber or plastics applied or molded at the sole and overlapping the upper.

*Fabrics upper cement process shoes.* Footwear having soles (or midsoles, if any) of rubber or plastics that are affixed to the upper exclusively with an adhesive (any midsoles also being affixed exclusively to one another and to the out sole with an adhesive), except footwear having a foxing or foxing-like band applied to or molded at the sole and overlapping the upper and except footwear with soles that overlap the upper other than the toe or heel.

*Other fabrics shoes.* This includes all fabrics shoes with rubber or plastics soles vulcanized or molded to a fabrics upper, except slippers primarily intended for indoor household use, and sandals. Includes sneakers.

**Men's workshoes.** Includes safety shoes with sole that is an inch or more thick.

**Nonrubber footwear.** Includes shoes made by conventional processes such as cemented, welt, slip-lasted, and shoes with rubber sole vulcanized to leather uppers. Includes slippers, except slipper socks, regardless of material or construction. Excludes all other rubber or plastics boots and shoes, whether sold for over-the-foot wear or not.

**Other footwear, except footwear with rubber or plastics soles/fabrics uppers.** Includes ballet and other theatrical shoes.

**Protective footwear.** Boots, lumberman and PACS, arctics and gaiters, rubbers, and other footwear designed to be worn over, or in lieu of, other footwear as a protection against water, oil, grease, or chemicals, or cold or inclement weather.

*Boots.* These are worn over the foot or over the sock and are normally worn for industrial, commercial, or sporting use, but boots for dress or commuter use are also included if they are over the sock and not over the shoe. No distinction is made to reflect varying processes of manufacture.

*Lumberman and PACS.* These are worn over the foot and are normally used for industrial, commercial, or sporting purposes. They include PACS, work shoes, and lumberman overs, with or without tops. No distinction is made to reflect varying processes of manufacture.

*Arctics and gaiters.* These are worn over the shoes and are above ankle height, all weights, work and dress, with or without fasteners.

*Light and heavy rubbers.* These are worn over the shoe and are ankle height or below and include work and dress weights, with or without fasteners.

*Protective footwear with fabrics upper.* Boots, lumberman and PACS, and arctics and gaiters designed to be worn over, or in lieu of, other footwear as a protection against water, oil, grease, chemicals, or cold or inclement weather, having upper of more than 10 percent fabrics.

### Sizes

Men's shoes: sizes 6 and over, including big boys' shoes.

Youth's and boys' shoes: sizes 12-1/2 to 5-1/2.

Women's shoes: sizes 4 and over, including growing girls' shoes.

Misses' shoes: sizes 12-1/2 to 3-1/2.

Children's shoes: sizes 8-1/2 to 12, including little boys' shoes.

Infants' shoes: sizes 0 to 8.

**Slippers.** Includes foldable and packable slippers.

**Table 64. Footwear Production: 1984 to 1998**

[Million pairs]

Year	Total	Nonrubber footwear	Rubber or plastics soles/fabrics uppers	Rubber and plastics footwear
1998.....	165.4	109.2	40.8	15.5
1997.....	190.1	124.4	49.2	16.5
1996.....	196.0	128.0	51.4	16.6
1995.....	220.4	147.0	56.1	17.4
1994.....	242.5	163.0	59.3	20.2
1993 <sup>1</sup> .....	252.0	171.7	62.5	17.8
1992.....	273.6	164.8	92.7	16.1
1991.....	282.1	169.0	97.5	15.6
1990.....	290.3	184.6	89.7	16.0
1989.....	312.8	221.9	76.8	14.1
1988.....	325.3	234.8	76.7	13.8
1987.....	312.1	230.0	71.0	11.1
1986.....	310.9	240.9	57.9	12.1
1985.....	336.5	265.1	54.9	16.5
1984.....	383.5	303.2	62.8	17.5

<sup>1</sup>For 1993, a number of companies were added based on information in the 1992 Census of Manufactures. Data were not collected from these establishments for 1992; therefore, information shown for years prior to 1992 may not be directly comparable. These changes represent approximately 2.7 percent of total rubber and plastics footwear production. Puerto Rican manufacturing facilities, also newly included for 1993, represent approximately 1.3 percent of rubber footwear production and less than 1 percent of total footwear production.

Note: For 1994, Puerto Rican manufacturing facilities accounted for approximately 1 percent of nonrubber footwear production and less than 1 percent of total footwear production.

**Table 65. Quantity and Value of Shipments of Nonrubber Footwear: 1998 and 1997**

[Production and quantity in thousands of pairs. Value in thousands of dollars]

Product description	1998			1997		
	Production	Quantity	Value	Production	Quantity	Value
Footwear (except rubber).....	109,194	117,627	2,569,374	124,444	127,876	2,827,714
Shoes (except slippers).....	72,960	75,341	2,402,637	85,452	85,888	2,657,266
Men's (except athletic).....	36,268	37,570	1,672,431	40,958	41,611	1,757,405
Dress and casual.....	14,263	14,784	558,123	16,423	16,314	583,102
Boots, dress and casual (except western style).....	486	539	31,262	737	792	42,730
Western style boots.....	9,182	9,933	410,924	10,823	11,306	432,820
Work oxfords.....	1,241	1,066	54,152	1,404	1,354	68,873
Workboots, ankle height or higher.....	11,096	11,248	617,970	11,571	11,845	629,880
Youth's and boys' (except athletic).....	304	236	7,146	390	358	5,822
Women's (except athletic).....	25,585	26,192	593,249	32,031	31,886	745,572
Sandals.....	1,640	1,911	51,293	1,761	1,721	52,294
Dress and casual (except sandals).....	22,547	22,723	465,781	28,241	27,940	596,655
Uniform duty shoes.....	348	344	13,249	414	417	14,861
Boots, ankle height or higher.....	1,050	1,214	62,926	1,615	1,808	81,762
Misses' shoes and boots (except athletic).....	77	73	1,118	313	313	6,137
Children's shoes and boots (except athletic).....	973	961	11,679	1,360	1,322	19,493
Infants' and babies'.....	4,213	4,849	27,538	4,912	4,869	34,879
Athletic.....	3,737	3,709	72,627	3,749	3,803	70,274
Men's.....	527	530	34,809	516	571	35,975
Women's.....	134	102	6,971	157	151	8,059
All other.....	(D)	(D)	(D)	(D)	(D)	(D)
Not specified by kind (n.s.k.).....	(D)	(D)	(D)	(D)	(D)	(D)
All other shoes (ballet, theatrical, etc.).....	1,803	1,751	16,849	1,739	1,726	17,684
Slippers.....	36,234	42,286	166,737	38,992	41,988	170,448
Men's.....	4,443	6,586	41,462	4,858	5,544	47,138
Women's.....	30,414	34,227	119,551	32,182	34,459	115,978
All other.....	1,377	1,473	5,724	1,952	1,985	7,332

D Withheld to avoid disclosing data for individual companies.

Note: Some companies are unable to exclude resales from their shipments' data.

**Table 66. Production of Shoes and Slippers: 1998 and 1997**

[Thousands of pairs]

Product description	Total	First quarter	Second quarter	Third quarter	Fourth quarter	
<b>1998</b>						
Shoes and slippers . . . . .	As published..	122,780	33,304	31,837	29,255	28,384
	As revised..	109,194	29,619	28,314	26,018	25,243
Shoes, including athletic . . . . .	As published..	79,573	22,689	20,379	18,386	18,119
	As revised..	72,960	20,803	18,685	16,858	16,613
Men's shoes (except athletic) . . . . .	As published..	33,810	9,157	8,663	7,822	8,168
	As revised..	36,268	9,823	9,293	8,391	8,762
Work shoes . . . . .	As published..	16,506	4,370	4,248	3,728	4,160
	As revised..	12,337	3,266	3,175	2,786	3,109
Shoes and boots (except work and athletic) . . . . .	As published..	17,304	4,787	4,415	4,094	4,008
	As revised..	23,931	6,620	6,106	5,662	5,543
Youth's and boys' . . . . .	As published..	380	99	100	91	90
	As revised..	304	79	80	73	72
Women's . . . . .	As published..	37,064	10,788	9,843	8,239	8,194
	As revised..	25,585	7,447	6,795	5,687	5,656
Misses' . . . . .	As published..	624	144	136	157	187
	As revised..	77	18	17	19	23
Children's . . . . .	As published..	1,062	312	287	231	232
	As revised..	973	286	263	212	213
Infants' and babies' . . . . .	As published..	4,864	1,375	1,057	1,480	952
	As revised..	4,213	1,191	916	1,282	825
Athletic shoes . . . . .	As published..	(D)	(D)	(D)	(D)	(D)
	As revised..	(D)	(D)	(D)	(D)	(D)
All other footwear . . . . .	As published..	(D)	(D)	(D)	(D)	(D)
	As revised..	(D)	(D)	(D)	(D)	(D)
Slippers . . . . .	As published..	43,207	10,615	11,458	10,869	10,265
	As revised..	36,234	8,902	9,609	9,115	8,608
<b>1997</b>						
Shoes and slippers . . . . .	As published..	136,870	35,582	37,276	31,810	32,202
	As revised..	124,444	32,352	33,892	28,922	29,278
Shoes, including athletic . . . . .	As published..	93,833	25,833	25,331	20,915	21,754
	As revised..	85,452	23,526	23,068	19,047	19,811
Men's shoes (except athletic) . . . . .	As published..	36,714	9,841	9,411	8,458	9,004
	As revised..	40,958	10,979	10,499	9,436	10,045
Work shoes . . . . .	As published..	16,458	4,334	4,106	3,786	4,232
	As revised..	12,975	3,417	3,237	2,985	3,336
Shoes and boots (except work and athletic) . . . . .	As published..	20,256	5,507	5,305	4,672	4,772
	As revised..	27,983	7,608	7,329	6,454	6,592
Youth's and boys' . . . . .	As published..	403	86	106	110	101
	As revised..	390	83	103	106	98
Women's . . . . .	As published..	43,382	12,135	11,929	9,550	9,768
	As revised..	32,031	8,960	8,808	7,051	7,212
Misses' . . . . .	As published..	796	189	245	215	147
	As revised..	313	74	96	85	58
Children's . . . . .	As published..	1,612	542	464	300	306
	As revised..	1,360	457	391	253	258
Infants' and babies' . . . . .	As published..	5,481	1,572	1,569	1,221	1,119
	As revised..	4,912	1,409	1,406	1,094	1,003
Athletic shoes . . . . .	As published..	(D)	(D)	(D)	(D)	(D)
	As revised..	(D)	(D)	(D)	(D)	(D)
All other footwear . . . . .	As published..	(D)	(D)	(D)	(D)	(D)
	As revised..	(D)	(D)	(D)	(D)	(D)
Slippers . . . . .	As published..	43,037	9,749	11,945	10,895	10,448
	As revised..	38,992	8,833	10,822	9,871	9,466

D Withheld to avoid disclosing data for individual companies.

Note: Detail may not add to total because of independent rounding.

**Table 67. Production for Nonrubber Footwear by State: 1998 and 1997**

[Thousands of pairs]

State	Production	
	1998	1997
<b>United States</b> .....	<b>109,194</b>	<b>124,444</b>
Arkansas .....	(D)	(D)
California .....	3,211	3,594
Georgia .....	(D)	(D)
Illinois .....	1,845	1,776
Maine .....	12,716	15,900
Missouri .....	2,285	1,870
New Hampshire .....	2,232	2,054
New York .....	4,770	4,334
North Carolina .....	809	989
Ohio .....	(D)	(D)
Pennsylvania .....	3,090	4,846
Tennessee .....	2,961	4,038
Texas .....	32,959	37,637
Wisconsin .....	2,395	2,590
All other states .....	34,213	37,680

D Withheld to avoid disclosing data for individual companies.

Note: Each state not shown separately has been withheld to avoid disclosing data for individual companies.

**Table 68. Quantity and Value of Shipments of Shoes and Slippers: 1998 and 1997**

[Quantity in thousands of pairs. Value in thousands of dollars]

Item	Total	First quarter	Second quarter	Third quarter	Fourth quarter
<b>1998</b>					
Quantity .....					
As published..	126,270	27,247	26,875	35,792	36,356
As revised..	117,627	25,382	25,035	33,342	33,867
Value .....					
As published..	2,688,440	632,317	635,700	713,681	706,742
As revised..	2,569,374	604,313	607,546	682,073	675,442
<b>1997</b>					
Quantity .....					
As published..	128,671	27,968	29,645	34,447	36,611
As revised..	127,876	27,795	29,462	34,234	36,385
Value .....					
As published..	2,603,506	573,579	584,613	700,294	745,020
As revised..	2,827,714	622,974	634,959	760,602	809,179

**Table 69. Production and Shipments of Shoes With Rubber or Plastics Soles/Fabrics Uppers and Rubber and Plastics Footwear: 1998 and 1997**

[Production and quantity in thousands of pairs. Value in thousands of dollars]

Product description	1998			1997		
	Production	Shipments		Production	Shipments	
		Quantity	Value		Quantity	Value
<b>SHOES WITH RUBBER OR PLASTICS SOLES/ FABRICS UPPERS</b>						
<b>Total.....</b>	<b>40,783</b>	<b>46,082</b>	<b>503,145</b>	<b>49,183</b>	<b>51,309</b>	<b>567,134</b>
Athletic.....	25,037	24,155	380,019	26,148	25,385	402,265
Men's.....	18,701	18,765	274,404	19,355	19,941	279,777
Women's.....	3,580	3,068	93,973	3,396	2,566	107,294
Other.....	2,756	2,322	11,642	3,397	2,878	15,194
Nonathletic.....	15,746	21,927	123,126	23,035	25,924	164,869
Men's.....	2,670	2,744	33,504	4,052	4,767	61,562
Women's.....	5,020	8,882	38,605	10,168	10,720	56,005
Other.....	8,056	10,301	51,017	8,815	10,437	47,302
<b>RUBBER AND PLASTICS FOOTWEAR</b>						
<b>Total.....</b>	<b>15,463</b>	<b>14,770</b>	<b>268,990</b>	<b>16,512</b>	<b>16,348</b>	<b>248,109</b>
Rubber upper protective footwear.....	2,081	2,404	83,545	4,156	4,220	91,804
Boots, lumberman, and PACS.....	(D)	(D)	(D)	(D)	(D)	(D)
Arctics and gaiters, light and heavy rubbers...	(D)	(D)	(D)	(D)	(D)	(D)
Plastics or fabrics protective footwear.....	13,382	12,366	185,445	12,356	12,128	156,305
Slush molded.....	(D)	(D)	(D)	(D)	(D)	(D)
Injection molded.....	7,249	7,141	66,562	8,241	8,243	76,226
Other.....	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

**Table 70. Production of Shoes With Rubber or Plastics Soles/Fabrics Uppers and Rubber and Plastics Protective Footwear by Quarter: 1998 and 1997**

[Thousand of pairs]

Product description	Total	First quarter	Second quarter	Third quarter	Fourth quarter
<b>1998</b>					
Shoes with rubber or plastics soles/fabrics uppers . . .As published..	30,414	11,173	8,111	5,246	5,884
As revised..	40,783	14,982	10,876	7,035	7,890
Rubber and plastics protective footwear . . . . .As published..	11,588	3,589	3,027	2,318	2,654
As revised..	15,463	4,789	4,039	3,093	3,541
<b>1997</b>					
Shoes with rubber or plastics soles/fabrics uppers . .As published..	41,622	14,274	10,223	7,000	10,125
As revised..	49,183	16,867	12,080	8,272	11,964
Rubber and plastics protective footwear . . . . .As published..	16,899	4,209	4,722	4,069	3,899
As revised..	16,512	4,113	4,614	3,976	3,810

**Table 71. Production of Footwear by Type of Upper and Type of Sole: 1998 and 1997**

[Thousands of pairs]

Product description	1998	1997
<b>Total. . . . .</b>	<b>156,031</b>	<b>182,860</b>
Rubber or plastics uppers and rubber or plastics soles, including rubber or plastics coated fabrics uppers . . . . .	17,632	21,338
Waterproof . . . . .	9,129	12,299
Made with steel safety toes. . . . .	2,482	2,646
Boots (except with steel safety toes) . . . . .	4,761	6,614
All other. . . . .	1,886	3,039
Not waterproof . . . . .	8,503	9,039
Athletic:		
Made with cleats, spikes, sprigs, stops, etc. . . . .	(D)	(D)
Other . . . . .	(D)	(D)
Made with steel safety toes. . . . .	(D)	(D)
Boots (except with steel safety toes) . . . . .	584	598
All other. . . . .	2,859	3,383
Leather uppers. . . . .	53,509	66,296
Athletic. . . . .	5,588	5,061
Made with cleats, spikes, sprigs, stops, etc. . . . .	(D)	(D)
Other . . . . .	(D)	(D)
Leather soles . . . . .	18,622	21,776
Made with steel safety toes. . . . .	1,566	1,732
Boots (except with steel safety toes) . . . . .	6,994	6,824
Shoes (except with steel safety toes) . . . . .	10,062	13,220
Other soles . . . . .	32,311	39,477
Made with steel safety toes. . . . .	1,895	1,965
Boots (except with steel safety toes) . . . . .	5,499	7,952
Shoes (except with steel safety toes) . . . . .	24,917	29,560
Fabrics uppers . . . . .	76,434	85,155
Rubber or plastics soles. . . . .	48,682	57,023
Athletic. . . . .	11,392	14,538
All other . . . . .	37,290	42,485
With all other soles . . . . .	27,752	28,132
Footwear not specified by type of material. . . . .	8,456	10,071

D Withheld to avoid disclosing data for individual companies.



**Table 72. Production, Exports, Imports, and Apparent Consumption of Footwear: 1998 and 1997**

[Quantity in thousands of pairs. Value in thousands of dollars]

Product description	Manufacturers' shipments <sup>1</sup> (quantity)	Exports of domestic merchandise <sup>2</sup>		Percent exports to domestic production	Imports for consumption <sup>3</sup>		Apparent consumption <sup>5</sup>	Percent imports to apparent consumption
		Quantity	Value		Quantity	Value <sup>4</sup>		
<b>1998</b>								
<b>Total</b> .....	<b>156,031</b>	<b>22,364</b>	<b>369,770</b>	<b>14.3</b>	<b>1,479,740</b>	<b>13,490,309</b>	<b>1,613,407</b>	<b>91.7</b>
Rubber or plastics uppers and rubber or plastics soles, including rubber or plastics coated fabrics uppers .....	17,632	4,087	41,157	23.2	547,089	3,158,395	560,634	97.6
Waterproof .....	9,129	841	8,945	9.2	8,048	48,062	16,336	49.3
Made with steel safety toes .....	2,482	194	3,449	7.8	282	4,504	2,570	11.0
All other .....	6,647	647	5,496	9.7	7,766	43,558	13,766	56.4
Not waterproof .....	8,503	3,246	32,212	38.2	539,041	3,110,333	544,298	99.0
Made with cleats, spikes, sprigs, stops, etc. ....	(D)	445	6,768	(D)	11,512	127,686	(D)	(D)
Other .....	(D)	328	4,716	(D)	53,217	271,721	(D)	(D)
Made with steel safety toes .....	(D)	355	1,899	(D)	610	6,393	(D)	(D)
Boots (except with steel safety toes) .....	584	346	3,277	59.2	54,725	429,008	54,963	99.6
All other .....	2,859	1,772	15,552	62.0	418,977	2,275,525	420,064	99.7
Leather uppers .....	53,509	9,739	237,698	18.2	642,448	9,044,193	686,218	93.6
Athletic .....	5,588	5,812	124,906	104.0	474,084	5,901,426	473,860	100.0
Made with cleats, spikes, sprigs, stop, etc. ....	(D)	2,170	54,955	(D)	9,984	216,312	(D)	(D)
Other .....	(D)	3,642	69,951	(D)	464,100	5,685,114	(D)	(D)
Leather soles .....	18,622	2,680	78,664	14.4	44,828	1,050,253	60,770	73.8
Made with steel safety toes .....	1,566	236	12,125	15.1	7,984	165,211	9,314	85.7
Boots (except with steel safety toes) .....	6,994	401	13,739	5.7	4,511	102,173	11,104	40.6
Shoes (except with steel safety toes) .....	10,062	2,043	52,800	20.3	32,333	782,869	40,352	80.1
Other soles .....	32,311	1,247	34,128	3.9	123,536	2,092,514	154,600	79.9
Made with steel safety toes .....	1,895	-	-	(NA)	-	-	1,895	(NA)
Boots (except with steel safety toes) .....	5,499	1,247	34,128	22.7	123,536	2,092,514	127,788	96.7
Shoes (except with steel safety toes) .....	24,917	-	-	(NA)	-	-	24,917	(NA)
Fabric uppers .....	76,434	8,538	90,915	11.2	290,203	1,287,721	358,099	81.0
Rubber or plastics soles .....	48,682	6,951	78,209	14.3	224,979	844,665	266,710	84.4
Athletic .....	(D)	5,582	63,556	(D)	36,181	166,595	(D)	(D)
All other .....	(D)	1,369	14,653	(D)	188,798	678,070	(D)	(D)
With all other soles .....	27,752	1,587	12,706	5.7	65,224	443,056	91,389	71.4
Footwear not specified by type of material .....	8,456	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
<b>1997</b>								
<b>Total</b> .....	<b>182,860</b>	<b>25,218</b>	<b>412,057</b>	<b>13.8</b>	<b>1,459,736</b>	<b>15,137,411</b>	<b>1,617,378</b>	<b>90.3</b>
Rubber or plastics uppers and rubber or plastic soles, including rubber or plastics coated fabrics uppers .....	21,338	4,307	44,492	20.2	517,924	3,095,025	534,955	96.8
Waterproof .....	12,299	384	5,219	3.1	3,389	26,046	15,304	22.1
Made with steel safety toes .....	2,646	184	2,975	7.0	235	4,107	2,697	8.7
All other .....	9,653	200	2,244	2.1	3,154	21,939	12,607	25.0
Not waterproof .....	9,039	3,923	39,273	43.4	514,535	3,068,979	519,651	99.0
Made with cleats, spikes, sprigs, stops, etc. ....	(D)	527	5,082	(D)	11,038	121,581	(D)	(D)
Other .....	(D)	953	13,917	(D)	40,335	228,289	(D)	(D)
Made with steel safety toes .....	(D)	256	1,435	(D)	561	6,243	(D)	(D)
Boots (except with steel safety toes) .....	598	284	2,969	47.5	74,104	786,686	74,418	99.6
All other .....	3,383	1,903	15,870	56.3	388,497	1,926,180	389,977	99.6

See footnotes at end of table.

Table 72. **Production, Exports, Imports, and Apparent Consumption of Footwear: 1998 and 1997—Con.**

[Quantity in thousands of pairs. Value in thousands of dollars]

Product description	Manufacturers' shipments <sup>1</sup> (quantity)	Exports of domestic merchandise <sup>2</sup>		Percent exports to domestic production	Imports for consumption <sup>3</sup>		Apparent consumption <sup>5</sup>	Percent imports to apparent consumption
		Quantity	Value		Quantity	Value <sup>4</sup>		
<b>1997—Con.</b>								
Leather uppers .....	66,296	11,287	274,734	17.0	628,766	9,845,954	683,775	92.0
Athletic .....	5,061	7,080	156,680	139.9	434,992	5,961,894	432,973	100.5
Made with cleats, spikes, sprigs, stops, etc.....	(D)	3,229	75,323	(D)	9,742	238,251	(D)	(D)
Other .....	(D)	3,851	81,357	(D)	425,250	5,723,643	(D)	(D)
Leather soles .....	21,776	2,816	77,819	12.9	52,213	1,282,976	71,173	73.4
Made with steel safety toes .....	1,732	173	9,588	10.0	8,584	193,321	10,143	84.6
Boots (except with steel safety toes) .....	6,824	488	14,265	7.2	4,682	112,721	11,018	42.5
Shoes (except with steel safety toes) .....	13,220	2,155	53,966	16.3	38,947	976,934	50,012	77.9
Other soles .....	39,477	1,391	40,235	3.5	141,561	2,601,084	179,647	78.8
Made with steel safety toes .....	1,965	-	-	(NA)	-	-	1,965	(NA)
Boots (except with steel safety toes) .....	7,952	1,391	40,235	17.5	141,561	2,601,084	148,122	95.6
Shoes (except with steel safety toes) .....	29,560	-	-	(NA)	-	-	29,560	(NA)
Fabric uppers .....	85,155	9,624	92,831	11.3	313,046	2,196,432	388,577	80.6
Rubber or plastics soles .....	57,023	7,111	73,625	12.5	255,355	1,780,502	305,267	83.6
Athletic .....	(D)	5,931	62,929	(D)	82,986	1,105,174	(D)	(D)
All other .....	(D)	1,180	10,696	(D)	172,369	675,328	(D)	(D)
With all other soles .....	28,132	2,513	19,206	8.9	57,691	415,930	72,677	79.4
Footwear not specified by type of material .....	10,071	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

- Represents zero.      D Withheld to avoid disclosing data for individual companies.      NA Not available.

<sup>1</sup>Represents production.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report EM 145, *U.S. Imports for Consumption*.

<sup>4</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

<sup>5</sup>Apparent consumption is derived by subtracting exports from total production plus imports.

Note: For comparison of North American Industry Classification (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

## HISTORICAL NOTE

Data on footwear have been collected in this program since 1921. For some period, data were collected monthly, with a more comprehensive survey done annually. In 1991, due to budget reductions, the monthly program was canceled and replaced with a quarterly survey that collected similar data. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before

1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

## CONTACT FOR DATA USERS

For additional information about these data, contact Thomas J. Hook, 301-457-1320.

# Chapter 3.

## Building Materials

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### LUMBER PRODUCTION AND MILL STOCKS—MA321T (FORMERLY MA24T)

#### INTRODUCTION

The Current Industrial Report on lumber production and mill stocks is a cut-off sample survey that canvasses approximately 2,000 establishments engaging in sawmill activity. Establishments are included in this survey even if the operation of the sawmill is a secondary activity. For example, a furniture manufacturer that manufactures the lumber they use to make furniture is considered as operating a sawmill and is in scope of this survey.

All sawmills producing lumber, sawed ties, and timbers from roundwood, whether sawed for their own use, sawed on contract for others, custom sawed, or sawed for sale are considered in scope of this survey. All sawmills with hardwood lumber production greater than or equal to 2 million board feet or softwood lumber production greater than or equal to 5 million board feet are included in this survey.

Since the MA321T survey is a cut-off sample, the panel does not include the entire universe of lumber manufacturers. The universe was calculated for 1994 based on the MA321T database, the 1997 Economic Census, Manufacturing sector, and state sawmill directories. The difference between the universe and the sample is the block estimate. The block estimate is carried forward by multiplying each cell of the block estimate by the rate of change of each cell for the sample. This new block estimate is added to the figures for the sample and any new lumber producers to calculate subsequent total production and inventories for all U.S. sawmills.

#### SUMMARY OF FINDINGS

Production of lumber in the United States amounted to 46.6 billion board feet in 1998, which is unchanged from the 1997 level.

Eastern lumber production was 29.3 billion board feet in 1998, 0.7 percent above the 1997 level of 29.1 billion board feet. Southern yellow pine production amounted to

15.4 billion board feet in 1998, 0.1-percent below the 1997 production level. Production of eastern hardwood, at 10.8 billion board feet in 1998, was 1.5 percent above the 1997 level of 10.6 billion board feet.

Western lumber production was 17.2 billion board feet in 1998, a decrease of 1.2 percent from the 1997 production level of 17.5 billion board feet. Production of western softwoods decreased by 0.9 percent to 16.8 billion board feet for 1998 from 17.0 billion in 1997. Total western hardwood production decreased by 12.8 percent.

#### EXPLANATION OF TERMS

**Lumber.** Timber sawed into beams, planks, boards, pallets stock, etc., of convenient sizes. Lumber is collected in this report in board feet. A board foot is a measure of lumber equal to a board 1-foot square and 1-inch thick.

**Hardwood lumber.** Wood obtained from a class of trees known as angiosperms (having seeds produced within a closed pod). These trees are characterized by broad leaves and are usually deciduous in the temperate zones. Some examples of hardwood lumber include such trees as oak, yellow-poplar, maple, gum, and ash.

**Softwood lumber.** Wood from coniferous trees whose leaves are needle-like. Some examples of softwood trees are pine, fir, cedar, redwood, and spruce.

**Eastern hardwoods and softwoods.** Those species of trees that are grown and harvested in states considered part of the eastern United States.

**Western softwoods.** Those species of trees that are grown and harvested in states considered part of the western United States.

## LUMBER INDUSTRY REGIONS

### Eastern Lumber Regions

#### Southern Pine:

Southern yellow pine.

#### Southern Hardwood:

All hardwoods in Alabama, Arkansas, Delaware, Florida, Louisiana, Mississippi, Missouri, Oklahoma, and Texas; and the lowland counties of Georgia, Kentucky, Maryland, North Carolina, South Carolina, Tennessee, and Virginia.

#### Appalachian:

All hardwoods and softwoods, except southern yellow pine, in West Virginia, and the Appalachian range counties of Georgia, Kentucky, Maryland, North Carolina, South Carolina, Tennessee, and Virginia.

#### Northern Hemlock and Hardwood:

All hardwoods and softwoods, except southern yellow pine, in Michigan and the Wisconsin.

#### Northeastern:

All hardwoods and softwoods, except southern yellow pine, in Connecticut, Maine, Massachusetts, New Hampshire, New York, Pennsylvania, Rhode Island, and Vermont.

#### Other:

All hardwoods and softwoods, except southern yellow pine, in Illinois, Indiana, Iowa, Kansas, Minnesota, Nebraska, New Jersey, North Dakota, and Ohio;

all softwoods, except southern yellow pine, in the lowland counties of Georgia, Kentucky, Maryland, North Carolina, South Carolina, Tennessee, and Virginia; and all softwoods, except southern yellow pine, in Alabama, Arkansas, Delaware, Florida, Louisiana, Mississippi, Missouri, Oklahoma, and Texas.

### Western Lumber Regions

#### Douglas Fir:

All softwoods and hardwoods in Oregon and Washington west of the Cascades, and in Jackson and Josephine counties in Oregon.

#### Western Pine:

All softwoods and hardwoods in Oregon (except in Jackson and Josephine counties in Oregon) and Washington east of the Cascades; in California (except the Redwood Region counties); and in Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, South Dakota, Utah, and Wyoming.

#### California Redwood:

All softwoods and hardwoods in the following 15 counties of California: Alameda, Contra Costa, Del Norte, Humboldt, Marin, Mendocino, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma.

#### Alaska and Hawaii:

All softwoods and hardwoods in Alaska and Hawaii.

**Table 1. Production and Mill Stocks of Lumber: 1995 to 1998**

[Millions of board feet, lumber tally]

Year	Production					Mill stocks		
	Total production	Softwoods			Total hardwoods	Total mill stocks	Softwoods	Hardwoods
		Total	Southern yellow pine	Other				
1998.....	46,560	35,358	15,389	19,969	11,202	4,237	2,948	1,289
1997.....	46,560	35,457	15,408	20,049	11,103	4,333	3,114	1,219
1996.....	44,755	34,065	15,060	19,005	10,690	4,247	2,964	1,283
1995.....	43,971	33,043	14,700	18,343	10,928	4,633	3,297	1,336

**Table 2. Production of Softwoods and Hardwoods by Geographic Area: 1998 and 1997**

[Millions of board feet, lumber tally]

Geographic area	Total		Softwoods		Hardwoods	
	1998	1997	1998	1997	1998	1997
<b>United States</b> .....	<b>46,560</b>	<b>46,560</b>	<b>35,358</b>	<b>35,457</b>	<b>11,202</b>	<b>11,103</b>
<b>Eastern United States</b> .....	<b>29,315</b>	<b>29,105</b>	<b>18,521</b>	<b>18,470</b>	<b>10,794</b>	<b>10,635</b>
Alabama .....	2,490	2,437	2,123	2,074	367	363
Arkansas .....	2,423	2,363	1,960	1,930	463	433
Connecticut .....	50	48	6	6	44	42
Delaware .....	14	15	(Z)	(Z)	14	15
Florida .....	782	803	770	790	12	13
Georgia .....	3,165	3,179	2,798	2,794	367	385
Illinois .....	86	93	-	-	86	93
Indiana .....	380	368	(Z)	(Z)	380	368
Iowa .....	76	77	(Z)	(Z)	76	77
Kansas .....	12	10	-	-	12	10
Kentucky .....	777	723	4	7	773	716
Louisiana .....	1,305	1,265	1,087	1,068	218	197
Maine .....	1,155	1,105	993	955	162	150
Maryland .....	262	250	94	87	168	163
Massachusetts .....	(D)	(D)	(D)	(D)	(D)	(D)
Michigan .....	683	671	141	147	542	524
Minnesota .....	306	338	179	170	127	168
Mississippi .....	2,759	2,798	2,265	2,306	494	492
Missouri .....	578	580	27	27	551	553
Nebraska .....	25	25	2	2	23	23
New Hampshire .....	314	298	273	262	41	76
New Jersey .....	8	8	1	1	7	7
New York .....	567	564	103	99	464	465
North Carolina .....	2,383	2,416	1,721	1,751	662	665
North Dakota .....	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)
Ohio .....	382	401	3	3	379	398
Oklahoma .....	(D)	(D)	(D)	(D)	(D)	(D)
Pennsylvania .....	1,138	1,077	38	39	1,100	1,038
Rhode Island .....	11	11	3	3	8	8
South Carolina .....	1,468	1,467	1,341	1,344	127	7123
Tennessee .....	816	7836	41	739	775	797
Texas .....	1,392	71,447	1,241	71,292	151	155
Vermont .....	255	278	139	163	116	115
Virginia .....	1,380	1,329	648	611	732	718
West Virginia .....	737	696	4	3	733	693
Wisconsin .....	698	681	145	7120	553	561
<b>Western United States</b> .....	<b>17,245</b>	<b>17,455</b>	<b>16,837</b>	<b>16,987</b>	<b>408</b>	<b>468</b>
Alaska .....	(D)	(D)	(D)	(D)	-	-
Arizona .....	98	110	98	110	-	-
California .....	3,137	3,513	(D)	(D)	(D)	(D)
Colorado .....	114	114	114	114	(Z)	(Z)
Hawaii .....	(Z)	(Z)	-	-	(Z)	(Z)
Idaho .....	1,877	71,845	1,877	71,845	-	-
Montana .....	1,348	1,309	1,348	1,309	-	-
Nevada .....	(Z)	(Z)	(Z)	(Z)	-	-
New Mexico .....	103	7110	103	7110	-	-
Oregon .....	5,639	5,715	5,519	5,593	120	122
South Dakota .....	(D)	(D)	(D)	(D)	(D)	(D)
Utah .....	27	27	(D)	(D)	(D)	(D)
Washington .....	4,452	4,271	4,165	3,926	287	345
Wyoming .....	232	226	232	226	(Z)	(Z)

- Represents zero. D Withheld to avoid disclosing data for individual companies. 7 Revised by 5 percent or more from previously published data. Z Represents less than 500,000 board feet.

**Table 3. Lumber Production by Species: 1995 to 1998**

[Millions of board feet, lumber tally]

Product description	1998	1997	1996	1995
<b>United States</b> .....	<b>46,560</b>	<b>46,560</b>	<b>44,755</b>	<b>43,971</b>
<b>All eastern species</b> .....	<b>29,315</b>	<b>29,105</b>	<b>28,153</b>	<b>27,984</b>
Eastern softwoods .....	18,521	18,470	17,912	17,497
Pine, southern yellow .....	15,389	15,408	15,060	14,700
Pine, eastern white .....	591	556	467	464
Pine, other <sup>1</sup> .....	291	283	244	250
Spruce or fir <sup>2</sup> .....	637	617	615	585
Other eastern softwoods <sup>3</sup> .....	149	150	151	148
Eastern softwoods, n.s.k. ....	1,464	1,456	1,375	1,350
Eastern hardwoods .....	10,794	10,635	10,241	10,487
Ash .....	197	193	200	208
Beech .....	68	69	61	70
Birch .....	77	70	64	68
Cherry .....	208	195	186	184
Cottonwood .....	72	74	84	95
Aspen .....	129	142	131	137
Gum, black, tupelo, and sweet .....	199	195	187	217
Hickory and pecan .....	107	95	99	98
Hard maple .....	452	437	376	383
Soft maple .....	283	256	223	231
Oak, red .....	2,022	1,983	1,974	1,945
Oak, white .....	943	929	877	933
Black walnut .....	26	25	27	34
Yellow-poplar .....	953	946	869	871
Other eastern hardwoods <sup>4</sup> .....	256	279	303	330
Mixed hardwoods <sup>5</sup> .....	1,210	1,195	1,193	1,248
Eastern hardwoods, n.s.k. ....	3,592	3,552	3,387	3,435
<b>All western species</b> .....	<b>17,245</b>	<b>17,455</b>	<b>16,602</b>	<b>15,987</b>
Western softwoods .....	16,837	16,987	16,153	15,546
Cedar, western red .....	591	654	652	619
Cedar, other <sup>6</sup> .....	185	209	186	186
Douglas fir .....	7,241	7,082	6,792	6,386
Fir, white, hem-fir, and other .....	3,499	3,521	3,151	2,801
Pine, ponderosa .....	2,074	2,266	2,320	2,395
Pine, western white .....	31	40	40	49
Pine, lodgepole .....	706	671	635	599
Pine, sugar .....	139	173	161	131
Redwood .....	688	735	686	762
Spruce <sup>7</sup> .....	348	321	331	307
Other western softwoods <sup>8</sup> .....	865	852	759	885
Western softwoods, n.s.k. ....	470	463	440	426
Western hardwoods <sup>9</sup> .....	408	468	449	441

n.s.k. Not specified by kind. <sup>†</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Includes jack and red (Norway) pines.

<sup>2</sup>Includes balsam fir and eastern spruce.

<sup>3</sup>Includes eastern red cedar, northern white cedar, southern white cedar, cypress, eastern hemlock, tamarack, and mixed woods.

<sup>4</sup>Includes basswood, boxwood, butternut, elm, hackberry, and sycamore.

<sup>5</sup>Includes mixed, ungraded hardwoods sawn for ties, timbers, blocking, cants, and pallet stock.

<sup>6</sup>Includes Alaska, incense, and Port Orford cedars.

<sup>7</sup>Includes Sitka and western/Engelmann spruce.

<sup>8</sup>Includes western hemlock, western larch, and mixed woods.

<sup>9</sup>Includes alder, aspen, birch, cottonwood, maple, oak, mixed woods, and western hardwoods not specified.

**Table 4. Production of Softwoods and Hardwoods by Lumber Industry Regions: 1998 and 1997**

[Millions of board feet, lumber tally]

Lumber industry region	Total		Softwoods		Hardwoods	
	1998	1997	1998	1997	1998	1997
<b>United States</b> .....	<b>46,560</b>	<b>46,560</b>	<b>35,358</b>	<b>35,457</b>	<b>11,202</b>	<b>11,103</b>
<b>Eastern lumber regions</b> .....	<b>29,315</b>	<b>29,105</b>	<b>18,521</b>	<b>18,470</b>	<b>10,794</b>	<b>10,635</b>
Southern pine .....	15,389	15,408	15,389	15,408	-	-
Southern hardwood .....	4,675	4,652	-	-	4,675	4,652
Appalachian .....	(D)	(D)	(D)	(D)	(D)	(D)
Northern hemlock and hardwood .....	1,381	1,352	286	267	1,095	1,085
Northeastern .....	(D)	(D)	(D)	(D)	(D)	(D)
Other .....	2,213	2,259	1,123	1,115	1,090	1,144
<b>Western lumber regions</b> .....	<b>17,245</b>	<b>17,455</b>	<b>16,837</b>	<b>16,987</b>	<b>408</b>	<b>468</b>
Douglas fir .....	7,993	8,015	7,585	7,547	407	467
Western pine .....	8,138	8,252	(D)	(D)	(D)	(D)
California redwood .....	(D)	(D)	(D)	(D)	(D)	(D)
Alaska and Hawaii .....	(D)	(D)	(D)	(D)	(Z)	(Z)

- Represents zero. D Withheld to avoid disclosing data for individual companies. † Revised by 5 percent or more from previously published data. Z Represents less than 500,000 board feet.

**Table 5. Production, Exports, Imports, and Apparent Consumption of Softwoods and Hardwoods: 1998 and 1997**

[Thousands of cubic meters]

Product code	Product description	Production <sup>1</sup>	Exports of domestic merchandise <sup>2</sup>	Percent exports to production	Imports for consumption <sup>2</sup>	Apparent consumption <sup>3</sup>	Percent imports to apparent consumption
<b>1998</b>							
<b>Total softwoods and hardwoods</b> .....		<b>109,869</b>	<b>5,387</b>	<b>4.9</b>	<b>44,997</b>	<b>149,479</b>	<b>30.1</b>
Softwoods <sup>4</sup> .....		83,435	2,886	3.5	43,703	124,252	35.2
Pine .....		45,356	1,150	2.5	1,588	45,794	3.5
3211133933	Lodgepole pine .....	1,666	40	2.4	137	1,763	7.8
3211133929	Ponderosa pine .....	4,894	97	2.0	130	4,927	2.6
3211133911, 13, 15, 31, 35	Other pine, including southern yellow and eastern white pine .....	38,796	1,013	2.6	1,321	39,104	3.4
3211133925	Douglas fir .....	17,087	594	3.5	984	17,477	5.6
3211133921	Western red cedar .....	1,395	55	3.9	1,098	2,438	45.0
3211133917, 19, 23, 27, 37, 39, 41, 43	Other softwoods, including hemlock, spruce, fir (other than Douglas fir), cedar (other than western red cedar), and mixed softwoods .....	15,034	1,087	7.2	40,033	53,980	74.2
32111339XX	Softwoods, n.s.k. ....	4,563	(X)	(X)	(X)	4,563	(X)
Hardwoods <sup>4</sup> .....		26,434	2,501	9.5	1,294	25,227	5.1
3211131951	Ash .....	465	133	28.6	8	340	2.4
3211131953	Beech .....	160	33	20.6	4	131	3.1
3211131955	Birch .....	182	24	13.2	74	232	31.9
3211131957	Cherry .....	491	136	27.7	8	363	2.2
3211131965	Hickory and pecan .....	252	16	6.3	2	238	0.8
3211131967, 69	Maple .....	1,734	329	19.0	191	1,596	12.0
3211131971	Red oak .....	4,771	559	11.7	18	4,230	0.4
3211131973	White oak .....	2,225	565	25.4	9	1,669	0.5
3211131975	Black walnut .....	61	22	36.1	1	40	2.5
3211131977	Yellow-poplar .....	2,249	169	7.5	1	2,081	-
3211131959, 61, 63, 79, 81, 83	Other hardwoods, including cottonwood, aspen, gum, and mixed hardwoods ...	5,324	515	9.7	978	5,787	16.9
32111319XX	Hardwoods, n.s.k. ....	8,520	(X)	(X)	(X)	8,520	(X)

See footnotes at end of table.

Table 5. **Production, Exports, Imports, and Apparent Consumption of Softwoods and Hardwoods: 1998 and 1997—Con.**

[Thousands of cubic meters]

Product code	Product description	Production <sup>1</sup>	Exports of domestic merchandise <sup>2</sup>	Percent exports to production	Imports for consumption <sup>2</sup>	Apparent consumption <sup>3</sup>	Percent imports to apparent consumption
	<b>1997</b>						
	<b>Total softwoods and hardwoods .</b>	<b>109,869</b>	<b>7,023</b>	<b>6.4</b>	<b>43,129</b>	<b>145,975</b>	<b>29.5</b>
	Softwoods <sup>4</sup> .....	83,669	4,132	4.9	42,066	121,603	34.6
	Pine .....	45,771	1,252	2.7	1,538	46,057	3.3
3211133933	Lodgepole pine .....	1,583	52	3.3	100	1,631	6.1
3211133929	Ponderosa pine .....	5,347	117	2.2	211	5,441	3.9
3211133911, 13, 15, 31, 35	Other pine, including southern yellow and eastern white pine .....	38,841	1,083	2.8	1,227	38,985	3.1
3211133925	Douglas fir .....	16,712	1,029	6.2	623	16,306	3.8
3211133921	Western red cedar .....	1,543	73	4.7	1,278	2,748	46.5
3211133917, 19, 23, 27, 37, 39, 41, 43	Other softwoods, including hemlock, spruce, fir (other than Douglas fir), cedar (other than western red cedar), and mixed softwoods .....	15,114	1,778	11.8	38,627	51,963	74.3
32111339XX	Softwoods, n.s.k. ....	4,529	(X)	(X)	(X)	4,529	(X)
	Hardwoods <sup>4</sup> .....	26,200	2,891	11.0	1,063	24,372	4.4
3211131951	Ash .....	455	152	33.4	7	310	2.3
3211131953	Beech .....	163	34	20.9	5	134	3.7
3211131955	Birch .....	165	27	16.4	63	201	31.3
3211131957	Cherry .....	460	113	24.6	7	354	2.0
3211131965	Hickory and pecan .....	224	18	8.0	1	207	0.5
3211131967, 69	Maple .....	1,635	391	23.9	176	1,420	12.4
3211131971	Red oak .....	4,679	649	13.9	19	4,049	0.5
3211131973	White oak .....	2,192	666	30.4	8	1,534	0.5
3211131975	Black walnut .....	59	20	33.9	1	40	2.5
3211131977	Yellow-poplar .....	2,232	204	9.1	1	2,029	-
3211131959, 61, 63, 79, 81, 83	Other hardwoods, including cottonwood, aspen, gum, and mixed hardwoods ...	5,508	617	11.2	775	5,666	13.7
32111319XX	Hardwoods, n.s.k. ....	8,428	(X)	(X)	(X)	8,428	(X)

- Represents zero. n.s.k. Not specified by kind. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Harmonized import and export data were collected in cubic meters. A conversion factor of 2.35973725 thousands of cubic meters per 1 million of board feet was used to convert from millions of board feet to thousands of cubic meters.

<sup>2</sup>Import and export numbers for 1998 and 1997 do not include cross-ties.

<sup>3</sup>Apparent consumption is equal to production plus imports minus exports.

<sup>4</sup>Totals for "Softwoods and Hardwoods" include n.s.k. production data.

Note: For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

**HISTORICAL NOTE**

Data on lumber production and stocks have been collected by the Census Bureau since 1904. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also

available on microfiche; contact the Census Bureau, Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Jim Jamski, 301-457-1603.



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## REFRACTORIES—MA327C (FORMERLY MA32C)

### INTRODUCTION

The data in this section are from a survey of all companies engaged in the manufacture of refractories. The survey panel for this survey includes all known manufacturers of refractories, approximately 200 companies. Data are collected in quantity and value of shipments. Quantity of shipments is measured in short tons, metric tons, and M bricks (thousand 9-inch equivalent). Related imports and exports are also shown.

### SUMMARY OF FINDINGS

In 1998, total manufacturers' shipments of refractories amounted to \$2,319.8 million, a decrease of 7 percent, from \$2,538.8 million in 1997.

Shipments of clay refractories decreased 5 percent to \$1,024.8 million in 1998, from \$1,084.2 million in 1997. Clay refractories shipments accounted for 44 percent of total refractories shipments in 1998 and 43 percent in 1997.

Shipments of nonclay refractories decreased 9 percent to \$1,354.4 million in 1998, from \$1,481.6 million in 1997. Nonclay refractories shipments accounted for 57 percent of total refractories shipments in 1998 and 58 percent in 1997.

Brick and shapes continue to be the dominate form of refractories, showing a decrease of 8 percent to \$571.0 million in 1998, from \$621.5 million in 1997. Unshaped clay refractories decreased 2 percent to \$398.8 million in 1998, from \$406.3 million in 1997. Mortars decreased 14 percent to \$26.9 million in 1998, from \$31.3 million in 1997. Plastic refractories and ramming mixes increased 13 percent to \$182.8 million in 1998, from \$161.3 million in 1997.

### EXPLANATION OF TERMS

**Unit of measure.** Data for quantity of shipments have been collected in two distinct units of measure. Shipments of all refractories are collected in metric tons, and shipments of brick and shapes are also collected in thousand 9-inch equivalents. (A 9-inch equivalent is a solid volume of 101.25 cubic inches.) For ease of comparison, the metric tons data have been multiplied by the appropriate factor (1.103) to derive the short tons figures.

**High alumina brick and shapes (50 percent to 87.5 percent  $\text{Al}_2\text{O}_3$ ).** Brick and shapes made substantially of calcined diaspore or bauxite. Calcined as applied to diaspore and bauxite implies heat treatment short of fusion for volume stability prior to use in a refractory product. In the process, volatile materials are driven off and chemical changes take place.

**Ladle brick.** Alumina ladle brick less than 50 percent  $\text{Al}_2\text{O}_3$ .

**High alumina ladle brick.** Ladle brick containing 50 percent or more  $\text{Al}_2\text{O}_3$ .

**Sleeves, nozzles, runner brick, tuyeres, and side grate brick.** Includes nozzles and sleeves described in American Society of Testing and Materials (ASTM) C-435, runner brick, tuyeres, and slide gate brick, externally applied, all compositions.

**Refractory bonding mortars, wet and dry tapes.** Includes both air-setting and heatsetting bonding mortars that contain up to 60 percent  $\text{Al}_2\text{O}_3$ , dry basis, by analysis.

**Plastic refractories and ramming mixes.** Includes products referred to as plastic fire brick and the less-plastic materials intended for ramming into place after the addition of water (when shipped in dry form) containing less than 50 percent  $\text{Al}_2\text{O}_3$ .

**High alumina plastic refractories and ramming mixes.** Plastic refractories and ramming mixes containing 50 percent to 87.5 percent  $\text{Al}_2\text{O}_3$ .

**Clay castable refractories (hydraulic setting).** Hydraulic setting castables containing up to 50 percent  $\text{Al}_2\text{O}_3$  and made from calcined fireclay, diaspore or bauxite base, and Portland or calcium aluminate cements. Castables based on mullite, fused or tabular alumina, or other nonclay materials are excluded.

**High alumina castable refractories (hydraulic setting).** Castable refractories containing more than 50 percent  $\text{Al}_2\text{O}_3$  excluding those based on mullite or extra-high alumina.

**Insulating castables.** Hydraulic setting castables designed for low thermal conductivity and having bulk densities as defined in ASTM Classification C-401 no greater than 105 pounds per cubic foot.

**Fireclay gunning mixes.** Alumina-silicate compositions up to 50 percent  $\text{Al}_2\text{O}_3$ , specifically engineered for gunning applications; may include hydraulic setting or other chemical bonding agents.

**Molten cast refractories.** Products made by fusing refractory oxides, as in an electric furnace, and pouring the molten material into molds to form finished shapes.

**Magnesite and magnesite-chrome brick and shapes (magnesite predominating; products analyzing greater than 55 percent Mg).** Pitch-bonded magnesite and magnesite-dolomite brick (magnesite predominating), not including burned impregnated brick, molten cast magnesite and magnesite-chrome brick and shapes, or those made of fused magnesia.

**Chrome and chrome-magnesite brick and shapes.**

Chrome predominating products analyzing no more than 55 percent Mg. Molten cast chrome and shapes are excluded.

**Mullite brick and shapes.** Mullite brick and shapes made predominantly of kyanite, sillimanite, and alusite, or synthetic mullite (excluding molten cast).

**Extra-high alumina brick and shapes (over 87.5 percent  $Al_2O_3$ ).** Products made predominantly of fused bauxite or fused or dense-sintered alumina. Molten cast extra-high alumina brick and shapes are excluded.

**Fused.** As applied to bauxite and alumina, fused means melting, as in an electric furnace; after cooling, the product is crushed and graded for use in the refractory.

**Dense-sintered alumina.** Refers to heat treatment (short of melting) of alumina to render it relatively volume-stable for use in a refractory.

**High alumina mortars.** Mortars containing more than 60 percent  $Al_2O_3$ .

**Other nonclay mortars.** Includes sterite, zircon, zirconia, and mullite.

**Nonclay castable refractories (hydraulic setting).** Hydraulic setting castables made from nonclay refractory materials and Portland or calcium aluminate cements.

**Basic nonclay gunning mixes.** Includes chrome, chrome-magnesia, and dolomite gunning mixes.

**Other nonclay gunning mixes.** Includes extra-high alumina, mullite, zircon, and other gunning mixes.

Table 6. **Value of Shipments of Refractories: 1991 to 1998**

[Thousands of dollars]

Year	Total	Clay	Nonclay
1998 .....	2,379,189	1,024,789	1,354,400
1997 .....	<sup>1</sup> 2,565,817	<sup>1</sup> 1,084,179	1,481,638
1996 .....	2,340,757	930,006	1,410,751
1995 .....	2,222,384	940,835	1,281,549
1994 .....	2,046,979	906,165	1,140,814
1993 .....	1,930,233	772,986	1,157,247
1992 .....	1,956,083	786,078	1,170,005
1991 .....	1,946,842	784,331	1,162,511

<sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 7. Quantity and Value of Shipments of Refractories by Type: 1998 and 1997**

[Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity shipped (unit of measure)			Value of shipments
			Short tons	Metric tons	M bricks (1,000 9-inch equivalent)	
<b>1998</b>						
327124	Clay and nonclay refractories .....	(X)	(X)	(X)	(X)	2,379,189
	Clay refractories .....	(X)	(X)	(X)	(X)	1,024,789
3271240111	Brick and shapes .....	(X)	1,012,857	918,275	337,800	570,997
3271240211	Fireclay, including semisilica, bloating and superduty fireclay brick and shapes, fireclay and high alumina pouring pit refractories; clay kiln furniture; radiant heater elements; and other miscellaneous clay refractory shapes .....	32	547,637	496,498	155,036	211,580
3271240411	High alumina brick and shapes containing 50 percent alumina and over, including glass-house pots, tank blocks, feeder parts, and upper structure shapes, made predominantly of calcined bauxite, kyanite, andalusite, and similar raw materials <sup>1</sup> .	31	414,200	375,521	145,585	300,364
3271240411	Insulating brick and shapes .....	14	51,020	46,256	37,179	59,053
3271240421	Unshaped clay refractories .....	(X)	837,945	759,696	(X)	398,800
3271240431	Refractory bonding mortars, wet and dry, including clay and high alumina .....	36	133,630	121,151	(X)	60,702
3271240311	Plastic refractories and ramming mixes, less than 50 percent alumina; high alumina plastic refractories and ramming mixes, 50 percent alumina and over; and high alumina phosphate bonded plastic refractories and ramming mixes, 50 percent alumina and over <sup>2</sup> .....	29	170,460	154,542	(X)	80,037
3271240441	Castable refractories less than 50 percent alumina; high alumina castables 50 percent alumina and over; and insulating castables (hydraulic setting), density up to 105 pounds/cubic foot <sup>3</sup> .....	36	364,053	330,057	(X)	193,270
3271240441	Fireclay gunning mixes, including hydraulic setting gunning mixes, less than 50 percent alumina; high alumina gunning mixes, 50 percent alumina and over; and insulating gunning mixes (hydraulic setting) .....	31	169,802	153,946	(X)	64,791
3271240451	Other refractory raw materials and refractory materials sold in lump or ground form, either for direct use by customer as a finished refractory product or as exported material .....	(X)	174,258	157,986	(X)	25,993
3271240461	Clay and high alumina refractory raw materials <sup>4</sup> .....	18	165,569	150,108	(X)	23,705
3271240000	Clay and high alumina refractory materials <sup>5</sup> .....	10	8,689	7,878	(X)	2,288
3271240000	Clay refractories, n.s.k. <sup>6</sup> .....	(X)	(X)	(X)	(X)	28,999
327125	Nonclay refractories .....	(X)	(X)	(X)	(X)	1,354,400
3271250111	Brick and shapes .....	(X)	477,397	432,817	106,052	720,999
3271250121	All silica brick and shapes, excluding semisilica .....	15	26,250	23,799	12,667	55,296
3271250131	Magnesite-carbon brick and shapes, both less than 7 percent carbon, 7 percent carbon and over, predominantly pitch and resin bonded, and carbon magnesite brick .....	9	109,232	99,032	20,392	110,660
3271250141	Magnesite brick and shapes, burned and unburned .....	10	37,328	33,842	6,887	33,404
3271250151	Magnesite-chrome, chrome-magnesite, including high fires, burned and unburned brick, and chrome brick .....	5	53,798	48,774	11,312	53,423
3271250161	Silicon-carbide brick and shapes (made predominantly of silicon carbide), including kiln furniture .....	14	15,966	14,475	4,237	79,001
3271250171	Extra-high alumina brick and shapes containing 87.5 percent alumina and higher, and extra-high alumina pouring pit refractories, including sleeves, nozzles, runners, tuyeres, ladle gate parts, and mullite brick and shapes .....	29	41,850	37,942	8,503	117,210
3271250181	Zircon and zirconia brick and shapes (made predominantly of either of these materials, including electrocast) .....	15	8,828	8,004	4,437	62,758
3271250181	All other brick and shapes, including dolomite, dolomite-magnesite, forsterite, pyrophyllite-zircon, carbon and graphite crucibles, retorts, stopper heads, natural graphite, refractories, and molten cast .....	18	184,145	166,949	37,617	209,247

See footnotes at end of table.

Table 7. **Quantity and Value of Shipments of Refractories by Type: 1998 and 1997—Con.**

[Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity shipped (unit of measure)			Value of shipments
			Short tons	Metric tons	M bricks (1,000 9-inch equivalent)	
<b>1998—Con.</b>						
Clay and nonclay refractories—Con.						
Nonclay refractories—Con.						
	Mortars .....	(X)	75,238	68,212	(X)	26,893
3271250211	Unshaped nonclay refractories basic bonding mortars made predominantly of magnesite or chrome ore, dolomite, and other nonclay mortars (made predominantly of forsterite, zircon, and silica) .....	11	(D)	(D)	(X)	19,186
3271250216	Extra-high alumina refractory mortars (made predominantly of fused or synthetic alumina and mullite) .....	19	(D)	(D)	(X)	7,707
	Plastic refractories and ramming mixes .....	(X)	163,002	147,781	(X)	182,769
3271250221	Basic castable mixes, including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite .....	13	89,388	81,041	(X)	64,834
3271250226	Extra-high alumina plastic refractories and ramming mixes, 87.5 percent alumina and higher (made predominantly of fused or synthetic aluminas and mullites), and extra-high alumina phosphate bonded plastic refractories and ramming mixes .....	22	62,178	56,372	(X)	72,685
3271250241	Extra-high alumina castable and gunning mixes .....	10	11,436	10,368	(X)	14,475
3271250236	Other nonclay plastic refractories and ramming mixes .....	12	(D)	(D)	(X)	12,986
3271250231	Other nonclay refractory castables and plastic refractories .....	13	(D)	(D)	(X)	17,789
Gunning mixes:						
3271250246	Basic nonclay gunning mixes, including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite and other nonclay gunning mixes .....	16	248,184	225,008	(X)	96,436
3271250251	Ceramic refractory fibers, 1,500 <sup>0</sup> F and higher .....	17	39,604	35,906	20,265	137,984
	Other nonclay refractory materials sold in lump or ground form, including ground silica .....	(X)	407,178	369,155	(X)	151,335
3271250256	Domestic shipments for direct use by customers as a finished refractory and all exported material <sup>5</sup> .....	11	207,066	187,730	(X)	93,637
3271250261	All other domestic shipments of nonclay refractory materials sold in lump or ground form as a refractory raw material <sup>4</sup> .....	9	200,112	181,425	(X)	57,698
3271250000	Nonclay refractories, n.s.k. <sup>6</sup> .....	(X)	(X)	(X)	(X)	37,984
327992	Dead-burned magnesia or magnesite .....	(X)	(D)	(D)	(X)	(D)
3279920331	Domestic shipments for direct use as finished refractory products and all exported material <sup>5</sup> .....	4	(D)	(D)	(X)	(D)
3279920336	All other domestic shipments predominantly for use as a refractory raw material .....	10	(D)	(D)	(X)	(D)
3274100311	Dead-burned dolomite .....	2	(D)	(D)	(X)	(D)
<b>1997</b>						
	Clay and nonclay refractories .....	(X)	(X)	(X)	(X)	'2,565,817
327124	Clay refractories .....	(X)	(X)	(X)	(X)	'1,084,179
	Brick and shapes .....	(X)	'1,120,931	'1,016,257	'340,967	'621,458
3271240111	Fireclay, including semisilica, bloating and superduty fireclay brick and shapes, fireclay and high alumina pouring pit refractories; clay kiln furniture; radiant heater elements; and other miscellaneous clay refractory shapes .....	32	'574,692	'521,026	'170,656	'231,257
3271240211	High alumina brick and shapes containing 50 percent alumina and over, including glass-house pots, tank blocks, feeder parts, and upper structure shapes, made predominantly of calcined bauxite, kyanite, andalusite, and similar raw materials <sup>1</sup> .....	34	'488,113	'442,532	'130,102	327,802
3271240411	Insulating brick and shapes .....	14	'58,127	'52,699	40,209	'62,399
	Unshaped clay refractories .....	(X)	'899,792	'815,768	(X)	'406,334

See footnotes at end of table.

**Table 7. Quantity and Value of Shipments of Refractories by Type: 1998 and 1997—Con.**

[Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity shipped (unit of measure)			Value of shipments
			Short tons	Metric tons	M bricks (1,000 9-inch equivalent)	
<b>1997—Con.</b>						
Clay and nonclay refractories—Con.						
Clay refractories—Con.						
Unshaped clay refractories—Con.						
3271240421	Refractory bonding mortars, wet and dry, including clay and high alumina .....	35	148,038	134,214	(X)	63,485
3271240431	Plastic refractories and ramming mixes, less than 50 percent alumina; high alumina plastic refractories and ramming mixes, 50 percent alumina and over; and high alumina phosphate bonded plastic refractories and ramming mixes, 50 percent alumina and over <sup>2</sup> .....	28	188,526	170,921	(X)	91,501
3271240311	Castable refractories less than 50 percent alumina; high alumina castables 50 percent alumina and over; and insulating castables (hydraulic setting), density up to 105 pounds/cubic foot <sup>3</sup> .....	38	385,262	349,286	(X)	188,222
3271240441	Fireclay gunning mixes, including hydraulic setting gunning mixes, less than 50 percent alumina; high alumina gunning mixes, 50 percent alumina and over; and insulating gunning mixes (hydraulic setting) .....	31	177,966	161,347	(X)	63,126
Other refractory raw materials and refractory materials sold in lump or ground form, either for direct use by customer as a finished refractory product or as exported material .....						
3271240451	Clay and high alumina refractory raw materials <sup>4</sup> .....	(X) 18	205,361	186,184	(X)	28,402
3271240461	Clay and high alumina refractory materials <sup>5</sup> .....	10	9,860	8,939	(X)	2,322
3271240000	Clay refractories, n.s.k. <sup>6</sup> .....	(X)	(X)	(X)	(X)	27,985
327125	Nonclay refractories .....	(X)	(X)	(X)	(X)	1,481,638
Brick and shapes .....						
3271250111	All silica brick and shapes, excluding semisilica .....	(X) 15	511,889	464,089	118,571	818,079
3271250121	Magnesite-carbon brick and shapes, both less than 7 percent carbon, 7 percent carbon and over, predominantly pitch and resin bonded, and carbon magnesite brick .....	8	43,615	39,542	20,473	67,385
3271250131	Magnesite brick and shapes, burned and unburned .....	10	110,839	100,489	20,721	115,450
3271250141	Magnesite-chrome, chrome-magnesite, including high fires, burned and unburned brick, and chrome brick .....	10	31,699	28,739	5,820	28,623
3271250151	Silicon carbide brick and shapes made predominately of silicon carbide, including kiln furniture .....	5	57,927	52,518	10,475	59,701
3271250161	Extra-high alumina brick and shapes containing 87.5 percent alumina and higher, and extra-high alumina pouring pit refractories, including sleeves, nozzles, runners, tuyeres, ladle gate parts, and mullite brick and shapes .....	14	20,013	18,144	4,711	84,177
3271250171	Zircon and zirconia brick and shapes (made predominantly of either of these materials, including electrocast) .....	29	42,518	38,548	9,693	148,769
3271250181	All other brick and shapes, including dolomite, dolomite-magnesite, forsterite, pyrophyllite-zircon, carbon and graphite crucibles, retorts, stopper heads, natural graphite, refractories, and molten cast .....	15	9,728	8,820	6,900	65,765
Mortars .....						
3271250211	Unshaped nonclay refractories basic bonding mortars made predominantly of magnesite or chrome ore, dolomite, and other nonclay mortars (made predominantly of forsterite, zircon, and silica) .....	18	195,550	177,289	39,778	248,209
3271250211	Mortars .....	(X)	99,884	90,557	(X)	31,295
3271250216	Unshaped nonclay refractories basic bonding mortars made predominantly of magnesite or chrome ore, dolomite, and other nonclay mortars (made predominantly of forsterite, zircon, and silica) .....	11	(D)	(D)	(X)	22,630
3271250216	Extra-high alumina refractory mortars (made predominantly of fused or synthetic alumina and mullite) .....	19	(D)	(D)	(X)	8,665
3271250221	Plastic refractories and ramming mixes .....	(X)	175,894	198,488	(X)	187,047
3271250221	Basic castable mixes, including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite .....	13	92,468	83,833	(X)	61,369
3271250226	Extra-high alumina plastic refractories and ramming mixes, 87.5 percent alumina and higher (made predominantly of fused or synthetic aluminas and mullites), and extra-high alumina phosphate bonded plastic refractories and ramming mixes .....	10	65,024	58,952	(X)	76,331

See footnotes at end of table.

Table 7. **Quantity and Value of Shipments of Refractories by Type: 1998 and 1997—Con.**

[Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity shipped (unit of measure)			Value of shipments
			Short tons	Metric tons	M bricks (1,000 9-inch equivalent)	
<b>1997—Con.</b>						
Clay and nonclay refractories—Con.						
Nonclay refractories—Con.						
Mortars—Con.						
Plastic refractories and ramming mixes—Con.						
3271250241	Extra-high alumina castable and gunning mixes . . . . .	13	11,942	10,827	(X)	15,697
3271250236	Other nonclay plastic refractories and ramming mixes. . . . .	13	(D)	(D)	(X)	13,973
3271250231	Other nonclay refractory castables and plastic refractories. . . . .	13	(D)	(D)	(X)	19,677
Gunning mixes:						
3271250246	Basic nonclay gunning mixes, including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite and other nonclay gunning mixes. . . . .	16	270,115	244,891	(X)	101,662
3271250251	Ceramic refractory fibers, 1,500° F and higher . . . . .	12	45,393	41,154	(X)	137,846
3271250256	Other nonclay refractory materials sold in lump or ground form, including ground silica. . . . .	(X)	460,369	417,379	(X)	166,516
3271250261	Domestic shipments for direct use by customers as a finished refractory and all exported material <sup>5</sup> . . . . .	21	236,103	214,055	(X)	99,586
3271250261	All other domestic shipments of nonclay refractory materials sold in lump or ground form as a refractory raw material <sup>4</sup> . . . . .	10	224,266	203,324	(X)	66,930
3271250000	Nonclay refractories, n.s.k. <sup>6</sup> . . . . .	(X)	(X)	(X)	(X)	39,193
327992	Dead-burned magnesia or magnesite . . . . .	(X)	(D)	(D)	(X)	(D)
3279920331	Domestic shipments for direct use as finished refractory products and all exported material <sup>5</sup> . . . . .	6	(D)	(D)	(X)	(D)
3279920336	All other domestic shipments predominantly for use as a refractory raw material . . . . .	8	(D)	(D)	(X)	(D)
3274100311	Dead-burned dolomite. . . . .	3	(D)	(D)	(X)	(D)

D Withheld to avoid disclosing data for individual companies. n.s.k. Not specified by kind. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Includes high alumina pouring pit refractories (containing 50% alumina and over), sleeves, nozzles, runners, and ladle gate parts. Excludes data for mullite and extra-high alumina refractories. These products are included in nonclay refractories section.

<sup>2</sup>Includes products referred to as plastic firebrick and less plastic materials intended for ramming into place after addition of water (when shipped in dry form).

<sup>3</sup>Includes hydraulic setting castables designed for low thermal conductivity and having bulk densities as defined in ASTM classification C-401, not greater than 105 pounds/cubic foot.

<sup>4</sup>Includes shipments to refractory producers for reprocessing in manufacture of brick and other refractories.

<sup>5</sup>Includes shipments for direct use as finished refractory products by establishments classified in manufacturing industries and excludes shipments to refractory producers for reprocessing in manufacture of brick and other refractories. Includes all exports.

<sup>6</sup>Not specified by kind (n.s.k.) represents value of shipments for establishments that did not report detailed information and establishments, typically with less than five employees that were not included on MA327C mailing panel.

**Table 8. Shipments, Exports, Imports, and Apparent Consumption of Refractories by Type: 1998 and 1997**

[Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Unit of measure	Manufacturers' shipments		Exports of domestic merchandise <sup>1 2</sup>		Percent exports to manufacturers' shipments	
			Quantity	Value	Quantity	Value at port <sup>2</sup>	Quantity	Value
	<b>1998</b>							
3271240111, 211, 411 3271240421, 431, 311, 441  3271250121, 131, 141  3271250111, 151, 161, 171, 181 3271250211, 216, 221, 226, 241, 231, 236, 246, 251	Clay and nonclay refractories <sup>3</sup> .....	.....(X).....	(X)	2,379,189	(X)	338,639	(X)	14.0
	Clay refractories .....	.....(X).....	(X)	1,024,789	(X)	59,712	(X)	6.0
	Brick and shapes .....	1,000 standard brick equivalent .	337,800	570,997	(NA)	46,600	(NA)	8.0
	Unshaped clay refractories and gunning mixes .....	Metric tons. ....	759,696	398,800	11,960	13,112	2.0	3.0
	Nonclay refractories .....	.....(X).....	(X)	1,354,400	(X)	278,927	(X)	21.0
	Nonclay magnesite and magnesite-chrome brick and shapes and chrome brick .....	1,000 standard brick equivalent .	38,591	197,487	(NA)	59,055	(NA)	30.0
	All other brick and shapes .....	.....do.....	67,461	523,512	(NA)	112,125	(NA)	21.0
3271240111, 211, 411 3271240421, 431, 311, 441  3271250121, 131, 141  3271250111, 151, 161, 171, 181 3271250211, 216, 221, 226, 241, 231, 236, 246, 251	Unshaped nonclay refractories and gunning mixes .....	Metric tons. ....	661,302	626,851	149,202	107,747	23.0	17.0
			Imports for consumption <sup>1 4</sup>		Apparent consumption <sup>6</sup>		Percent imports to apparent consumption	
			Quantity	Value <sup>5</sup>	Quantity	Value	Quantity	Value
	Clay and nonclay refractories <sup>3</sup> .....	.....(X).....	(X)	256,023	(X)	2,296,573	(X)	11.1
	Clay refractories .....	.....(X).....	(X)	30,929	(X)	996,006	(X)	3.1
	Brick and shapes .....	1,000 standard brick equivalent .	(NA)	29,296	(NA)	553,693	(NA)	5.3
	Unshaped clay refractories and gunning mixes .....	Metric tons. ....	1,309	1,633	749,045	387,321	0.2	0.4
Nonclay refractories .....	.....(X).....	(X)	225,094	(X)	1,300,567	(X)	17.3	
3271250121, 131, 141  3271250111, 151, 161, 171, 181 3271250211, 216, 221, 226, 241, 231, 236, 246, 251	Nonclay magnesite and magnesite-chrome brick and shapes and chrome brick .....	1,000 standard brick equivalent .	(NA)	92,088	(NA)	230,520	(NA)	39.9
	All other brick and shapes .....	.....do.....	(NA)	106,936	(NA)	518,323	(NA)	20.6
	Unshaped nonclay refractories and gunning mixes .....	Metric tons. ....	51,158	26,070	563,258	545,174	9.1	4.8

See footnotes at end of table.

**Table 8. Shipments, Exports, Imports and Apparent Consumption of Refractories by Type: 1998 and 1997—Con.**

[Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Unit of measure	Manufacturers'		Exports of domestic merchandise <sup>1 2</sup>		Percent exports to manufacturers' shipments	
			Quantity	Value	Quantity	Value at port <sup>2</sup>	Quantity	Value
<b>1997</b>								
3271240111, 211, 411	Clay and nonclay refractories <sup>3</sup> .....	.....(X).....	(X)	2,565,817	(X)	369,093	(X)	14.0
	Clay refractories .....	.....(X).....	(X)	1,084,179	(X)	81,185	(X)	7.0
3271240421, 431, 311, 441	Brick and shapes .....	1,000 standard brick equivalent .	340,967	621,458	(NA)	68,040	(NA)	11.0
	Unshaped clay refractories and gunning mixes .....	Metric tons. ....	815,768	406,344	13,362	13,145	2.0	3.0
3271250121, 131, 141	Nonclay refractories .....	.....(X).....	(X)	1,481,638	(X)	287,908	(X)	19.0
	Nonclay magnesite and magnesite-chrome brick and shapes and chrome brick .....	1,000 standard brick equivalent .	37,016	203,774	(NA)	70,967	(NA)	35.0
3271250111, 151, 161, 171, 181	All other brick and shapes .....	.....do .....	81,555	614,305	(NA)	100,890	(NA)	16.0
	Unshaped nonclay refractories and gunning mixes .....	Metric tons. ....	751,997	644,897	160,190	116,051	21.0	18.0
3271250211, 216, 221, 226, 241, 231, 236, 246, 251			Imports for consumption <sup>1 4</sup>		Apparent consumption <sup>6</sup>		Percent imports to apparent consumption	
			Quantity	Value <sup>5</sup>	Quantity	Value	Quantity	Value
3271240111, 211, 411	Clay and nonclay refractories <sup>3</sup> .....	.....(X).....	(X)	278,962	(X)	2,475,686	(X)	11.3
	Clay refractories .....	.....(X).....	(X)	30,616	(X)	1,033,610	(X)	3.0
3271240421, 431, 311, 441	Brick and shapes .....	1,000 standard brick equivalent .	(NA)	29,450	(NA)	582,868	(NA)	5.1
	Unshaped clay refractories and gunning mixes .....	Metric tons. ....	1,078	1,166	803,484	394,365	0.1	0.3
3271250121, 131, 141	Nonclay refractories .....	.....(X).....	(X)	248,346	(X)	1,442,076	(X)	17.2
	Nonclay magnesite and magnesite-chrome brick and shapes and chrome brick .....	1,000 standard brick equivalent .	(NA)	95,364	(NA)	228,171	(NA)	41.8
3271250111, 151, 161, 171, 181	All other brick and shapes .....	.....do .....	(NA)	127,476	(NA)	640,891	(NA)	19.9
	Unshaped nonclay refractories and gunning mixes .....	Metric tons. ....	40,881	25,506	632,688	554,352	6.5	4.6

NA Not available. X Not applicable.

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>"Clay and nonclay refractories" total shown here excludes product codes 3271240451, 3271240461, 3271240000, 3271250256, 3271250261, 3271250000, 3279920331, 3279920336, 3274100311; therefore, they differ from totals shown in Tables 6 and 7.

<sup>4</sup>Source: Census Bureau report IM 146, *U.S. Imports for Consumption and General Imports*.

<sup>5</sup>"Value at port" includes both import value and duty value.

<sup>6</sup>Apparent consumption is derived by subtracting exports from total of shipments plus imports (including duty).



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**HISTORICAL NOTE**

Data on refractories have been collected by the Census Bureau since 1947. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library.

Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact John Linehan, 301-457-4742.

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## CLAY CONSTRUCTION PRODUCTS—MQ327D (FORMERLY MQ32D)

### INTRODUCTION

The data in this section are from a survey of manufacturers of clay products, including brick, tile, pipe, and fittings. The panel for this survey consists of all known producers of clay construction products, approximately 220 establishments. This survey supplies a regional state break out of quantity of production, quantity of shipments, and value of shipments for brick, building or common and facing, by quarter. The tile, pipe, and fittings products are available on an overall industry basis, by quarter. Related imports and exports are also shown.

### SUMMARY OF FINDINGS

Shipments of brick, building or common and facing, increased 9.2 percent to \$1,453.0 million in 1998, from \$1,330.8 million in 1997. The South Atlantic region accounted for 34.5 percent of the total value of brick shipments in 1998. More specifically, North Carolina accounted for 14.5 percent of the total value of brick shipments in 1998.

Shipments of structural facing tile and ceramic glazed brick increased 6.6 percent to \$15.1 million in 1998, from \$14.2 million in 1997.

Shipments of clay floor and wall tile increased 0.3 percent to \$836.9 million in 1998, from \$834.2 million in 1997. Shipments of glazed floor and wall tile (except ceramic mosaic tile) increased 3.2 percent to \$612.0 million in 1998, from \$592.7 million in 1997.

Shipments of vitrified sewer pipe and fittings increased 2.0 percent to \$48.1 million in 1998, from \$47.2 million in 1997.

### EXPLANATION OF TERMS

**Building or common brick.** Any brick made primarily for building purposes and not especially treated for texture or color.

**Facing brick.** Brick made especially for facing purposes, often treated to produce surface texture, and made of selected clays or otherwise treated to produce desired color.

**Production and shipments.** Due to breakage and inventory adjustments, production (quantity) and shipments (quantity) may vary widely on a quarterly basis.

**Facing tile.** Tile designed for use in exterior or interior walls, partitions, or columns where the face of the tile is to be left exposed.

**Ceramic glazed brick.** Brick having a glaze of bright satin or glass finish obtained by spraying the clay body with a compound of metallic oxides, chemicals, and clays, and burning at high temperature, thus fusing the glaze to the body to make them inseparable.

**Structural clay tile.** A hollow masonry building unit composed of burned clay, shale, fireclay, or mixtures thereof, and having parallel air cells.

**Quarry tile.** Glazed or unglazed tile made by the process from natural clay or shale, usually having 6 square inches (39 square centimeters) or more of facial area.

**Vitrified.** This characteristic of a clay product results when the temperature in the kiln is sufficient to fuse all the grains and close all the pores of the clay, making the mass impervious.

**Table 9. Production and Shipments of Clay Construction Products: 1995 to 1998**

[Value in thousands of dollars]

Product code	Product description	Production (quantity)	Shipments	
			Quantity	Value (million dollars)
32510 11	Brick, building or common and facing (thousands of standard brick equivalent):			
	1998 .....	8,071,209	8,241,086	1,453,024
	1997 .....	7,837,600	7,732,971	1,330,797
	1996 .....	7,426,402	7,619,279	1,235,139
	1995 .....	7,243,872	6,890,321	1,092,231
32510 31	Structural facing tile and ceramic glazed brick (thousands of standard brick equivalent):			
	1998 .....	26,166	25,813	15,106
	1997 .....	26,830	26,515	14,165
	1996 .....	23,920	22,970	14,895
	1995 .....	25,797	24,086	16,458
32510 61	Structural clay tile (except facing) (short tons):			
	1998 .....	50,125	49,098	8,641
	1997 .....	50,917	49,729	8,545
	1996 .....	49,220	50,990	8,320
	1995 .....	54,468	53,727	8,066
32530 00	Clay floor and wall tile, (thousands of sq ft):			
	1998 .....	621,031	636,805	836,897
	1997 .....	626,933	618,978	834,166
	1996 .....	575,769	580,392	799,411
	1995 .....	580,797	568,094	727,978
32591 00	Vitrified clay sewer pipe and fittings (short tons):			
	1998 .....	164,523	156,189	48,105
	1997 .....	162,183	164,983	47,158
	1996 .....	143,064	158,968	44,955
	1995 .....	138,056	135,795	35,279

<sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 10. Production of Brick, Building or Common, and Facing by Regions and State: 1998 and 1997**

[Quantity in thousands of brick: 2-1/4 inch by 3-5/8 inch by 7-5/8 inch brick equivalent]

Region and state	1998					1997				
	Total	Fourth quarter	Third quarter	Second quarter	First quarter	Total	Fourth quarter	Third quarter	Second quarter	First quarter
<b>United States</b> .....	<b>8,071,209</b>	<b>2,089,479</b>	<b>2,088,212</b>	<b>2,026,582</b>	<b>1,866,936</b>	<b>7,837,600</b>	<b>1,957,141</b>	<b>2,052,622</b>	<b>2,038,722</b>	<b>1,789,115</b>
New England <sup>1</sup> .....	81,514	21,466	21,156	20,044	18,848	76,553	20,801	19,079	20,152	16,521
Middle Atlantic <sup>2</sup> .....	425,409	107,485	109,902	108,504	99,518	402,393	110,869	118,643	(D)	(D)
East North Central .....	727,366	190,936	179,052	184,876	172,502	700,447	173,678	179,152	184,994	162,623
Ohio .....	460,367	116,540	118,356	114,779	110,692	447,433	114,568	115,043	114,534	103,288
Other (Illinois, Indiana, Michigan, and Wisconsin) .....	266,999	74,396	60,696	70,097	61,810	253,014	59,110	64,109	70,460	59,335
West North Central .....	356,299	91,556	91,060	89,872	83,811	317,836	85,450	81,346	84,786	66,254
Kansas and Missouri .....	123,285	29,171	30,752	31,962	31,400	120,074	33,530	29,240	31,425	25,879
Other (Iowa, Minnesota, Nebraska, North Dakota, and South Dakota) .....	233,014	62,385	60,308	57,910	52,411	197,762	51,920	52,106	53,361	40,375
South Atlantic .....	3,040,676	781,273	795,760	757,182	706,461	2,978,044	728,073	789,254	784,984	675,733
Virginia .....	423,893	110,875	107,663	110,211	95,144	391,826	92,805	106,167	102,718	90,136
North Carolina .....	1,270,316	325,166	336,248	306,032	302,870	1,250,860	309,643	330,771	330,184	280,262
South Carolina .....	554,901	137,467	146,338	143,197	127,899	538,974	135,084	141,752	139,086	123,052
Other (Delaware, District of Columbia, Florida, Georgia, Maryland, and West Virginia) .....	791,566	207,765	205,511	197,742	180,548	796,384	190,541	210,564	212,996	182,283
East South Central .....	1,493,926	380,339	384,767	380,470	348,350	1,476,597	357,490	376,473	384,469	358,165
Alabama .....	717,738	183,322	184,632	179,714	170,070	708,316	174,156	178,627	181,279	174,254
Other (Kentucky, Mississippi, and Tennessee) .....	776,188	197,017	200,135	200,756	178,280	768,281	183,334	197,846	203,190	183,911
West South Central .....	1,431,715	384,408	373,842	357,139	316,326	1,352,598	343,284	344,086	(D)	(D)
Arkansas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Louisiana .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Oklahoma .....	246,541	69,144	66,845	63,448	47,104	251,290	62,182	63,784	64,438	60,886
Texas .....	859,698	226,742	224,421	212,241	196,294	791,675	201,099	198,893	201,275	190,408
Mountain .....	308,862	76,951	77,278	77,832	76,801	295,599	77,436	80,158	75,969	62,036
Colorado .....	171,010	42,771	42,570	(D)	(D)	157,125	42,395	43,548	40,020	31,162
Other (Arizona, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming) .....	137,852	34,180	34,708	(D)	(D)	138,474	35,041	36,610	35,949	30,874
Pacific <sup>3</sup> .....	205,442	55,065	55,395	50,663	44,319	237,533	60,060	64,431	63,594	49,448

See footnotes at end of Table 12.

**Table 11. Shipments of Brick, Building or Common, and Facing by Regions and State: 1998 and 1997**

[Quantity in thousands of brick: 2-1/4 inch by 3-5/8 inch by 7-5/8 inch brick equivalent]

Region and state	1998					1997				
	Total	Fourth quarter	Third quarter	Second quarter	First quarter	Total	Fourth quarter	Third quarter	Second quarter	First quarter
<b>United States</b> .....	<b>8,241,086</b>	<b>2,124,206</b>	<b>2,242,132</b>	<b>2,174,301</b>	<b>1,700,447</b>	<b>7,732,971</b>	<b>1,851,409</b>	<b>2,138,486</b>	<b>2,145,764</b>	<b>1,597,312</b>
New England <sup>1</sup> .....	82,369	20,369	23,037	22,970	15,993	79,455	19,733	22,858	22,945	13,919
Middle Atlantic <sup>2</sup> .....	433,040	106,779	119,050	121,486	85,725	403,725	96,888	123,672	(D)	(D)
East North Central .....	719,081	179,027	200,365	198,667	141,022	710,434	174,190	200,938	206,504	128,802
Ohio .....	446,744	110,011	123,276	123,130	90,327	446,334	105,704	127,621	132,558	80,451
Other (Illinois, Indiana, Michigan, and Wisconsin) .....	272,337	69,016	77,089	75,537	50,695	264,100	68,486	73,317	73,946	48,351
West North Central .....	342,334	90,829	97,124	87,495	66,886	319,009	77,758	90,186	89,373	61,692
Kansas and Missouri .....	128,261	34,435	37,977	32,569	23,280	119,269	27,886	33,634	32,755	24,994
Other (Iowa, Minnesota, Nebraska, North Dakota, and South Dakota) .....	214,073	56,394	59,147	54,926	43,606	199,740	49,872	56,552	56,618	36,698
South Atlantic .....	3,168,029	850,725	853,597	809,675	654,032	2,977,590	707,780	804,804	825,028	639,978
Virginia .....	444,852	116,216	120,114	117,125	91,397	408,659	97,248	109,008	114,282	88,121
North Carolina .....	1,328,690	377,321	362,644	320,002	268,723	1,245,894	293,265	339,395	344,350	268,884
South Carolina .....	567,011	148,917	152,002	150,629	115,463	536,895	131,776	143,398	146,764	114,957
Other (Delaware, District of Columbia, Florida, Georgia, Maryland, and West Virginia) .....	827,476	208,271	218,837	221,919	178,449	786,142	185,491	213,003	219,632	168,016
East South Central .....	1,536,671	386,302	416,212	406,034	328,123	1,446,444	340,621	389,793	397,735	318,295
Alabama .....	741,094	186,382	196,506	198,694	159,512	687,607	162,575	183,016	186,081	155,935
Other (Kentucky, Mississippi, and Tennessee) .....	795,577	199,920	219,706	207,340	168,611	758,837	178,046	206,777	211,654	162,360
West South Central .....	1,451,695	359,210	394,890	394,963	302,632	1,280,886	312,275	363,608	(D)	(D)
Arkansas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Louisiana .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Oklahoma .....	256,803	65,247	69,313	69,186	53,057	237,651	60,253	64,469	63,206	49,723
Texas .....	872,400	211,965	240,916	238,103	181,416	739,955	176,861	213,560	198,180	151,354
Mountain .....	295,724	77,295	81,744	77,536	59,149	282,870	67,688	78,503	78,154	58,525
Colorado .....	165,096	44,056	48,569	(D)	(D)	152,651	36,387	42,620	42,361	31,283
Other (Arizona, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming) .....	130,628	33,239	33,175	(D)	(D)	130,219	31,301	35,883	35,793	27,242
Pacific <sup>3</sup> .....	212,143	53,670	56,113	55,475	46,885	232,558	54,476	64,124	65,752	48,206

See footnotes at end of Table 12.

**Table 12. Value of Shipments of Brick, Building or Common, and Facing by Region and State: 1998 and 1997**

[Quantity in thousands of brick: 2-1/4 inch by 3-5/8 inch by 7-5/8 inch brick equivalent]

Region and state	1998					1997				
	Total	Fourth quarter	Third quarter	Second quarter	First quarter	Total	Fourth quarter	Third quarter	Second quarter	First quarter
<b>United States</b> .....	<b>1,453,024</b>	<b>371,776</b>	<b>394,540</b>	<b>387,457</b>	<b>299,251</b>	<b>1,330,797</b>	<b>315,882</b>	<b>382,397</b>	<b>370,110</b>	<b>262,408</b>
New England <sup>1</sup> .....	20,127	5,011	5,558	5,497	†4,061	18,407	4,547	5,482	5,244	3,134
Middle Atlantic <sup>2</sup> .....	90,484	22,434	25,082	25,041	17,927	83,886	19,723	25,312	(D)	(D)
East North Central .....	137,766	34,176	38,769	38,156	26,665	131,566	32,113	37,858	38,486	23,109
Ohio .....	90,614	22,360	25,259	24,977	18,018	87,189	20,728	25,339	25,979	15,143
Other (Illinois, Indiana, Michigan, and Wisconsin) .....	47,152	11,816	13,510	13,179	8,647	44,377	11,385	12,519	12,507	7,966
West North Central .....	†73,015	†20,218	†20,005	†18,458	†14,334	59,764	15,268	17,554	16,662	10,280
Kansas and Missouri .....	†28,269	†8,594	†7,730	†6,913	†5,032	†20,733	†5,332	†6,128	†5,817	3,456
Other (Iowa, Minnesota, Nebraska, North Dakota, and South Dakota) .....	44,746	11,624	12,275	11,545	†9,302	39,031	9,936	11,426	10,845	6,824
South Atlantic .....	501,731	132,539	133,926	133,469	101,797	457,929	108,757	127,623	126,295	95,254
Virginia .....	62,209	16,207	16,837	16,488	12,677	55,328	13,212	15,196	15,457	11,463
North Carolina .....	211,410	57,275	56,266	55,736	42,133	194,393	45,269	55,416	53,747	39,961
South Carolina .....	100,773	26,840	26,974	26,654	20,305	91,784	22,578	24,592	24,884	19,730
Other (Delaware, District of Columbia, Florida, Georgia, Maryland, and West Virginia) .....	127,339	32,217	33,849	34,591	26,682	116,424	27,698	32,419	32,207	24,100
East South Central .....	213,112	53,207	58,208	56,609	45,088	201,838	46,802	53,574	53,915	47,547
Alabama .....	101,694	25,186	27,354	27,307	21,847	93,132	22,161	24,901	25,362	20,708
Other (Kentucky, Mississippi, and Tennessee) .....	111,418	28,021	30,854	29,302	23,241	108,706	24,641	28,673	28,553	26,839
West South Central .....	275,065	68,411	75,443	73,740	†57,471	248,939	58,459	†76,268	(D)	(D)
Arkansas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Louisiana .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Oklahoma .....	47,805	12,270	12,897	12,778	9,860	45,023	10,536	12,622	12,747	9,118
Texas .....	156,689	38,524	43,402	42,438	†32,325	†141,476	31,786	†42,825	40,494	26,371
Mountain .....	72,411	18,322	19,295	18,382	16,412	62,429	14,811	18,599	17,034	11,985
Colorado .....	40,997	10,300	11,295	(D)	(D)	34,568	8,242	10,164	9,466	6,696
Other (Arizona, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming) .....	31,414	8,022	8,000	(D)	(D)	27,861	6,569	8,435	7,568	5,289
Pacific <sup>3</sup> .....	69,313	17,458	18,254	18,105	15,496	66,039	15,402	20,127	18,225	12,285

D Withheld to avoid disclosing data for individual companies. †Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents a combined total for Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

<sup>2</sup>Represents a combined total for New Jersey, New York, and Pennsylvania.

<sup>3</sup>Represents a combined total for Alaska, California, Hawaii, Oregon, and Washington.

**Table 13. Production of Clay Construction Products: 1998 and 1997**

Product description	Total	Fourth quarter	Third quarter	Second quarter	First quarter
<b>1998</b>					
Brick, building or common and face . . . . .	8,071,209	2,089,479	2,088,212	2,026,582	1,866,936
Structural facing tile and ceramic glazed brick . . . . .	'26,166	'6,516	'5,820	'6,311	7,519
Structural clay tile (except facing) . . . . .	50,125	12,694	12,784	13,218	11,429
Clay floor and wall tile, . . . . .	621,031	'152,008	155,005	163,366	150,653
Glazed floor and wall tile having a facial area greater than or equal to 6 and less than 59 square inches . . . . .	'355,630	'90,896	'91,623	'92,213	'80,898
Glazed floor and wall tile having a facial area greater than or equal to 59 square inches . . . . .	132,989	31,899	31,666	33,859	35,565
Glazed and unglazed ceramic mosaic tile having a facial area of less than 6 square inches . . . . .	(D)	(D)	(D)	(D)	(D)
Unglazed tile, including unglazed quarry tile having a facial area greater than or equal to 6 square inches . . . . .	(D)	(D)	(D)	(D)	(D)
Vitrified clay sewer pipe and fittings . . . . .	'164,523	'43,289	'43,422	'40,216	'37,596
<b>1997</b>					
Brick, building or common and facing . . . . .	7,837,600	1,957,141	2,052,622	2,038,722	1,789,115
Structural facing tile and ceramic glazed brick . . . . .	26,830	7,749	7,773	7,112	4,196
Structural clay tile (except facing) . . . . .	50,917	12,157	13,628	13,306	11,826
Clay floor and wall tile, including quarry tile . . . . .	626,933	136,449	149,957	170,643	169,884
Glazed floor and wall tile having a facial area greater than or equal to 6 and less than 59 square inches . . . . .	'366,292	'74,275	'92,063	'100,068	'99,886
Glazed floor and wall tile having a facial area greater than or equal to 59 square inches . . . . .	126,235	32,902	26,696	33,044	33,593
Glazed and unglazed ceramic mosaic tile having a facial area of less than 6 square inches . . . . .	(D)	(D)	(D)	(D)	(D)
Unglazed tile, including unglazed quarry tile having a facial area greater than or equal to 6 square inches . . . . .	(D)	(D)	(D)	(D)	(D)
Vitrified clay sewer pipe and fittings . . . . .	'162,183	44,492	'43,395	'40,576	'33,720

See footnotes at end of Table 15.

**Table 14. Quantity of Shipments of Clay Construction Products: 1998 and 1997**

Product description	Total	Fourth quarter	Third quarter	Second quarter	First quarter
<b>1998</b>					
Brick, building or common and face . . . . .	8,241,086	2,124,206	2,242,132	2,174,301	1,700,447
Structural facing tile and ceramic glazed brick . . . . .	'25,813	6,101	6,294	'7,147	6,271
Structural clay tile (except facing) . . . . .	49,098	12,670	12,949	11,870	11,609
Clay floor and wall tile . . . . .	636,805	154,744	158,148	165,398	158,515
Glazed floor and wall tile having a facial area greater than or equal to 6 and less than 59 square inches . .	'378,716	'92,135	'93,876	'99,086	'93,619
Glazed floor and wall tile having a facial area greater than or equal to 59 square inches . . . . .	'135,358	'33,835	'33,712	'33,184	34,627
Glazed and unglazed ceramic mosaic tile having a facial area of less than 6 square inches . . . . .	(D)	(D)	(D)	(D)	(D)
Unglazed tile, including unglazed quarry tile having a facial area greater than or equal to 6 square inches . . . . .	(D)	(D)	(D)	(D)	(D)
Vitrified clay sewer pipe and fittings . . . . .	'156,189	'41,012	'43,860	'39,399	'31,918
<b>1997</b>					
Brick, building or common and facing . . . . .	7,732,971	1,851,409	2,138,486	2,145,764	1,597,312
Structural facing tile and ceramic glazed brick . . . . .	26,515	6,109	7,541	6,699	6,166
Structural clay tile (except facing) . . . . .	49,729	12,213	13,296	12,515	11,705
Clay floor and wall tile, including quarry tile . . . . .	618,978	145,995	156,704	160,360	155,919
Glazed floor and wall tile having a facial area greater than or equal to 6 and less than 59 square inches . .	'353,873	'83,017	'93,092	'90,535	'87,229
Glazed floor and wall tile having a facial area greater than or equal to 59 square inches . . . . .	'135,139	'33,263	'31,088	'35,565	'35,223
Glazed and unglazed ceramic mosaic tile having a facial area of less than 6 square inches . . . . .	(D)	(D)	(D)	(D)	(D)
Unglazed tile, including unglazed quarry tile having a facial area greater than or equal to 6 square inches . . . . .	(D)	(D)	(D)	(D)	(D)
Vitrified clay sewer pipe and fittings . . . . .	'164,983	40,630	'47,372	'43,716	'33,265

See footnotes at end of Table 15.



**Table 15. Value of Shipments of Clay Construction Products: 1998 and 1997**

Product description	Total	Fourth quarter	Third quarter	Second quarter	First quarter
<b>1998</b>					
Brick, building or common and face .....	1,453,024	371,776	394,540	387,457	299,251
Structural facing tile and ceramic glazed brick .....	15,106	3,492	3,950	4,086	3,578
Structural clay tile (except facing) .....	8,641	2,224	2,330	2,064	2,023
Clay floor and wall tile .....	836,897	203,085	207,911	215,340	210,561
Glazed floor and wall tile having a facial area greater than or equal to 6 and less than 59 square inches ..	473,339	113,371	117,269	122,836	119,863
Glazed floor and wall tile having a facial area greater than or equal to 59 square inches .....	138,622	34,338	34,288	34,492	35,504
Glazed and unglazed ceramic mosaic tile having a facial area of less than 6 square inches .....	(D)	(D)	(D)	(D)	(D)
Unglazed tile, including unglazed quarry tile having a facial area greater than or equal to 6 square inches .....	(D)	(D)	(D)	(D)	(D)
Vitrified clay sewer pipe and fittings .....	48,105	12,814	13,276	12,114	9,901
<b>1997</b>					
Brick, building or common and facing .....	1,330,797	315,882	382,397	370,110	262,408
Structural facing tile and ceramic glazed brick .....	14,165	3,451	4,104	3,353	3,257
Structural clay tile (except facing) .....	8,545	2,100	2,320	2,137	1,988
Clay floor and wall tile, including quarry tile .....	834,166	200,778	213,200	210,135	210,053
Glazed floor and wall tile having a facial area greater than or equal to 6 and less than 59 square inches ..	459,730	109,307	120,311	113,956	116,156
Glazed floor and wall tile having a facial area greater than or equal to 59 square inches .....	132,969	32,911	31,239	34,670	34,149
Glazed and unglazed ceramic mosaic tile having a facial area of less than 6 square inches .....	(D)	(D)	(D)	(D)	(D)
Unglazed tile, including unglazed quarry tile having a facial area greater than or equal to 6 square inches .....	(D)	(D)	(D)	(D)	(D)
Vitrified clay sewer pipe and fittings .....	47,158	11,330	13,699	12,646	9,483

D Withheld to avoid disclosing data for individual companies.      1 Revised by 5 percent or more from previously published data.

Note: Units of measure for Tables 13 and 14 are: Brick and facing tile quantity in thousands of brick; structural clay tile (except facing) and vitrified clay sewer pipe and fittings quantity in short tons; clay floor and wall tile, quantity in thousands of square feet. Unit of measure for Table 15 is value in thousands of dollars.

**Table 16. Shipments, Exports, and Imports of Selected Clay Construction Products: 1998 and 1997**

[Value in thousands of dollars]

Product description	Unit of measure	Manufacturers' shipments		Exports of domestic merchandise <sup>1 2</sup>		Percent exports to manufacturers' shipments <sup>1</sup>	
		Quantity	Value (f.o.b. plant)	Quantity	Value (at port)	Quantity	Value <sup>3</sup>
<b>1998</b>							
Brick building or common and facing <sup>4</sup> . . . . .	1,000 bricks .	8,241,086	1,453,024	40,631	8,764	0.5	0.6
Structural clay tile and ceramic glazed brick. . . . .do . . . . .		(X)	23,747	(X)	7,040	(X)	29.6
Clay floor and wall tile <sup>5</sup> . . . . .	1,000 sq meters . . . . .	59,161	836,897	3,868	26,624	6.5	3.2
Vitrified clay sewer pipe and fittings <sup>6</sup> . . . . .	Metric tons . .	'141,692	'48,105	2,078	5,105	'1.5	'10.6
<b>1997</b>							
Brick building or common and facing <sup>4</sup> . . . . .	1,000 bricks .	7,732,971	1,330,797	46,518	9,351	0.6	0.7
Structural clay tile and ceramic glazed brick. . . . .do . . . . .		(X)	22,710	(X)	7,160	(X)	31.5
Clay floor and wall tile <sup>5</sup> . . . . .	1,000 sq meters . . . . .	57,505	834,166	3,943	28,924	6.9	'3.5
Vitrified clay sewer pipe and fittings <sup>6</sup> . . . . .	Metric tons . .	'149,670	'47,158	1,210	2,484	'0.8	'5.3
		Imports for consumption <sup>7</sup>		Apparent consumption <sup>9</sup>		Percent imports to apparent consumption	
	Unit of measure	Quantity	Value <sup>8</sup>	Quantity	Value <sup>3</sup>	Quantity	Value
<b>1998</b>							
Brick building or common and facing <sup>4</sup> . . . . .	1,000 bricks .	18,243	5,109	8,218,698	1,449,369	0.2	0.4
Structural clay tile and ceramic glazed brick. . . . .do . . . . .		(X)	1,541	(X)	18,248	(X)	8.4
Clay floor and wall tile <sup>5</sup> . . . . .	1,000 sq meters . . . . .	114,547	999,114	169,840	1,809,387	67.4	55.2
Vitrified clay sewer pipe and fittings <sup>6</sup> . . . . .	Metric tons . .	264	399	'139,878	'43,399	'0.2	'0.9
<b>1997</b>							
Brick building or common and facing <sup>4</sup> . . . . .	1,000 bricks .	20,267	5,346	7,706,720	1,326,792	0.3	0.4
Structural clay tile and ceramic glazed brick. . . . .do . . . . .		(X)	823	(X)	16,373	(X)	5.0
Clay floor and wall tile <sup>5</sup> . . . . .	1,000 sq meters . . . . .	95,026	829,119	148,588	1,634,361	64.0	50.7
Vitrified clay sewer pipe and fittings <sup>6</sup> . . . . .	Metric tons . .	806	475	'149,266	'45,149	'0.5	1.1

<sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>For comparison of Standard Industrial Classification System (SIC)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Value calculations are based on the estimated producers' value of exports.

<sup>4</sup>Import and export data include data for floor, paving, and sewer brick; and export data include data for heat insulating building brick: manufacturers' shipments data do not include data for floor, paving, sewer, and heat insulating building brick.

<sup>5</sup>A conversion factor of 0.092903 thousands of square meters per 1 thousand square feet was used to convert manufacturers' shipments from thousands of square feet to thousands of square meters.

<sup>6</sup>A conversion factor of 0.907185 metric tons per 1 short ton was used to convert manufacturers' shipments from short tons to metric tons. Import and export data include data for guttering, other conduits, other fittings, and other pipe: manufacturers' shipments data do not include data for guttering, other conduits, other fittings, and other pipe.

<sup>7</sup>Source: Census Bureau report IM 146, *U.S. Imports for Consumption*.

<sup>8</sup>Represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States.

<sup>9</sup>Apparent consumption is derived by subtracting exports from total of shipments plus imports.

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**HISTORICAL NOTE**

Data on clay products have been collected by the Census Bureau since 1947. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Evelyn Jordan, 301-457-4788.

## PLUMBING FIXTURES—MQ332E (FORMERLY MQ34E)

### INTRODUCTION

The data in this section are from a survey of all companies engaged in the manufacture of plumbing fixtures in the United States. The statistics were collected by mail on Census Bureau quarterly Form MQ34E, Plumbing Fixtures. The survey panel includes all known manufacturers of plumbing fixtures, approximately 179 companies.

### SUMMARY OF FINDINGS

Manufacturers' shipments of plumbing fixtures during 1998 were valued at \$3,435 million. This represents a 3-percent increase from the 1997 level of \$3,323 million.

Data for water closet bowls are collected reflecting handicapped accessible, and low consumption bowls. The categories have served to better define the industry. Shipments of low consumption water closet bowls (1.6 or less g.p.f.) increased from 8.1 million in 1997 to 8.2 million in 1998.

Bathtub shipments increased 3.0 percent, from 4.5 million in 1997 to 4.6 million in 1998. Whirlpool bath shipments increased 9.1 percent, from 489 thousand units in 1997 to 538 thousand units in 1998. Shipments of kitchen sinks increased 8.3 percent, from 5.3 million in 1997 to 5.8 million in 1998.

### EXPLANATION OF TERMS

**Definitions of plumbing fixtures.** The products covered are classified by the standards set by the American National Standards Institute.

Table 17. **Shipments of Selected Types of Plumbing Fixtures: 1994 to 1998**

[Quantity in thousands of units]

Product description	1998	1997	1996	1995	1994
Lavatories <sup>1</sup> . . . . .	7,869	7,460	7,458	7,129	6,982
Vitreous china and other nonmetals . . . . .	5,691	5,786	5,686	5,494	5,402
Cast iron (enameled) <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)
Steel . . . . .	1,901	1,674	1,838	1,635	1,579
Water closet bowls . . . . .	8,217	8,107	8,623	8,829	9,685
Flush tanks . . . . .	7,169	7,110	7,163	6,652	7,559
Kitchen sinks <sup>2</sup> . . . . .	5,814	5,329	5,131	4,961	5,034
Cast iron (enameled) <sup>2</sup> . . . . .	(D)	(D)	(D)	(D)	(D)
Steel . . . . .	4,658	4,276	4,166	4,086	4,056
All other materials <sup>2</sup> . . . . .	(D)	(D)	(D)	(D)	(D)
Bathtubs <sup>3</sup> . . . . .	4,635	4,495	4,442	3,904	3,826
Cast iron (enameled) <sup>3</sup> . . . . .	(D)	(D)	(D)	(D)	(D)
Steel (enameled) . . . . .	874	894	977	880	928
Plastics and all other materials <sup>3</sup> . . . . .	(D)	(D)	(D)	(D)	(D)
Fiberglass, and cultured marble . . . . .	2,726	2,723	2,540	2,203	2,125
Whirlpool baths . . . . .	538	489	483	442	426

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>"Lavatories, cast iron (enameled)" are included with "Lavatories," to avoid disclosing data for individual companies.

<sup>2</sup>"Kitchen sinks, cast iron (enameled)," and "Kitchen sinks, all other materials" are included with "Kitchen sinks" to avoid disclosing data for individual companies.

<sup>3</sup>"Bathtubs, cast iron (enameled)" and "Bathtubs, plastics, and all other materials" are included with "Bathtubs" to avoid disclosing data for individual companies.

**Table 18. Value of Shipments of Plumbing Fixtures by Material: 1995 to 1998**

[Value in thousands of dollars]

Product description	1998	1997	1996	1995
<b>Total</b> .....	<b>3,435,424</b>	<b>3,322,739</b>	<b>3,144,297</b>	<b>2,953,621</b>
Metal .....	700,833	672,814	643,775	578,319
Cast iron (enameled) .....	274,134	261,333	270,529	239,962
Steel and other metal .....	426,699	411,481	373,246	338,357
Vitreous china .....	883,689	875,908	859,693	891,869
Fiberglass .....	1,287,939	1,267,084	1,144,722	996,465
Gel coat .....	598,316	569,864	507,479	458,510
Acrylic .....	689,623	697,220	637,243	537,955
Plastics .....	420,698	371,716	362,469	337,156
Cultured marble .....	208,020	179,039	167,363	168,326
Other .....	212,678	192,677	195,106	168,830
All other materials, nonmetal <sup>1</sup> .....	142,265	135,217	133,638	149,812

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Includes plumbing fixtures, n.s.k. (not specified by kind).

**Table 19. Quantity of Shipments of Plumbing Fixtures: 1995 to 1998**

[Quantity in thousands of units]

Quarter and year	Lavatories	Water closet bowls	Flush tanks	Kitchen sinks	Bathtubs	Whirlpool baths
<b>1998</b>						
<b>Total</b> .....	<b>7,870</b>	<b>8,217</b>	<b>7,169</b>	<b>5,814</b>	<b>4,635</b>	<b>538</b>
First quarter .....	1,866	2,070	1,832	1,483	1,160	137
Second quarter .....	1,812	2,065	1,815	1,487	1,164	132
Third quarter .....	2,106	2,088	1,806	1,385	1,168	137
Fourth quarter .....	2,085	1,994	1,716	1,459	1,144	132
<b>1997</b>						
<b>Total</b> .....	<b>7,460</b>	<b>8,107</b>	<b>7,110</b>	<b>5,329</b>	<b>4,495</b>	<b>489</b>
First quarter .....	1,926	2,051	1,781	1,307	1,102	114
Second quarter .....	1,934	2,056	1,804	1,350	1,171	125
Third quarter .....	1,807	2,018	1,786	1,297	1,181	137
Fourth quarter .....	1,793	1,983	1,739	1,375	1,042	112
<b>1996</b>						
<b>Total</b> .....	<b>7,458</b>	<b>8,623</b>	<b>7,163</b>	<b>5,131</b>	<b>4,442</b>	<b>482</b>
First quarter .....	1,775	2,093	1,695	1,239	1,017	105
Second quarter .....	1,899	2,241	1,853	1,324	1,171	132
Third quarter .....	1,928	2,166	1,811	1,275	1,250	138
Fourth quarter .....	1,856	2,123	1,804	1,293	1,004	107
<b>1995</b>						
<b>Total</b> .....	<b>7,129</b>	<b>8,829</b>	<b>6,652</b>	<b>4,961</b>	<b>3,904</b>	<b>442</b>
First quarter .....	1,899	2,442	1,843	1,356	954	114
Second quarter .....	1,786	2,265	1,678	1,245	965	103
Third quarter .....	1,784	2,124	1,639	1,239	990	120
Fourth quarter .....	1,660	1,998	1,492	1,122	995	105

<sup>1</sup>Revised by 5 percent or more from previously published data.

Note: Detail may not add to totals because of independent rounding.

**Table 20. Total Production and Shipments of Plumbing Fixtures: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments	
				Quantity	Value
<b>1998</b>					
	Plumbing fixtures	(NA)	(X)	(X)	3,435,424
	Drinking fountains <sup>1</sup>	(NA)	57,726	58,017	15,693
34310 15	Metal	6	(D)	(D)	(D)
32610 12	Vitreous china <sup>1</sup>	3	(D)	(D)	(D)
19001 02	All other materials <sup>1</sup>	2	(D)	(D)	(D)
	Lavatories <sup>2</sup>	(NA)	8,011,007	7,869,670	404,552
34310 17	Cast iron (enameled) <sup>2</sup>	4	(D)	(D)	(D)
34310 18	Steel (enameled)	6	1,867,977	1,793,849	23,813
34310 19	Steel (stainless)	7	32,989	35,130	7,163
32610 17	Vitreous china	11	3,262,597	3,258,939	162,937
30880 04	Cultured marble	79	2,107,141	2,005,627	155,231
30880 31	Other plastics	8	393,778	426,195	36,328
19001 03	All other material <sup>2</sup>	3	(D)	(D)	(D)
	Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup>	(NA)	8,047,267	8,217,029	465,300
	Vitreous china 17 inches from floor to rim of bowl: Close coupled for use with flush tank:				
	Gravity and pressurized	7	2,258,559	2,373,853	107,878
32610 18, 22	One-piece: Gravity and pressurized <sup>3</sup>	1	(D)	(D)	(D)
32610 25, 26	Flushometer valve: Floor mounted <sup>3</sup>	5	(D)	(D)	(D)
32610 28	Less than 17 inches from floor to rim of bowl: Close coupled for use with flush tank:				
	Gravity and pressurized	7	4,262,982	4,310,210	178,421
32610 32, 34	One-piece: Gravity and pressurized <sup>3</sup>	7	377,336	387,050	(D)
32610 44	Flushometer valve: Wall mounted	6	326,506	302,490	19,770
32610 46	Floor mounted	5	191,521	193,687	13,911
32610 48	Blowout 3.5 g.p.f.: Vitreous china <sup>3</sup>	5	(D)	171,220	(D)
19001 17	Any bowl style: All materials other than vitreous china <sup>3</sup>	6	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china)	10	7,585,013	7,169,428	252,754
	Urinals	(NA)	308,694	299,780	33,229
34310 38	Metal	7	(D)	4,088	1,782
32610 36	Vitreous china	9	(D)	295,692	31,447
	Kitchen sinks, not including bar sinks <sup>4</sup>	(NA)	5,565,786	5,813,639	384,390
34310 41	Cast iron (enameled) <sup>4</sup>	4	(D)	(D)	(D)
34310 42	Steel (enameled)	7	342,832	454,209	14,609
34310 47	Steel (stainless)	7	4,079,187	4,204,007	203,741
19001 07	All other materials <sup>4</sup>	12	(D)	(D)	(D)
19001 08	Bar sinks (all materials) <sup>5</sup>	23	(D)	(D)	(D)
	Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup>	(NA)	856,817	848,657	59,475
34310 54	Metal	9	87,610	77,449	27,907
30880 33	Plastics	5	745,107	744,591	14,459
32610 54	Vitreous china <sup>5</sup>	4	(D)	(D)	(D)
32722 84	Concrete and all other materials <sup>5</sup>	3	(D)	(D)	(D)
	Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup>	(NA)	4,687,571	4,635,348	687,145
34310 61	Cast iron (enameled) <sup>6</sup>	2	(D)	(D)	(D)
34310 62	Steel (enameled)	5	917,082	874,289	58,468
30880 12	Fiberglass (FRP) gel coat	31	2,508,022	2,497,489	416,725
30880 13	Fiberglass (FRP) acrylic	30	217,455	203,780	57,996
30880 14	Cultured marble	54	24,024	24,622	12,759
30880 15	Other plastics (PVC, ABS)	13	598,428	612,439	43,483
19001 09	All other materials <sup>6</sup>	2	(D)	(D)	(D)
	Shower receptors, sold separately	(NA)	376,661	397,018	24,056
30886 55	Plastics	26	344,546	364,312	17,996
19001 10	All other materials	37	32,115	32,706	6,060

See footnotes at end of table.

Table 20. **Total Production and Shipments of Plumbing Fixtures: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments	
				Quantity	Value
<b>1998—Con.</b>					
Plumbing fixtures—Con.					
	Shower stalls, including receptor <sup>7</sup> .....	(NA)	1,036,091	1,018,132	222,379
34310 74	Metal <sup>7</sup> .....	3	(D)	(D)	(D)
30880 21	Fiberglass (FRP) gel coat.....	28	705,721	688,432	146,957
30880 22	Fiberglass (FRP) acrylic.....	15	96,963	102,722	40,033
30880 23	Other plastics <sup>7</sup> .....	14	(D)	(D)	5,872
19001 11	All other materials <sup>7</sup> .....	19	(D)	(D)	(D)
Wall surrounds, sold as separate units.....					
30880 70	Showers (all materials).....	(NA)	1,171,764	1,175,805	76,300
30880 71	Bathtubs (all materials).....	51	294,261	302,469	25,772
		46	877,503	873,336	50,528
19222 08	Bidets (all materials).....	9	42,448	44,192	6,111
Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> .....					
	Cast iron (enameled) <sup>8</sup> .....	(NA)	540,063	537,803	359,882
34310 86	Fiberglass (FRP) gel coat.....	2	(D)	(D)	(D)
30880 26	Fiberglass (FRP) acrylic.....	23	33,340	30,292	20,213
30880 27	Cultured marble.....	35	456,338	455,313	304,879
30880 28	Other plastics.....	53	12,650	13,894	12,713
30886 29	All other materials <sup>8</sup> .....	8	31,292	31,676	11,415
19001 12		2	(D)	(D)	(D)
19001 15	Hot tubs and spas (noninstitutional, all materials).....	30	153,236	125,693	361,108
All other fixtures not described above.....					
30882 20	Plastics.....	(NA)	(X)	(X)	60,489
19002 20	All other materials.....	5	(X)	(X)	218
		13	(X)	(X)	60,271
<b>1997</b>					
Plumbing fixtures.....					
	Drinking fountains <sup>1</sup> .....	(NA)	(X)	(X)	3,322,739
34310 15	Metal <sup>1</sup> .....	(NA)	50,083	50,239	14,472
32610 12	Vitreous china <sup>1</sup> .....	5	(D)	(D)	(D)
19001 02	All other materials <sup>1</sup> .....	3	(D)	(D)	(D)
		2	(D)	(D)	(D)
Lavatories <sup>2</sup> .....					
	Cast iron (enameled) <sup>2</sup> .....	(NA)	7,516,050	7,459,563	375,357
34310 17	Steel (enameled).....	4	(D)	(D)	(D)
34310 18	Steel (stainless).....	6	1,677,309	1,644,886	26,426
34310 19	Vitreous china.....	7	29,249	28,602	6,001
32610 17	Cultured marble.....	11	3,235,209	3,249,276	157,374
30880 04	Other plastics.....	80	1,918,928	1,894,695	132,065
30880 31	All other material <sup>2</sup> .....	8	655,462	642,104	53,491
19001 03		3	(D)	(D)	(D)
Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> .....					
	Vitreous china 17 inches from floor to rim of bowl: Close coupled for use with flush tank: Gravity and pressurized.....	(NA)	8,051,614	8,106,944	459,258
32610 18, 22	One-piece: Gravity and pressurized <sup>3</sup> .....	10	2,316,271	2,307,710	107,229
32610 25, 26	Flushometer valve: Floor mounted <sup>3</sup> .....	1	(D)	(D)	(D)
32610 28	Less than 17 inches from floor to rim of bowl: Close coupled for use with flush tank: Gravity and pressurized.....	4	(D)	(D)	(D)
32610 32, 34	One-piece: Gravity <sup>3</sup> .....	7	4,303,622	4,289,444	175,791
32610 38	Pressurized <sup>3</sup> .....	5	362,132	376,274	(D)
	Flushometer valve: Wall mounted.....	3	(D)	(D)	(D)
32610 44	Floor mounted.....	5	(D)	270,316	17,361
32610 46	Blowout 3.5 g.p.f.: Vitreous china <sup>3</sup> .....	5	193,904	207,417	14,225
32610 48	Any bowl style: All materials other than vitreous china <sup>3</sup> .....	5	(D)	(D)	(D)
19001 17		7	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china).....	10	6,853,894	7,109,538	252,217
Urinals.....					
34310 38	Metal.....	(NA)	287,396	303,058	32,635
32610 36	Vitreous china.....	7	4,070	4,057	2,080
		9	283,326	299,001	30,555

See footnotes at end of table.

Table 20. **Total Production and Shipments of Plumbing Fixtures: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments	
				Quantity	Value
	<b>1997—Con.</b>				
	Plumbing fixtures—Con.				
	Kitchen sinks, not including bar sinks <sup>4</sup>	(NA)	5,238,719	5,328,511	348,154
34310 41	Cast iron (enameled) <sup>4</sup>	3	(D)	(D)	117,813
34310 42	Steel (enameled)	7	325,454	392,265	12,931
34310 47	Steel (stainless)	7	3,852,790	3,883,647	186,847
19001 07	All other materials <sup>4</sup>	12	(D)	(D)	117,813
19001 08	Bar sinks (all materials)	24	359,146	361,353	21,396
	Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup>	(NA)	822,956	819,033	62,967
34310 54	Metal	9	64,464	66,078	33,151
30880 33	Plastics	6	728,913	725,932	14,018
32610 54	Vitreous china	4	11,808	10,866	3,413
32722 84	Concrete and all other materials <sup>5</sup>	4	(D)	(D)	(D)
	Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup>	(NA)	4,491,728	4,495,447	662,488
34310 61	Cast iron (enameled) <sup>6</sup>	2	(D)	(D)	(D)
34310 62	Steel (enameled)	5	882,457	893,725	60,415
30880 12	Fiberglass (FRP) gel coat	30	2,497,896	2,496,928	409,168
30880 13	Fiberglass (FRP) acrylic	29	207,149	205,584	56,576
30880 14	Cultured marble	56	20,430	20,241	11,162
30880 15	Other plastics (PVC, ABS)	11	470,730	466,192	31,729
19001 09	All other materials <sup>6</sup>	2	(D)	(D)	(D)
	Shower receptors, sold separately	(NA)	309,853	305,617	19,581
30886 55	Plastics	25	293,342	287,023	15,104
19001 10	All other materials	35	16,511	18,594	4,477
	Shower stalls, including receptor <sup>7</sup>	(NA)	1,027,859	1,014,544	210,117
34310 74	Metal <sup>7</sup>	2	(D)	(D)	(D)
30880 21	Fiberglass (FRP) gel coat	26	674,374	665,200	128,364
30880 22	Fiberglass (FRP) acrylic	15	104,099	100,531	39,306
30880 23	Other plastics	13	111,025	111,895	8,901
19001 11	All other materials <sup>7</sup>	22	(D)	(D)	(D)
	Wall surrounds, sold as separate units	(NA)	1,085,976	1,136,488	70,666
30880 70	Showers (all materials)	57	280,511	307,189	21,418
30880 71	Bathtubs (all materials)	47	805,465	829,299	49,248
19222 08	Bidets (all materials)	9	44,471	46,836	6,194
	Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup>	(NA)	498,349	488,516	329,291
34310 86	Cast iron (enameled) <sup>8</sup>	2	(D)	(D)	(D)
30880 26	Fiberglass (FRP) gel coat	22	40,603	41,060	27,725
30880 27	Fiberglass (FRP) acrylic	36	403,973	391,420	262,904
30880 28	Cultured marble	55	9,027	8,840	10,142
30886 29	Other plastics	8	38,556	40,917	18,316
19001 12	All other materials <sup>8</sup>	2	(D)	(D)	(D)
19001 13, 15	Hot tubs and spas (noninstitutional, all materials)	29	156,049	155,895	401,102
	All other fixtures not described above	(NA)	(X)	(X)	54,372
30882 20	Plastics	7	(X)	(X)	441
19002 20	All other materials	12	(X)	(X)	53,931

D Withheld to avoid disclosing data for individual companies. NA Not available. X Not applicable.

<sup>1</sup>“Drinking fountains, metal,” “Drinking fountains, vitreous china,” and “Drinking fountains, all other materials” are combined with “Drinking fountains” to avoid disclosing data for individual companies.

<sup>2</sup>“Lavatories, cast iron (enameled)” and “Lavatories, all other materials” are included with “Lavatories” to avoid disclosing data for individual companies.

<sup>3</sup>“Water closet bowls, 17 inches from floor to rim of bowl, one-piece, and flushometer valve,” “Water closet bowls, less than 17 inches from floor to rim of bowl, one-piece,” “Blowout 3.5 g.p.f.,” and “Any bowl style” are included with “Water closet bowls” to avoid disclosing data for individual companies.

<sup>4</sup>“Kitchen sinks, cast iron (enameled),” and “Kitchen sinks, all other materials” are included with “Kitchen sinks” to avoid disclosing data for individual companies.

<sup>5</sup>For 1998, data for “Wash sinks, vitreous china,” Wash sinks, concrete and all other materials,” and “Bar sinks (all materials)” are included with “Washing sinks” to avoid disclosing data for individual companies. For 1997, data for “Wash sinks, concrete and all other materials” are included with “Wash sinks” to avoid disclosing data for individual companies.

<sup>6</sup>“Bathtubs, cast iron (enameled)” and “Bathtubs, all other materials” are included with “Bathtubs” to avoid disclosing data for individual companies.

<sup>7</sup>For 1998, data for “Shower stalls, all other materials,” “Shower stalls, metal,” and “Shower stalls, other plastics” are included with “Shower stalls” to avoid disclosing data for individual companies. For 1997, data for “Showers stalls, all other materials,” and “Shower stalls, metal” are included with “Shower stalls” to avoid disclosing data for individual companies.

<sup>8</sup>“Whirlpool baths, all other materials,” and “Whirlpool baths, cast iron (enameled)” are included with “Whirlpool baths” to avoid disclosing data for individual companies.



**Table 21. Production, Shipments, and Stocks of Plumbing Fixtures: 1998**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>FIRST QUARTER</b>						
	Plumbing fixtures.....	(NA)	(X)	(X)	<sup>a</sup> 822,694	(X)
	Drinking fountains <sup>1</sup> .....	(NA)	13,108	13,201	3,286	428
34310 15	Metal <sup>1</sup> .....	6	(D)	(D)	(D)	(D)
32610 12	Vitreous china <sup>1</sup> .....	3	(D)	(D)	(D)	(D)
19001 02	All other materials <sup>1</sup> .....	2	(D)	(D)	(D)	(D)
	Lavatories <sup>2</sup> .....	(NA)	<sup>a</sup> 1,790,420	<sup>a</sup> 1,866,028	<sup>a</sup> 98,733	<sup>b</sup> 580,308
34310 17	Cast iron (enameled) <sup>2</sup> .....	4	(D)	(D)	(D)	20,679
34310 18	Steel (enameled).....	6	<sup>b</sup> 456,151	<sup>b</sup> 476,051	<sup>b</sup> 6,487	<sup>b</sup> 126,576
34310 19	Steel (stainless) <sup>2</sup> .....	7	7,580	8,144	1,680	(D)
32610 17	Vitreous china.....	11	<sup>a</sup> 776,485	<sup>a</sup> 817,696	<sup>a</sup> 40,831	<sup>b</sup> 321,413
30880 04	Cultured marble.....	79	<sup>a</sup> 375,343	<sup>a</sup> 383,830	<sup>b</sup> 35,162	<sup>b</sup> 89,539
30880 31	Other plastics.....	8	<sup>a</sup> 90,052	<sup>a</sup> 95,963	<sup>a</sup> 8,204	<sup>r</sup> 21,117
19001 03	All other materials <sup>2</sup> .....	3	(D)	(D)	(D)	(D)
	Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> .....	(NA)	<sup>a</sup> 2,017,085	<sup>a</sup> 2,070,182	<sup>a</sup> 115,671	<sup>a</sup> 607,132
	Vitreous china:					
	17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 18, 22	Gravity and pressurized.....	7	<sup>r</sup> 574,370	<sup>r</sup> 609,824	<sup>r</sup> 27,934	<sup>r</sup> 196,130
	One-piece:					
32610 25, 26	Gravity and pressurized <sup>3</sup> .....	1	(D)	(D)	(D)	(D)
	Flushometer value:					
32610 28	Floor mounted <sup>3</sup> .....	5	(D)	(D)	(D)	(D)
	Less than 17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 32, 34	Gravity and pressurized <sup>3</sup> .....	7	<sup>a</sup> 1,043,333	<sup>a</sup> 1,082,541	<sup>a</sup> 43,996	(D)
	One-piece:					
32610 38, 42	Gravity and pressurized <sup>3</sup> .....	7	103,674	94,915	(D)	(D)
	Flushometer valve:					
32610 44	Wall mounted <sup>3</sup> .....	6	<sup>a</sup> 65,896	<sup>a</sup> 69,637	<sup>a</sup> 4,333	(D)
32610 46	Floor mounted.....	5	<sup>a</sup> 51,102	<sup>a</sup> 50,701	<sup>a</sup> 3,342	<sup>a</sup> 6,146
	Blowout 3.5 g.p.f.:					
32610 48	Vitreous china <sup>3</sup> .....	5	(D)	<sup>b</sup> 39,161	(D)	(D)
	Any bowl style:					
19001 17	All materials other than vitreous china <sup>3</sup> .....	6	(D)	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china).....	10	<sup>a</sup> 1,868,973	<sup>a</sup> 1,832,410	<sup>b</sup> 62,289	<sup>b</sup> 322,134
	Urinals.....	(NA)	<sup>a</sup> 77,339	<sup>a</sup> 75,231	<sup>a</sup> 7,911	<sup>b</sup> 24,523
34310 38	Metal.....	7	(D)	<sup>b</sup> 997	<sup>b</sup> 412	(D)
32610 36	Vitreous china.....	9	(D)	<sup>a</sup> 74,234	<sup>a</sup> 7,499	(D)
	Kitchen sinks, not including bar sinks <sup>4</sup> .....	(NA)	<sup>a</sup> 1,455,457	<sup>a</sup> 1,483,002	<sup>a</sup> 101,726	93,066
34310 41	Cast iron (enameled) <sup>4</sup> .....	4	(D)	(D)	(D)	(D)
34310 42	Steel (enameled).....	7	<sup>b</sup> 84,017	<sup>b</sup> 106,317	<sup>b</sup> 3,368	<sup>a</sup> 16,730
34310 47	Steel (stainless) <sup>4</sup> .....	7	<sup>a</sup> 1,030,541	<sup>a</sup> 1,073,375	<sup>a</sup> 50,518	(D)
19001 07	All other materials <sup>4</sup> .....	12	(D)	(D)	(D)	(D)
19001 08	Bar sinks (all materials) <sup>5</sup> .....	23	(D)	(D)	(D)	(D)
	Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup> .....	(NA)	<sup>b</sup> 216,115	<sup>b</sup> 212,778	<sup>b</sup> 15,659	<sup>b</sup> 27,225
34310 54	Metal.....	9	<sup>b</sup> 24,346	<sup>a</sup> 19,887	<sup>b</sup> 7,689	<sup>b</sup> 7,934
30880 33	Plastics <sup>5</sup> .....	5	<sup>b</sup> 186,277	<sup>b</sup> 186,148	<sup>b</sup> 3,615	(D)
32610 54	Vitreous china <sup>5</sup> .....	4	(D)	(D)	(D)	1,281
32722 84	Concrete and all other materials <sup>5</sup> .....	33	(D)	(D)	(D)	(D)
	Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup> .....	(NA)	<sup>a</sup> 1,193,104	<sup>a</sup> 1,159,560	<sup>a</sup> 166,315	<sup>a</sup> 128,147
34310 61	Cast iron (enameled) <sup>6</sup> .....	2	(D)	(D)	(D)	(D)
34310 62	Steel (enameled).....	5	<sup>b</sup> 235,995	<sup>b</sup> 238,068	<sup>b</sup> 14,793	<sup>b</sup> 26,285
30880 12	Fiberglass (FRP) gel coat.....	31	<sup>a</sup> 593,648	<sup>a</sup> 606,587	<sup>a</sup> 97,870	<sup>b</sup> 49,218 30
30880 13	Fiberglass (FRP) acrylic.....	30	<sup>a</sup> 50,239	<sup>a</sup> 49,460	<sup>a</sup> 13,122	<sup>b</sup> 15,676
30880 14	Cultured marble <sup>6</sup> .....	54	<sup>b</sup> 6,105	<sup>b</sup> 6,439	<sup>b</sup> 2,988	(D)
30880 15	Other plastics (PVC, ABS) <sup>6</sup> .....	13	<sup>b</sup> 191,959	<sup>b</sup> 145,326	<sup>b</sup> 10,815	(D)
19001 09	All other materials <sup>6</sup> .....	2	(D)	(D)	(D)	(D)

See footnotes at end of table.

Table 21. **Production, Shipments, and Stocks of Plumbing Fixtures: 1998**—Con.

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>FIRST QUARTER—Con.</b>						
Plumbing fixtures—Con.						
30886 55	Shower receptors, sold separately . . . . .	(NA)	<sup>b</sup> <sup>r</sup> 100,798	<sup>b</sup> <sup>r</sup> 110,186	<sup>b</sup> 5,537	<sup>b</sup> 14,346
19001 10	Plastics . . . . .	26	<sup>b</sup> <sup>r</sup> 92,719	<sup>b</sup> <sup>r</sup> 101,457	<sup>b</sup> 4,055	(D)
	All other materials . . . . .	37	<sup>r</sup> 8,079	<sup>r</sup> 8,728	<sup>a</sup> <sup>r</sup> 1,483	(D)
34310 74	Shower stalls, including receptor <sup>7</sup> . . . . .	(NA)	<sup>b</sup> <sup>r</sup> 245,565	<sup>b</sup> <sup>r</sup> 254,603	<sup>b</sup> <sup>r</sup> 52,770	<sup>b</sup> <sup>r</sup> 22,403
30880 21	Metal <sup>7</sup> . . . . .	3	(D)	(D)	(D)	-
30880 22	Fiberglass (FRP) gel coat . . . . .	28	<sup>b</sup> <sup>r</sup> 163,243	<sup>a</sup> <sup>r</sup> 172,812	<sup>a</sup> <sup>r</sup> 33,766	<sup>b</sup> <sup>r</sup> 8,377
30880 23	Fiberglass (FRP) acrylic . . . . .	15	<sup>a</sup> <sup>r</sup> 23,823	<sup>a</sup> <sup>r</sup> 24,939	10,193	<sup>r</sup> 2,196
19001 11	Other plastics <sup>7</sup> . . . . .	14	(D)	(D)	<sup>b</sup> <sup>r</sup> 1,449	(D)
	All other materials <sup>7</sup> . . . . .	19	(D)	(D)	(D)	(D)
30880 70	Wall surrounds, sold as separate units . . . . .	(NA)	<sup>b</sup> <sup>r</sup> 299,384	<sup>b</sup> <sup>r</sup> 284,611	<sup>b</sup> <sup>r</sup> 19,489	<sup>r</sup> 36,886
30880 71	Showers (all materials) . . . . .	51	<sup>b</sup> <sup>r</sup> 65,262	<sup>b</sup> <sup>r</sup> 81,199	<sup>b</sup> <sup>r</sup> 5,416	(D)
19222 08	Bathtubs (all materials) . . . . .	46	<sup>b</sup> <sup>r</sup> 234,121	<sup>b</sup> <sup>r</sup> 203,412	<sup>b</sup> <sup>r</sup> 14,073	(D)
	Bidets (all materials) . . . . .	9	<sup>r</sup> 11,040	<sup>a</sup> <sup>r</sup> 11,598	1,552	<sup>r</sup> 7,222
34310 86	Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> . . . . .	(NA)	<sup>a</sup> <sup>r</sup> 145,774	<sup>b</sup> <sup>r</sup> 136,818	<sup>a</sup> <sup>r</sup> 89,992	<sup>b</sup> <sup>r</sup> 43,659
30880 26	Cast iron (enameled) <sup>8</sup> . . . . .	2	(D)	(D)	(D)	(D)
30880 27	Fiberglass (FRP) gel coat . . . . .	323	<sup>b</sup> <sup>r</sup> 7,432	<sup>b</sup> <sup>r</sup> 7,911	<sup>b</sup> <sup>r</sup> 4,277	<sup>b</sup> 1,011
30880 28	Fiberglass (FRP) acrylic . . . . .	35	<sup>a</sup> <sup>r</sup> 121,671	<sup>a</sup> <sup>r</sup> 112,950	<sup>a</sup> <sup>r</sup> 74,024	<sup>b</sup> <sup>r</sup> 40,483
30886 29	Cultured marble <sup>8</sup> . . . . .	53	<sup>b</sup> <sup>r</sup> 3,657	<sup>b</sup> <sup>r</sup> 3,128	<sup>b</sup> <sup>r</sup> 3,964	(D)
19001 12	Other plastics <sup>8</sup> . . . . .	8	<sup>b</sup> <sup>r</sup> 11,445	<sup>b</sup> <sup>r</sup> 11,153	<sup>b</sup> <sup>r</sup> 5,052	(D)
	All other materials <sup>8</sup> . . . . .	2	(D)	(D)	(D)	(D)
19001 15	Hot tubs and spas (noninstitutional, all materials) . . . . .	30	<sup>a</sup> <sup>r</sup> 30,323	<sup>a</sup> <sup>r</sup> 32,883	<sup>a</sup> <sup>r</sup> 63,647	<sup>b</sup> <sup>r</sup> 9,120
30882 20	All other fixtures not described above . . . . .	(NA)	(X)	(X)	<sup>b</sup> 15,252	(X)
19002 20	Plastics . . . . .	5	(X)	(X)	<sup>b</sup> 56	(X)
	All other materials . . . . .	13	(X)	(X)	<sup>b</sup> 15,195	(X)
<b>SECOND QUARTER</b>						
34310 15	Plumbing fixtures . . . . .	(NA)	(X)	(X)	<sup>a</sup> <sup>r</sup> 874,673	(X)
32610 12	Drinking fountains <sup>1</sup> . . . . .	(NA)	17,474	17,208	4,385	672
19001 02	Metal . . . . .	6	(D)	(D)	(D)	(D)
	Vitreous china <sup>1</sup> . . . . .	3	(D)	(D)	(D)	(D)
	All other materials <sup>1</sup> . . . . .	2	(D)	(D)	(D)	(D)
34310 17	Lavatories <sup>2</sup> . . . . .	(NA)	<sup>a</sup> <sup>r</sup> 1,868,676	<sup>a</sup> <sup>r</sup> 1,812,424	<sup>a</sup> <sup>r</sup> 101,665	<sup>b</sup> <sup>r</sup> 609,671
34310 18	Cast iron (enameled) <sup>2</sup> . . . . .	4	(D)	(D)	(D)	24,789
34310 19	Steel (enameled) . . . . .	6	<sup>b</sup> <sup>r</sup> 433,120	<sup>b</sup> <sup>r</sup> 421,544	<sup>b</sup> <sup>r</sup> 6,024	<sup>b</sup> <sup>r</sup> 138,152
32610 17	Steel (stainless) <sup>2</sup> . . . . .	7	6,683	9,305	2,034	(D)
30880 04	Vitreous china . . . . .	11	<sup>a</sup> <sup>r</sup> 828,129	<sup>a</sup> <sup>r</sup> 821,322	<sup>a</sup> <sup>r</sup> 40,032	<sup>b</sup> <sup>r</sup> 323,494
30880 31	Cultured marble . . . . .	79	<sup>a</sup> <sup>r</sup> 403,135	<sup>a</sup> <sup>r</sup> 369,966	<sup>b</sup> <sup>r</sup> 39,154	<sup>b</sup> <sup>r</sup> 101,573
19001 03	Other plastics . . . . .	8	<sup>a</sup> <sup>r</sup> 102,598	<sup>a</sup> <sup>r</sup> 101,882	<sup>a</sup> <sup>r</sup> 7,905	<sup>r</sup> 21,117
	All other materials <sup>2</sup> . . . . .	3	(D)	(D)	(D)	(D)
32610 18, 22	Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> . . . . .	(NA)	<sup>a</sup> <sup>r</sup> 2,031,447	<sup>a</sup> <sup>r</sup> 2,065,005	<sup>a</sup> <sup>r</sup> 118,257	<sup>a</sup> <sup>r</sup> 578,275
	Vitreous china:					
	17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 18, 26	Gravity and pressurized . . . . .	7	<sup>r</sup> 543,727	<sup>r</sup> 579,326	<sup>r</sup> 25,844	<sup>r</sup> 164,297
	One-piece:					
32610 25, 26	Gravity and pressurized <sup>3</sup> . . . . .	1	(D)	(D)	(D)	(D)
	Flushometer valve:					
32610 28	Floor mounted <sup>3</sup> . . . . .	5	(D)	(D)	(D)	(D)
	Less than 17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 32, 34	Gravity and pressurized <sup>3</sup> . . . . .	7	<sup>a</sup> <sup>r</sup> 1,089,084	<sup>a</sup> <sup>r</sup> 1,092,263	<sup>a</sup> <sup>r</sup> 44,633	(D)
	One-piece:					
32610 38	Gravity and pressurized <sup>3</sup> . . . . .	7	82,332	98,553	(D)	(D)
	Flushometer valve:					
32610 44	Wall mounted <sup>3</sup> . . . . .	6	<sup>a</sup> <sup>r</sup> 81,801	<sup>a</sup> <sup>r</sup> 74,714	<sup>a</sup> <sup>r</sup> 5,057	(D)
32610 46	Floor mounted . . . . .	5	<sup>a</sup> <sup>r</sup> 46,118	<sup>a</sup> <sup>r</sup> 48,982	<sup>a</sup> <sup>r</sup> 3,361	<sup>a</sup> <sup>r</sup> 3,347

See footnotes at end of table.

**Table 21. Production, Shipments, and Stocks of Plumbing Fixtures: 1998—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>SECOND QUARTER—Con.</b>						
Plumbing fixtures—Con.						
Blowout 3.5 g.p.f.:						
32610 48	Vitreous china <sup>3</sup> .....	5	(D)	<sup>b</sup> 39,462	(D)	(D)
Any bowl style:						
19001 17	All materials other than vitreous china <sup>3</sup> .....	6	(D)	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china).....	10	<sup>a</sup> 1,930,950	<sup>a</sup> 1,814,757	<sup>b</sup> 64,343	<sup>b</sup> 359,082
Urinals.....						
34310 38	Metal.....	(NA)	<sup>a</sup> 67,782	<sup>a</sup> 71,784	<sup>a</sup> 8,627	<sup>b</sup> 20,041
32610 36	Vitreous china.....	7	(D)	<sup>b</sup> 1,210	<sup>b</sup> 640	(D)
Kitchen sinks, not including bar sinks <sup>4</sup> .....						
34310 41	Cast iron (enameled) <sup>4</sup> .....	(NA)	<sup>a</sup> 1,449,323	<sup>a</sup> 1,487,367	<sup>a</sup> 95,283	<sup>r</sup> 98,437
34310 42	Steel (enameled).....	4	(D)	(D)	(D)	(D)
34310 47	Steel (stainless) <sup>4</sup> .....	7	<sup>b</sup> 92,838	<sup>b</sup> 109,743	<sup>b</sup> 4,013	<sup>a</sup> 13,625
19001 07	All other materials <sup>4</sup> .....	7	<sup>a</sup> 1,080,433	<sup>a</sup> 1,095,563	<sup>a</sup> 52,348	(D)
19001 08	Bar sinks (all materials) <sup>5</sup> .....	12	(D)	(D)	(D)	(D)
Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup> .....						
34310 54	Metal.....	(NA)	<sup>b</sup> 215,705	<sup>b</sup> 212,091	<sup>b</sup> 14,727	<sup>b</sup> 32,858
30880 33	Plastics <sup>5</sup> .....	9	<sup>b</sup> 22,883	<sup>a</sup> 19,222	<sup>b</sup> 6,760	<sup>b</sup> 13,642
32610 54	Vitreous china <sup>5</sup> .....	5	<sup>b</sup> 186,277	<sup>b</sup> 186,148	<sup>b</sup> 3,615	(D)
32722 84	Concrete and all other materials <sup>5</sup> .....	4	(D)	(D)	(D)	<sup>r</sup> 1,196
Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup> .....						
34310 61	Cast iron (enameled) <sup>6</sup> .....	(NA)	<sup>a</sup> 1,163,384	<sup>a</sup> 1,163,799	<sup>a</sup> 171,173	<sup>a</sup> 130,692
34310 62	Steel (enameled).....	2	(D)	(D)	(D)	(D)
30880 12	Fiberglass (FRP) gel coat.....	5	<sup>b</sup> 210,796	<sup>b</sup> 217,290	<sup>b</sup> 13,663	<sup>b</sup> 23,464
30880 13	Fiberglass (FRP) acrylic.....	31	<sup>a</sup> 645,238	<sup>a</sup> 633,817	<sup>a</sup> 105,301	<sup>b</sup> 53,172
30880 14	Cultured marble <sup>6</sup> .....	30	<sup>a</sup> 52,019	<sup>a</sup> 50,283	<sup>a</sup> 14,333	<sup>b</sup> 16,857
30880 15	Other plastics (PVC, ABS) <sup>6</sup> .....	54	<sup>b</sup> 4,927	<sup>b</sup> 6,010	<sup>b</sup> 2,980	(D)
19001 09	All other materials <sup>6</sup> .....	13	<sup>b</sup> 146,702	<sup>b</sup> 151,542	<sup>b</sup> 11,230	(D)
Shower receptors, sold separately.....						
30886 55	Plastics.....	(NA)	<sup>b</sup> 96,406	<sup>b</sup> 126,768	<sup>b</sup> 5,450	<sup>b</sup> 14,830
19001 10	All other materials.....	26	<sup>b</sup> 87,379	<sup>b</sup> 118,106	<sup>b</sup> 3,651	(D)
Shower stalls, including receptor <sup>7</sup> .....						
34310 74	Metal <sup>7</sup> .....	37	<sup>r</sup> 260,383	<sup>b</sup> 255,593	<sup>b</sup> 55,540	<sup>b</sup> 25,830
30880 21	Fiberglass (FRP) gel coat.....	(NA)	(D)	(D)	(D)	-
30880 22	Fiberglass (FRP) acrylic.....	3	<sup>b</sup> 176,396	<sup>a</sup> 174,048	<sup>a</sup> 36,349	<sup>b</sup> 11,378
30880 23	Other plastics <sup>7</sup> .....	28	<sup>a</sup> 25,306	<sup>a</sup> 25,741	10,202	<sup>r</sup> 2,621
19001 11	All other materials <sup>7</sup> .....	15	(D)	(D)	1,544	(D)
Wall surrounds, sold as separate units.....						
30880 70	Showers (all materials).....	(NA)	<sup>b</sup> 277,601	<sup>b</sup> 296,827	<sup>b</sup> 21,298	<sup>r</sup> 37,677
30880 71	Bathtubs (all materials).....	51	<sup>b</sup> 81,729	<sup>b</sup> 79,350	<sup>b</sup> 8,226	(D)
19222 08	Bidets (all materials).....	46	<sup>b</sup> 195,871	<sup>b</sup> 217,477	<sup>b</sup> 13,072	(D)
Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> .....						
34310 86	Cast iron (enameled) <sup>8</sup> .....	9	<sup>a</sup> 140,223	<sup>b</sup> 131,741	<sup>a</sup> 93,234	<sup>b</sup> 45,155
30880 26	Fiberglass (FRP) gel coat.....	(NA)	(D)	(D)	(D)	(D)
30880 27	Fiberglass (FRP) acrylic.....	2	<sup>b</sup> 8,724	<sup>b</sup> 7,444	<sup>b</sup> 5,296	<sup>b</sup> 1,615
30880 28	Cultured marble <sup>8</sup> .....	23	<sup>a</sup> 118,532	<sup>a</sup> 112,917	<sup>a</sup> 79,259	<sup>b</sup> 41,843
30886 29	Other plastics <sup>8</sup> .....	35	<sup>b</sup> 3,336	<sup>b</sup> 3,001	<sup>b</sup> 3,454	(D)
19001 12	All other materials <sup>8</sup> .....	53	<sup>b</sup> 7,710	<sup>b</sup> 6,504	<sup>b</sup> 2,312	(D)
19001 15	Hot tubs and spas (noninstitutional, all materials).....	8	(D)	(D)	(D)	(D)
All other fixtures not described above.....						
30882 20	Plastics.....	2	(X)	(X)	<sup>b</sup> 15,167	(X)
19002 20	All other materials.....	5	(X)	(X)	<sup>b</sup> 55	(X)
		13	(X)	(X)	<sup>b</sup> 15,112	(X)

See footnotes at end of table.

Table 21. **Production, Shipments, and Stocks of Plumbing Fixtures: 1998**—Con.

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>THIRD QUARTER</b>						
	Plumbing fixtures . . . . .	(NA)	(X)	(X)	<sup>a</sup> 909,791	(X)
34310 15	Drinking fountains . . . . .	(NA)	16,064	16,284	4,730	432
32610 12	Metal <sup>1</sup> . . . . .	6	(D)	(D)	(D)	(D)
19001 02	Vitreous china <sup>1</sup> . . . . .	3	(D)	(D)	(D)	(D)
	All other materials <sup>1</sup> . . . . .	2	(D)	(D)	(D)	(D)
	Lavatories <sup>2</sup> . . . . .	(NA)	<sup>a</sup> 2,197,533	<sup>a</sup> 2,106,361	<sup>a</sup> 102,602	<sup>b</sup> 776,845
34310 17	Cast iron (enameled) <sup>2</sup> . . . . .	4	(D)	(D)	(D)	16,561
34310 18	Steel (enameled) . . . . .	6	<sup>b</sup> 507,388	<sup>b</sup> 411,253	<sup>b</sup> 6,359	<sup>b</sup> 234,287
34310 19	Steel (stainless) <sup>2</sup> . . . . .	7	9,736	9,223	1,814	(D)
32610 17	Vitreous china . . . . .	11	<sup>a</sup> 822,267	<sup>a</sup> 819,147	<sup>a</sup> 40,702	<sup>b</sup> 320,871
30880 04	Cultured marble . . . . .	79	<sup>a</sup> 671,934	<sup>a</sup> 654,924	<sup>b</sup> 40,780	<sup>b</sup> 183,111
30880 31	Other plastics . . . . .	8	<sup>a</sup> 103,932	<sup>a</sup> 121,122	<sup>a</sup> 12,946	<sup>r</sup> 21,117
19001 03	All other materials <sup>2</sup> . . . . .	3	(D)	(D)	(D)	(D)
	Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> . . . . .	(NA)	<sup>a</sup> 2,037,346	<sup>a</sup> 2,088,090	<sup>a</sup> 117,831	<sup>a</sup> 554,900
	Vitreous china:					
	17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 18, 22	Gravity and pressurized . . . . .	7	<sup>r</sup> 565,253	<sup>r</sup> 614,628	<sup>r</sup> 27,697	121,851
	One-piece:					
32610 25, 26	Gravity and pressurized <sup>3</sup> . . . . .	1	(D)	(D)	(D)	(D)
	Flushometer valve:					
32610 28	Floor mounted <sup>3</sup> . . . . .	5	(D)	(D)	(D)	(D)
	Less than 17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 32, 34	Gravity and pressurized <sup>3</sup> . . . . .	7	<sup>a</sup> 1,110,511	<sup>a</sup> 1,082,530	<sup>a</sup> 46,313	(D)
	One-piece:					
32610 38, 42	Gravity and pressurized <sup>3</sup> . . . . .	7	96,937	97,647	(D)	(D)
	Flushometer valve:					
32610 44	Wall mounted <sup>3</sup> . . . . .	6	<sup>a</sup> 90,615	<sup>a</sup> 75,798	<sup>a</sup> 5,202	(D)
32610 46	Floor mounted . . . . .	5	<sup>a</sup> 47,236	<sup>r</sup> 48,568	<sup>a</sup> 3,394	<sup>a</sup> 2,622
	Blowout 3.5 g.p.f.:					
32610 48	Vitreous china <sup>3</sup> . . . . .	5	(D)	<sup>b</sup> 52,045	(D)	(D)
	Any bowl style:					
19001 17	All materials other than vitreous china <sup>3</sup> . . . . .	6	(D)	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china) . . . . .	10	<sup>a</sup> 2,016,957	<sup>a</sup> 1,805,972	<sup>b</sup> 66,341	<sup>b</sup> 471,214
	Urinals . . . . .	(NA)	<sup>a</sup> 79,887	<sup>a</sup> 76,196	<sup>a</sup> 8,289	<sup>b</sup> 23,027
34310 38	Metal . . . . .	7	(D)	<sup>b</sup> 952	<sup>b</sup> 375	(D)
32610 36	Vitreous china . . . . .	9	(D)	<sup>a</sup> 75,244	<sup>a</sup> 7,914	(D)
	Kitchen sinks, not including bar sinks <sup>4</sup> . . . . .	(NA)	<sup>a</sup> 1,309,809	<sup>a</sup> 1,384,481	<sup>a</sup> 97,546	<sup>r</sup> 73,779
34310 41	Cast iron (enameled) <sup>4</sup> . . . . .	4	(D)	(D)	(D)	(D)
34310 42	Steel (enameled) . . . . .	7	<sup>b</sup> 84,409	<sup>b</sup> 109,317	<sup>b</sup> 3,991	<sup>a</sup> 12,656
34310 47	Steel (stainless) <sup>4</sup> . . . . .	7	<sup>a</sup> 969,352	<sup>a</sup> 990,128	<sup>a</sup> 53,312	(D)
19001 07	All other materials <sup>4</sup> . . . . .	12	(D)	(D)	(D)	(D)
19001 08	Bar sinks (all materials) <sup>5</sup> . . . . .	23	(D)	(D)	(D)	(D)
	Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup> . . . . .	(NA)	<sup>b</sup> 212,689	<sup>b</sup> 212,047	<sup>b</sup> 14,525	<sup>b</sup> 34,011
34310 54	Metal . . . . .	9	<sup>b</sup> 20,586	<sup>a</sup> 19,347	<sup>b</sup> 6,723	<sup>b</sup> 15,120
30880 33	Plastics <sup>5</sup> . . . . .	5	<sup>b</sup> 186,277	<sup>b</sup> 186,148	<sup>b</sup> 3,615	(D)
32610 54	Vitreous china <sup>5</sup> . . . . .	4	(D)	(D)	(D)	<sup>r</sup> 861
32722 84	Concrete and all other materials <sup>5</sup> . . . . .	3	(D)	(D)	(D)	(D)
	Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup> . . . . .	(NA)	<sup>a</sup> 1,197,239	<sup>a</sup> 1,168,388	<sup>a</sup> 178,388	<sup>a</sup> 151,316
34310 61	Cast iron (enameled) <sup>6</sup> . . . . .	2	(D)	(D)	(D)	(D)
34310 62	Steel (enameled) . . . . .	5	<sup>b</sup> 234,139	<sup>b</sup> 207,110	<sup>b</sup> 15,507	<sup>b</sup> 42,481
30880 12	Fiberglass (FRP) gel coat . . . . .	31	<sup>a</sup> 650,680	<sup>a</sup> 631,384	<sup>a</sup> 109,895	<sup>b</sup> 51,320
30880 13	Fiberglass (FRP) acrylic . . . . .	30	<sup>a</sup> 63,757	<sup>a</sup> 53,504	<sup>a</sup> 16,943	<sup>b</sup> 22,627

See footnotes at end of table.

**Table 21. Production, Shipments, and Stocks of Plumbing Fixtures: 1998—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>THIRD QUARTER—Con.</b>						
Plumbing fixtures—Con.						
Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup> —Con.						
30880 14	Cultured marble <sup>6</sup> .....	54	<sup>b</sup> 5,970	<sup>b</sup> 6,202	<sup>b</sup> 3,273	(D)
30880 15	Other plastics (PVC, ABS) <sup>6</sup> .....	13	<sup>b</sup> 144,921	<sup>b</sup> 169,918	<sup>b</sup> 9,942	(D)
19001 09	All other materials <sup>6</sup> .....	2	(D)	(D)	(D)	(D)
Shower receptors, sold separately .....						
30886 55	Plastics .....	(NA)	<sup>b</sup> 97,346	<sup>b</sup> 79,654	<sup>b</sup> 6,502	<sup>b</sup> 14,079
19001 10	All other materials .....	26	<sup>b</sup> 90,475	<sup>b</sup> 71,812	<sup>b</sup> 5,243	(D)
		37	<sup>b</sup> 6,870	<sup>b</sup> 7,842	<sup>a</sup> 1,259	(D)
Shower stalls, including receptor <sup>7</sup> .....						
34310 74	Metal <sup>7</sup> .....	(NA)	<sup>b</sup> 276,129	<sup>b</sup> 255,812	<sup>b</sup> 59,349	<sup>b</sup> 27,966
30880 21	Fiberglass (FRP) gel coat .....	3	(D)	(D)	(D)	-
30880 22	Fiberglass (FRP) acrylic .....	28	<sup>b</sup> 191,820	<sup>a</sup> 171,994	<sup>a</sup> 39,929	<sup>b</sup> 13,872
30880 23	Other plastics <sup>7</sup> .....	15	<sup>a</sup> 25,971	<sup>a</sup> 26,651	10,588	<sup>r</sup> 2,260
19001 11	All other materials <sup>7</sup> .....	14	(D)	(D)	<sup>b</sup> 1,445	(D)
		19	(D)	(D)	(D)	(D)
Wall surrounds, sold as separate units .....						
30880 70	Showers (all materials) .....	(NA)	<sup>b</sup> 297,045	<sup>b</sup> 312,251	<sup>b</sup> 17,917	<sup>r</sup> 37,661
30880 71	Bathtubs (all materials) .....	51	<sup>b</sup> 75,828	<sup>b</sup> 71,230	<sup>b</sup> 6,024	(D)
		46	<sup>b</sup> 221,217	<sup>b</sup> 241,021	<sup>b</sup> 11,892	(D)
19222 08	Bidets (all materials) .....	9	<sup>r</sup> 11,276	<sup>a</sup> 10,949	1,621	<sup>r</sup> 7,079
Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> .....						
34310 86	Cast iron (enameled) <sup>8</sup> .....	(NA)	<sup>a</sup> 145,800	<sup>b</sup> 136,821	<sup>a</sup> 97,939	<sup>b</sup> 50,377
30880 26	Fiberglass (FRP) gel coat .....	2	(D)	(D)	(D)	(D)
30880 27	Fiberglass (FRP) acrylic .....	23	<sup>b</sup> 9,180	<sup>b</sup> 7,314	<sup>b</sup> 5,729	<sup>b</sup> 2,354
30880 28	Cultured marble <sup>8</sup> .....	35	<sup>a</sup> 125,285	<sup>a</sup> 116,953	<sup>a</sup> 84,849	<sup>b</sup> 46,261
30886 29	Other plastics <sup>8</sup> .....	53	<sup>b</sup> 2,834	<sup>b</sup> 3,946	<sup>b</sup> 2,641	(D)
19001 12	All other materials <sup>8</sup> .....	8	<sup>b</sup> 6,968	<sup>b</sup> 6,976	<sup>b</sup> 2,035	(D)
		2	(D)	(D)	(D)	(D)
19001 15	Hot tubs and spas (noninstitutional, all materials) .....	30	<sup>a</sup> 47,496	<sup>a</sup> 32,914	<sup>a</sup> 111,985	<sup>b</sup> 22,805
All other fixtures not described above .....						
30882 20	Plastics .....	(NA)	(X)	(X)	<sup>b</sup> 16,440	(X)
19002 20	All other materials .....	5	(X)	(X)	<sup>b</sup> 53	(X)
		13	(X)	(X)	<sup>b</sup> 16,387	(X)
<b>FOURTH QUARTER</b>						
Plumbing fixtures .....						
34310 15	Drinking fountains <sup>1</sup> .....	(NA)	(X)	(X)	<sup>a</sup> 828,267	(X)
32610 12	Metal <sup>1</sup> .....	(NA)	11,080	11,324	3,292	216
19001 02	Vitreous china <sup>1</sup> .....	6	(D)	(D)	(D)	(D)
	All other materials <sup>1</sup> .....	3	(D)	(D)	(D)	(D)
		2	(D)	(D)	(D)	(D)
Lavatories <sup>2</sup> .....						
34310 17	Cast iron (enameled) <sup>2</sup> .....	(NA)	<sup>a</sup> 2,154,378	<sup>a</sup> 2,084,857	<sup>a</sup> 101,552	<sup>b</sup> 804,908
34310 18	Steel (enameled) .....	4	(D)	(D)	(D)	14,941
34310 19	Steel (stainless) <sup>2</sup> .....	6	<sup>b</sup> 471,318	<sup>b</sup> 485,001	<sup>b</sup> 4,943	<sup>b</sup> 222,756
32610 17	Vitreous china .....	7	8,990	8,457	1,635	(D)
30880 04	Cultured marble .....	11	<sup>a</sup> 835,716	<sup>a</sup> 800,775	<sup>a</sup> 41,372	<sup>b</sup> 348,050
30880 31	Other plastics .....	79	<sup>a</sup> 656,729	<sup>a</sup> 596,908	<sup>b</sup> 40,135	<sup>b</sup> 196,514
19001 03	All other materials <sup>2</sup> .....	8	<sup>a</sup> 97,197	<sup>a</sup> 107,227	<sup>a</sup> 7,273	<sup>r</sup> 21,117
		3	(D)	(D)	(D)	(D)
Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> .....						
32610 18, 22	Vitreous china: 17 inches from floor to rim of bowl: Close coupled for use with flush tank: Gravity and pressurized .....	(NA)	<sup>a</sup> 1,961,388	<sup>a</sup> 1,993,751	<sup>a</sup> 113,541	<sup>a</sup> 551,067
32610 25, 26	One-piece: Gravity and pressurized <sup>3</sup> .....	7	<sup>r</sup> 575,210	<sup>r</sup> 570,074	<sup>r</sup> 26,402	133,659
32610 28	Flushometer valve: Floor mounted <sup>3</sup> .....	1	(D)	(D)	(D)	(D)
		5	(D)	(D)	(D)	(D)

See footnotes at end of table.

**Table 21. Production, Shipments, and Stocks of Plumbing Fixtures: 1998—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>FOURTH QUARTER—Con.</b>						
Plumbing fixtures—Con.						
Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> —Con.						
Vitreous china:						
Less than 17 inches from floor to rim of bowl:						
Close coupled for use with flush tank:						
32610 32, 34	Gravity and pressurized <sup>3</sup> .....	7	<sup>a</sup> 1,020,053	<sup>a</sup> 1,052,877	<sup>a</sup> 43,479	(D)
32610 38, 42	One-piece: Gravity and pressurized <sup>3</sup> .....	7	94,393	95,934	(D)	(D)
Flushometer valve:						
32610 44	Wall mounted <sup>3</sup> .....	6	<sup>a</sup> 88,196	<sup>a</sup> 82,341	<sup>a</sup> 5,178	(D)
32610 46	Floor mounted .....	5	<sup>a</sup> 47,065	<sup>a</sup> 45,436	<sup>a</sup> 3,814	<sup>a</sup> 4,316
Blowout 3.5 g.p.f.:						
32610 48	Vitreous china <sup>3</sup> .....	5	(D)	<sup>b</sup> 40,553	(D)	(D)
Any bowl style:						
19001 17	All materials other than vitreous china <sup>3</sup> .....	6	(D)	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china) .....	10	<sup>a</sup> 1,768,132	<sup>a</sup> 1,716,289	<sup>b</sup> 59,780	<sup>b</sup> 538,345
Urinals .....						
34310 38	Metal .....	7	<sup>a</sup> 83,687	<sup>a</sup> 76,570	<sup>a</sup> 8,402	<sup>b</sup> 29,191
32610 36	Vitreous china .....	9	(D)	<sup>b</sup> 931	<sup>b</sup> 355	(D)
Kitchen sinks, not including bar sinks <sup>4</sup> .....						
34310 41	Cast iron (enameled) <sup>4</sup> .....	4	<sup>a</sup> 1,351,197	<sup>a</sup> 1,458,789	<sup>a</sup> 89,835	55,927
34310 42	Steel (enameled) .....	7	(D)	(D)	(D)	(D)
34310 47	Steel (stainless) <sup>4</sup> .....	7	<sup>b</sup> 81,568	<sup>b</sup> 128,832	<sup>b</sup> 3,237	<sup>a</sup> 7,268
19001 07	All other materials <sup>4</sup> .....	12	<sup>a</sup> 998,861	<sup>a</sup> 1,044,940	<sup>a</sup> 47,564	(D)
19001 08	Bar sinks (all materials) <sup>5</sup> .....	23	(D)	(D)	(D)	(D)
Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup> .....						
34310 54	Metal .....	(NA)	<sup>b</sup> 212,308	<sup>b</sup> 211,742	<sup>b</sup> 14,564	<sup>b</sup> 35,056
30880 33	Plastics <sup>5</sup> .....	9	<sup>b</sup> 19,795	<sup>a</sup> 18,993	<sup>b</sup> 6,735	<sup>b</sup> 16,165
32610 54	Vitreous china <sup>5</sup> .....	5	<sup>b</sup> 186,277	<sup>b</sup> 186,148	<sup>b</sup> 3,615	(D)
32722 84	Concrete and all other materials <sup>5</sup> .....	4	(D)	(D)	(D)	851
32722 84	Concrete and all other materials <sup>5</sup> .....	3	(D)	(D)	(D)	(D)
Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup> .....						
34310 61	Cast iron (enameled) <sup>6</sup> .....	(NA)	<sup>a</sup> 1,133,844	<sup>a</sup> 1,143,601	<sup>a</sup> 171,270	<sup>a</sup> 169,907
34310 62	Steel (enameled) .....	2	(D)	(D)	(D)	(D)
30880 12	Fiberglass (FRP) gel coat .....	5	<sup>b</sup> 236,152	<sup>b</sup> 211,821	<sup>b</sup> 14,505	<sup>b</sup> 61,537
30880 13	Fiberglass (FRP) acrylic .....	31	<sup>a</sup> 618,456	<sup>a</sup> 625,701	<sup>a</sup> 103,659	<sup>b</sup> 47,619
30880 14	Cultured marble <sup>6</sup> .....	30	<sup>a</sup> 51,440	<sup>a</sup> 50,533	<sup>a</sup> 13,598	<sup>b</sup> 24,217
30880 15	Other plastics (PVC, ABS) <sup>6</sup> .....	54	<sup>b</sup> 7,022	<sup>b</sup> 5,971	<sup>b</sup> 3,518	(D)
19001 09	All other materials <sup>6</sup> .....	13	<sup>b</sup> 114,846	<sup>b</sup> 145,652	<sup>b</sup> 11,495	(D)
19001 09	All other materials <sup>6</sup> .....	2	(D)	(D)	(D)	(D)
Shower receptors, sold separately .....						
30886 55	Plastics .....	(NA)	<sup>b</sup> 82,112	<sup>b</sup> 80,410	<sup>b</sup> 6,567	<sup>b</sup> 14,204
19001 10	All other materials .....	26	<sup>b</sup> 73,973	<sup>b</sup> 72,936	<sup>b</sup> 5,048	(D)
19001 10	All other materials .....	37	<sup>a</sup> 8,139	<sup>a</sup> 7,474	<sup>a</sup> 1,519	(D)
Shower stalls, including receptor <sup>7</sup> .....						
34310 74	Metal <sup>7</sup> .....	(NA)	<sup>b</sup> 254,014	<sup>b</sup> 252,123	<sup>b</sup> 54,720	<sup>b</sup> 27,478
30880 21	Fiberglass (FRP) gel coat .....	3	(D)	(D)	(D)	-
30880 22	Fiberglass (FRP) acrylic .....	28	<sup>b</sup> 174,263	<sup>a</sup> 169,579	<sup>a</sup> 36,913	<sup>b</sup> 13,796
30880 23	Other plastics <sup>7</sup> .....	15	<sup>a</sup> 21,863	<sup>a</sup> 25,391	<sup>a</sup> 9,050	<sup>a</sup> 1,750
19001 11	All other materials <sup>7</sup> .....	14	(D)	(D)	<sup>b</sup> 1,434	(D)
19001 11	All other materials <sup>7</sup> .....	19	(D)	(D)	(D)	(D)
Wall surrounds, sold as separate units .....						
30880 70	Showers (all materials) .....	(NA)	<sup>b</sup> 297,734	<sup>b</sup> 282,116	<sup>b</sup> 17,596	<sup>a</sup> 38,327
30880 71	Bathtubs (all materials) .....	51	<sup>b</sup> 71,442	<sup>b</sup> 70,690	<sup>b</sup> 6,106	(D)
30880 71	Bathtubs (all materials) .....	46	<sup>b</sup> 226,293	<sup>b</sup> 211,426	<sup>b</sup> 11,490	(D)
19222 08	Bidets (all materials) .....	9	<sup>a</sup> 9,151	<sup>a</sup> 10,405	1,475	<sup>a</sup> 5,897
Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> .....						
34310 86	Cast iron (enameled) <sup>8</sup> .....	(NA)	<sup>a</sup> 108,266	<sup>b</sup> 132,423	<sup>a</sup> 78,716	<sup>b</sup> 40,583
30880 26	Fiberglass (FRP) gel coat .....	2	(D)	(D)	(D)	(D)
30880 26	Fiberglass (FRP) gel coat .....	23	<sup>b</sup> 8,003	<sup>b</sup> 7,623	<sup>b</sup> 4,911	<sup>b</sup> 2,634

See footnotes at end of table.

**Table 21. Production, Shipments, and Stocks of Plumbing Fixtures: 1998—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>FOURTH QUARTER—Con.</b>						
Plumbing fixtures—Con.						
Whirlpool baths, not spas or hot tubs (noninstitutional)—Con.						
30880 27	Fiberglass (FRP) acrylic.....	35	<sup>a</sup> 90,850	<sup>a</sup> 112,493	<sup>a</sup> 66,747	<sup>b</sup> 36,703
30880 28	Cultured marble <sup>8</sup> .....	53	<sup>b</sup> 2,823	<sup>b</sup> 3,819	<sup>b</sup> 2,654	(D)
30886 29	Other plastics <sup>8</sup> .....	8	<sup>b</sup> 5,170	<sup>b</sup> 7,042	<sup>b</sup> 2,017	(D)
19001 12	All other materials <sup>8</sup> .....	2	(D)	(D)	(D)	(D)
19001 15	Hot tubs and spas (noninstitutional, all materials).....	30	<sup>a</sup> 35,616	<sup>a</sup> 30,974	<sup>a</sup> 86,916	<sup>b</sup> 27,580
All other fixtures not described above.....						
30882 20	Plastics.....	(NA)	(X)	(X)	<sup>b</sup> 13,631	(X)
19002 20	All other materials.....	13	(X)	(X)	<sup>b</sup> 53	(X)
			(X)	(X)	<sup>b</sup> 13,577	(X)

- Represents zero. D Withheld to avoid disclosing for individual companies. NA Not available. <sup>c</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>“Drinking fountains, metal,” “Drinking fountains, vitreous china,” and “Drinking fountains, all other materials” are included with “Drinking fountains” to avoid disclosing data for individual companies.

<sup>2</sup>“Lavatories, cast iron (enameled),” “Lavatories, all other materials,” and Stocks, end of quarter for “Lavatories, steel (stainless)” are included with “Lavatories” to avoid disclosing data for individual companies.

<sup>3</sup>“Water closet bowls, 17 inches from floor to rim of bowl, one-piece, and flushometer valve,” “Water closet bowls, less than 17 inches from floor to rim of bowl, one-piece,” “Blowout 3.5 gpf,” and “Any bowl style” are included with “Water closet bowls” to avoid disclosing data for individual companies. Stocks, end of quarter for “Water closet bowls,” less than 17 inches from floor to rim of bowl, close coupled for use with flush tank, and flushometer valve, wall mounted” are included with “Water closet bowls” to avoid disclosing data for individual companies.

<sup>4</sup>“Kitchen sinks, cast iron (enameled),” and “Kitchen sinks, all other materials,” are included with “Kitchen sinks” to avoid disclosing data for individual companies. Stocks, end of quarter for “Kitchen sinks, steel (stainless)” are included with “Kitchen sinks” to avoid disclosing data for individual companies.

<sup>5</sup>“Wash sinks, vitreous china,” “Wash sinks, concrete and all other materials,” “Bar sinks (all materials),” and Stocks, end of quarter for “Wash sinks, plastics,” are included with “Wash sinks” to avoid disclosing data for individual companies.

<sup>6</sup>“Bathtubs, cast iron (enameled),” “Bathtubs, all other materials,” Stocks, end of quarter for “Bathtubs, cultured marble,” and “Bathtubs, other plastics” are included with “Bathtubs” to avoid disclosing data for individual companies.

<sup>7</sup>“Shower stalls, all other materials,” “Shower stalls, metal,” and Stocks, end of quarter for “Shower stalls, other plastics” are included with “Shower stalls” to avoid disclosing data for individual companies.

<sup>8</sup>“Whirlpool baths, all other materials,” “Whirlpool baths, cast iron (enameled),” and Stocks, end of quarter for “Whirlpool baths, other plastics,” and “Whirlpool baths, cultured marble” are included with “Whirlpool baths” to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>25 to 50 percent of this item is estimated. <sup>b</sup>Over 50 percent of this item is estimated.

**Table 22. Production, Shipments, and Stocks of Plumbing Fixtures: 1997**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>FIRST QUARTER</b>						
	Plumbing fixtures.....	(NA)	(X)	(X)	719,530	(X)
	Drinking fountains.....	(NA)	9,991	9,785	2,839	901
34310 15	Metal <sup>1</sup> .....	5	(D)	(D)	(D)	(D)
32610 12	Vitreous china <sup>1</sup> .....	3	(D)	(D)	(D)	(D)
19001 02	All other materials <sup>1</sup> .....	2	(D)	(D)	(D)	(D)
	Lavatories <sup>2</sup> .....	(NA)	<sup>r</sup> 1,914,508	1,925,672	<sup>r</sup> 96,612	543,765
34310 17	Cast iron (enameled) <sup>2</sup> .....	4	(D)	(D)	(D)	(D)
34310 18	Steel (enameled).....	6	417,464	<sup>r</sup> 437,411	<sup>r</sup> 7,196	92,657
34310 19	Steel (stainless) <sup>2</sup> .....	7	<sup>r</sup> 7,412	<sup>r</sup> 7,230	<sup>r</sup> 1,547	(D)
32610 17	Vitreous china.....	11	<sup>a</sup> 848,967	<sup>a</sup> 850,313	41,545	<sup>a</sup> 332,780
30880 04	Cultured marble.....	80	<sup>b</sup> 470,500	<sup>b</sup> 470,035	<sup>b</sup> 32,944	<sup>b</sup> 66,370
30880 31	Other plastics <sup>2</sup> .....	8	<sup>b</sup> 170,164	<sup>b</sup> 160,683	<sup>b</sup> 13,379	(D)
19001 03	All other materials <sup>2</sup> .....	3	(D)	(D)	(D)	(D)
	Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> .....	(NA)	<sup>r</sup> 2,049,531	<sup>r</sup> 2,050,804	<sup>r</sup> 116,617	<sup>r</sup> 585,215
	Vitreous china:					
	17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 18, 22	Gravity and pressurized.....	10	<sup>r</sup> 615,462	<sup>r</sup> 639,870	<sup>r</sup> 29,204	<sup>r</sup> 207,853
	One-piece:					
32610 25, 26	Gravity and pressurized <sup>3</sup> .....	1	(D)	(D)	(D)	(D)
	Flushometer value:					
32610 28	Floor mounted <sup>3</sup> .....	4	(D)	(D)	(D)	(D)
	Less than 17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 32, 34	Gravity and pressurized.....	7	<sup>r</sup> 1,060,250	<sup>r</sup> 1,026,706	<sup>r</sup> 43,718	<sup>r</sup> 234,607
	One-piece:					
32610 38	Gravity <sup>3</sup> .....	5	<sup>r</sup> 86,676	<sup>r</sup> 88,635	(D)	(D)
32610 42	Pressurized <sup>3</sup> .....	3	(D)	(D)	(D)	(D)
	Flushometer valve:					
32610 44	Wall mounted <sup>3</sup> .....	5	(D)	71,087	4,495	15,223
32610 46	Floor mounted.....	5	38,944	47,133	3,191	10,913
	Blowout 3.5 g.p.f.:					
32610 48	Vitreous china <sup>3</sup> .....	5	(D)	(D)	(D)	(D)
	Any bowl style:					
19001 17	All materials other than vitreous china <sup>3</sup> .....	7	(D)	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china).....	10	<sup>a</sup> 1,664,321	<sup>a</sup> 1,780,904	<sup>a</sup> 65,683	<sup>a</sup> 418,680
	Urinals.....	(NA)	74,000	<sup>r</sup> 74,406	<sup>r</sup> 8,132	24,362
34310 38	Metal.....	7	<sup>a</sup> 1,488	<sup>b</sup> 1,138	<sup>b</sup> 660	(D)
32610 36	Vitreous china.....	9	72,512	<sup>r</sup> 73,268	<sup>r</sup> 7,472	(D)
	Kitchen sinks, not including bar sinks <sup>4</sup> .....	(NA)	1,296,297	1,306,686	83,122	174,170
34310 41	Cast iron (enameled) <sup>4</sup> .....	3	(D)	(D)	<sup>r</sup> 28,930	(D)
34310 42	Steel (enameled).....	7	<sup>b</sup> 77,765	<sup>b</sup> 104,031	<sup>b</sup> 3,492	19,834
34310 47	Steel (stainless).....	7	<sup>a</sup> 956,636	<sup>b</sup> 960,206	44,962	<sup>b</sup> 85,918
19001 07	All other materials <sup>4</sup> .....	12	(D)	(D)	<sup>b</sup> 5,739	(D)
19001 08	Bar sinks (all materials).....	24	93,841	92,638	<sup>r</sup> 5,831	<sup>r</sup> 15,046
	Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup> .....	(NA)	<sup>r</sup> 206,507	<sup>r</sup> 205,571	<sup>r</sup> 25,187	25,296
34310 54	Metal.....	9	<sup>b</sup> 16,228	<sup>a</sup> 17,658	<sup>b</sup> 17,832	<sup>b</sup> 5,013
30880 33	Plastics <sup>5</sup> .....	6	<sup>b</sup> 182,228	<sup>b</sup> 181,483	<sup>b</sup> 3,505	(D)
32610 54	Vitreous china <sup>5</sup> .....	4	(D)	(D)	(D)	(D)
32722 84	Concrete and all other materials <sup>5</sup> .....	4	(D)	(D)	(D)	(D)
	Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup> .....	(NA)	1,139,095	1,102,213	158,228	142,151
34310 61	Cast iron (enameled) <sup>6</sup> .....	2	(D)	(D)	(D)	(D)
34310 62	Steel (enameled) <sup>6</sup> .....	5	<sup>b</sup> 219,659	<sup>b</sup> 230,569	<sup>b</sup> 16,368	(D)
30880 12	Fiberglass (FRP) gel coat.....	30	<sup>a</sup> 578,567	<sup>a</sup> 570,020	<sup>a</sup> 92,905	<sup>a</sup> 63,200
30880 13	Fiberglass (FRP) acrylic.....	29	<sup>a</sup> 50,087	<sup>a</sup> 50,875	<sup>a</sup> 14,026	9,360
30880 14	Cultured marble <sup>6</sup> .....	56	<sup>b</sup> 3,111	<sup>b</sup> 3,571	<sup>b</sup> 1,919	(D)
30880 15	Other plastics (PVC, ABS) <sup>6</sup> .....	11	<sup>b</sup> 178,779	<sup>b</sup> 142,861	<sup>b</sup> 9,722	(D)
19001 09	All other materials <sup>6</sup> .....	2	(D)	(D)	(D)	(D)

See footnotes at end of table.



**Table 22. Production, Shipments, and Stocks of Plumbing Fixtures: 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>FIRST QUARTER—Con.</b>						
Plumbing fixtures—Con.						
	Shower receptors, sold separately . . . . .	(NA)	74,784	77,880	4,688	17,561
30886 55	Plastics . . . . .	25	<sup>b</sup> 71,357	<sup>b</sup> 74,170	<sup>b</sup> 3,792	(D)
19001 10	All other materials . . . . .	35	3,427	<sup>a</sup> 3,710	<sup>a</sup> 896	(D)
	Shower stalls, including receptor <sup>7</sup> . . . . .	(NA)	255,790	252,844	51,266	25,742
34310 74	Metal <sup>7</sup> . . . . .	2	(D)	(D)	(D)	(D)
30880 21	Fiberglass (FRP) gel coat . . . . .	26	<sup>a</sup> 165,741	<sup>a</sup> 162,863	<sup>a</sup> 30,849	<sup>b</sup> 16,464
30880 22	Fiberglass (FRP) acrylic . . . . .	15	<sup>a</sup> 25,160	<sup>a</sup> 24,322	<sup>a</sup> 9,611	2,998
30880 23	Other plastics <sup>7</sup> . . . . .	13	<sup>b</sup> 30,229	<sup>b</sup> 31,110	<sup>b</sup> 2,328	(D)
19001 11	All other materials <sup>7</sup> . . . . .	22	(D)	(D)	(D)	(D)
	Wall surrounds, sold as separate units . . . . .	(NA)	324,624	345,746	20,813	29,561
30880 70	Showers (all materials) . . . . .	57	<sup>b</sup> 84,836	<sup>b</sup> 83,618	<sup>b</sup> 6,052	(D)
30880 71	Bathubs (all materials) . . . . .	47	<sup>b</sup> 239,787	<sup>b</sup> 262,127	<sup>b</sup> 14,760	(D)
19222 08	Bidets (all materials) . . . . .	9	10,859	12,063	1,602	8,553
	Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> . . . . .	(NA)	114,383	114,393	77,802	27,564
34310 86	Cast iron (enameled) <sup>8</sup> . . . . .	2	(D)	(D)	(D)	(D)
30880 26	Fiberglass (FRP) gel coat . . . . .	22	<sup>b</sup> 8,994	<sup>b</sup> 9,009	<sup>b</sup> 6,140	<sup>b</sup> 2,233
30880 27	Fiberglass (FRP) acrylic . . . . .	36	<sup>a</sup> 91,920	<sup>a</sup> 89,820	<sup>a</sup> 61,542	<sup>b</sup> 21,313
30880 28	Cultured marble . . . . .	55	<sup>b</sup> 2,064	<sup>b</sup> 2,043	<sup>b</sup> 2,342	<sup>b</sup> 2,580
30886 29	Other plastics <sup>8</sup> . . . . .	8	<sup>a</sup> 9,673	<sup>a</sup> 11,789	5,044	(D)
19001 12	All other materials <sup>8</sup> . . . . .	2	(D)	(D)	(D)	(D)
19001 15	Hot tubs and spas (noninstitutional, all materials) . . . . .	29	<sup>b</sup> 34,333	<sup>b</sup> 28,804	<sup>b</sup> 75,741	7,991
	All other fixtures not described above . . . . .	(NA)	(X)	(X)	11,731	(X)
30882 20	Plastics . . . . .	7	(X)	(X)	<sup>b</sup> 112	(X)
19002 20	All other materials . . . . .	12	(X)	(X)	<sup>b</sup> 11,620	(X)
<b>SECOND QUARTER</b>						
	Plumbing fixtures . . . . .	(NA)	(X)	(X)	861,666	(X)
	Drinking fountains <sup>1</sup> . . . . .	(NA)	13,624	13,770	3,794	745
34310 15	Metal <sup>1</sup> . . . . .	5	(D)	(D)	(D)	(D)
32610 12	Vitreous china <sup>1</sup> . . . . .	3	(D)	(D)	(D)	(D)
19001 02	All other materials <sup>1</sup> . . . . .	2	(D)	(D)	(D)	(D)
	Lavatories <sup>2</sup> . . . . .	(NA)	1,909,728	1,934,146	99,208	547,258
34310 17	Cast iron (enameled) <sup>2</sup> . . . . .	4	(D)	(D)	(D)	(D)
34310 18	Steel (enameled) . . . . .	6	432,412	411,801	6,706	113,268
34310 19	Steel (stainless) . . . . .	7	6,683	7,002	1,435	675
32610 17	Vitreous china . . . . .	11	<sup>a</sup> 828,182	<sup>a</sup> 865,966	42,555	<sup>a</sup> 311,642
30880 04	Cultured marble . . . . .	80	<sup>b</sup> 466,027	<sup>b</sup> 482,393	<sup>b</sup> 34,500	<sup>b</sup> 62,430
30880 31	Other plastics . . . . .	8	<sup>b</sup> 176,531	<sup>b</sup> 166,984	<sup>b</sup> 14,013	59,243
19001 03	All other materials <sup>2</sup> . . . . .	3	(D)	(D)	(D)	(D)
	Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> . . . . .	(NA)	2,094,331	2,055,478	116,696	627,940
	Vitreous china:					
	17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 18, 22	Gravity and pressurized . . . . .	10	619,067	604,528	28,107	215,918
	One-piece:					
32610 25, 26	Gravity and pressurized <sup>3</sup> . . . . .	1	(D)	(D)	(D)	(D)
	Flushometer valve:					
32610 28	Floor mounted <sup>3</sup> . . . . .	4	(D)	(D)	(D)	(D)
	Less than 17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 32, 34	Gravity and pressurized . . . . .	7	1,104,519	1,066,951	44,382	276,789
	One-piece:					
32610 38	Gravity <sup>3</sup> . . . . .	5	91,397	91,762	(D)	(D)
32610 42	Pressurized <sup>3</sup> . . . . .	3	(D)	(D)	(D)	(D)
	Flushometer valve:					
32610 44	Wall mounted <sup>3</sup> . . . . .	5	(D)	63,720	4,150	12,348
32610 46	Floor mounted . . . . .	5	49,419	51,214	3,623	9,093

See footnotes at end of table.

Table 22. **Production, Shipments, and Stocks of Plumbing Fixtures: 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>SECOND QUARTER—Con.</b>						
Plumbing fixtures—Con.						
32610 48	Blowout 3.5 g.p.f.: Vitreous china <sup>3</sup> .....	5	(D)	(D)	(D)	(D)
19001 17	Any bowl style: All materials other than vitreous china <sup>3</sup> .....	7	(D)	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china).....	10	<sup>a</sup> 1,769,536	<sup>a</sup> 1,803,577	<sup>a</sup> 64,407	<sup>a</sup> 379,775
	Urinals.....	(NA)	72,322	80,689	8,625	20,200
34310 38	Metal.....	7	<sup>a</sup> 1,027	<sup>b</sup> 1,021	<sup>b</sup> 544	(D)
32610 36	Vitreous china.....	9	71,295	79,668	8,080	(D)
	Kitchen sinks, not including bar sinks <sup>4</sup> .....	(NA)	1,346,980	1,350,156	88,859	194,345
34310 41	Cast iron (enameled) <sup>4</sup> .....	3	(D)	(D)	29,573	(D)
34310 42	Steel (enameled).....	7	<sup>b</sup> 78,143	<sup>b</sup> 91,965	<sup>b</sup> 2,933	17,292
34310 47	Steel (stainless).....	7	<sup>a</sup> 981,099	<sup>b</sup> 993,633	48,128	<sup>b</sup> 86,576
19001 07	All other materials <sup>4</sup> .....	12	(D)	(D)	<sup>b</sup> 8,225	(D)
19001 08	Bar sinks (all materials).....	24	97,107	96,909	<sup>r</sup> 5,844	<sup>r</sup> 14,404
	Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup> .....	(NA)	<sup>r</sup> 208,093	<sup>r</sup> 206,800	<sup>r</sup> 13,201	25,423
34310 54	Metal.....	9	<sup>b</sup> 17,372	<sup>a</sup> 17,537	<sup>b</sup> 5,547	<sup>b</sup> 4,803
30880 33	Plastics <sup>5</sup> .....	6	<sup>b</sup> 182,228	<sup>b</sup> 181,483	<sup>b</sup> 3,505	(D)
32610 54	Vitreous china <sup>5</sup> .....	4	(D)	(D)	(D)	<sup>r</sup> 2,723
32722 84	Concrete and all other materials <sup>5</sup> .....	4	(D)	(D)	(D)	(D)
	Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup> .....	(NA)	<sup>r</sup> 1,153,208	<sup>r</sup> 1,170,702	<sup>r</sup> 171,965	<sup>r</sup> 157,256
34310 61	Cast iron (enameled) <sup>6</sup> .....	2	(D)	(D)	(D)	(D)
34310 62	Steel (enameled).....	5	<sup>b</sup> 229,129	<sup>b</sup> 223,643	<sup>b</sup> 14,867	23,877
30880 12	Fiberglass (FRP) gel coat.....	30	<sup>a</sup> 667,080	<sup>a</sup> 670,952	<sup>a</sup> 108,284	<sup>a</sup> 57,691
30880 13	Fiberglass (FRP) acrylic.....	29	<sup>a</sup> 53,477	<sup>a</sup> 53,525	<sup>a</sup> 14,790	8,678
30880 14	Cultured marble <sup>6</sup> .....	56	<sup>b</sup> 4,895	<sup>b</sup> 4,851	<sup>b</sup> 2,705	(D)
30880 15	Other plastics (PVC, ABS) <sup>6</sup> .....	11	<sup>b</sup> 81,437	<sup>b</sup> 115,219	<sup>b</sup> 7,838	(D)
19001 09	All other materials <sup>6</sup> .....	2	(D)	(D)	(D)	(D)
	Shower receptors, sold separately.....	(NA)	<sup>r</sup> 79,305	76,714	4,746	17,561
30886 55	Plastics.....	25	<sup>b</sup> 75,574	<sup>b</sup> 73,139	<sup>b</sup> 3,881	(D)
19001 10	All other materials.....	35	<sup>r</sup> 3,731	<sup>a</sup> 3,576	<sup>a</sup> 865	(D)
	Shower stalls, including receptor <sup>7</sup> .....	(NA)	<sup>r</sup> 258,441	<sup>r</sup> 256,452	52,946	24,911
34310 74	Metal <sup>7</sup> .....	2	(D)	(D)	(D)	(D)
30880 21	Fiberglass (FRP) gel coat.....	26	<sup>a</sup> 170,386	<sup>a</sup> 169,114	<sup>a</sup> 32,436	<sup>b</sup> 15,747
30880 22	Fiberglass (FRP) acrylic.....	15	<sup>a</sup> 26,483	<sup>a</sup> 25,496	<sup>a</sup> 9,976	<sup>r</sup> 2,983
30880 23	Other plastics <sup>7</sup> .....	13	<sup>b</sup> 27,076	<sup>b</sup> 27,456	<sup>b</sup> 2,271	(D)
19001 11	All other materials <sup>7</sup> .....	22	(D)	(D)	(D)	(D)
	Wall surrounds, sold as separate units.....	(NA)	<sup>r</sup> 268,445	<sup>r</sup> 274,346	17,387	<sup>r</sup> 33,899
30880 70	Showers (all materials).....	57	<sup>b</sup> 71,172	<sup>b</sup> 77,887	<sup>b</sup> 5,358	(D)
30880 71	Bathtubs (all materials).....	47	<sup>b</sup> 197,273	<sup>b</sup> 196,459	<sup>b</sup> 12,028	(D)
19222 08	Bidets (all materials).....	9	<sup>r</sup> 10,566	11,541	1,554	<sup>r</sup> 7,614
	Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> .....	(NA)	130,268	125,036	82,751	28,868
34310 86	Cast iron (enameled) <sup>8</sup> .....	2	(D)	(D)	(D)	(D)
30880 26	Fiberglass (FRP) gel coat.....	22	<sup>b</sup> 10,629	<sup>b</sup> 10,546	<sup>b</sup> 6,945	<sup>b</sup> 2,062
30880 27	Fiberglass (FRP) acrylic.....	36	<sup>a</sup> 105,250	<sup>a</sup> 99,895	<sup>a</sup> 66,123	<sup>b</sup> 23,451
30880 28	Cultured marble.....	55	<sup>b</sup> 2,022	<sup>b</sup> 2,043	<sup>b</sup> 2,348	<sup>b</sup> 2,528
30886 29	Other plastics <sup>8</sup> .....	8	<sup>a</sup> 10,558	<sup>a</sup> 10,960	<sup>r</sup> 4,748	(D)
19001 12	All other materials <sup>8</sup> .....	2	(D)	(D)	(D)	(D)
19001 15	Hot tubs and spas (noninstitutional, all materials).....	29	<sup>b</sup> 43,721	<sup>b</sup> 45,372	<sup>b</sup> 115,434	<sup>r</sup> 7,829
	All other fixtures not described above.....	(NA)	(X)	(X)	<sup>r</sup> 14,248	(X)
30882 20	Plastics.....	7	(X)	(X)	<sup>b</sup> 113	(X)
19002 20	All other materials.....	12	(X)	(X)	<sup>b</sup> 14,136	(X)

See footnotes at end of table.

**Table 22. Production, Shipments, and Stocks of Plumbing Fixtures: 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>THIRD QUARTER</b>						
	Plumbing fixtures.....	(NA)	(X)	(X)	867,340	(X)
	Drinking fountains <sup>1</sup> .....	(NA)	15,470	15,573	4,478	594
34310 15	Metal <sup>1</sup> .....	5	(D)	(D)	(D)	(D)
32610 12	Vitreous china <sup>1</sup> .....	3	(D)	(D)	(D)	(D)
19001 02	All other materials <sup>1</sup> .....	2	(D)	(D)	(D)	(D)
	Lavatories <sup>2</sup> .....	(NA)	1,838,879	1,807,174	88,145	579,234
34310 17	Cast iron (enameled) <sup>2</sup> .....	4	(D)	(D)	(D)	(D)
34310 18	Steel (enameled).....	6	431,691	403,254	6,328	142,099
34310 19	Steel (stainless).....	7	7,700	7,034	1,430	1,276
32610 17	Vitreous china.....	11	<sup>a</sup> 765,530	<sup>a</sup> 755,778	35,577	<sup>a</sup> 325,560
30880 04	Cultured marble.....	80	<sup>b</sup> 491,370	<sup>b</sup> 479,112	<sup>b</sup> 31,167	<sup>b</sup> 65,397
30880 31	Other plastics.....	8	<sup>b</sup> 142,589	<sup>b</sup> 161,997	<sup>b</sup> 13,643	<sup>r</sup> 44,902
19001 03	All other materials <sup>2</sup> .....	3	(D)	(D)	(D)	(D)
	Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> .....	(NA)	<sup>r</sup> 1,995,805	<sup>r</sup> 2,017,486	<sup>r</sup> 114,065	<sup>r</sup> 625,232
	Vitreous china:					
	17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 18, 22	Gravity and pressurized.....	10	<sup>r</sup> 542,185	<sup>r</sup> 534,152	<sup>r</sup> 25,763	<sup>r</sup> 222,351
	One-piece:					
32610 25, 26	Gravity and pressurized <sup>3</sup> .....	1	(D)	(D)	(D)	(D)
	Flushometer value:					
32610 28	Floor mounted <sup>3</sup> .....	4	(D)	(D)	(D)	(D)
	Less than 17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 32, 34	Gravity and pressurized.....	7	<sup>r</sup> 1,110,734	<sup>r</sup> 1,111,335	<sup>r</sup> 44,610	<sup>r</sup> 280,236
	One-piece:					
32610 38	Gravity <sup>3</sup> .....	5	<sup>r</sup> 100,534	<sup>r</sup> 97,459	(D)	(D)
32610 42	Pressurized <sup>3</sup> .....	3	(D)	(D)	(D)	(D)
	Flushometer valve:					
32610 44	Wall mounted <sup>3</sup> .....	5	(D)	<sup>r</sup> 69,684	<sup>r</sup> 4,486	<sup>r</sup> 11,502
32610 46	Floor mounted.....	5	<sup>r</sup> 51,608	<sup>r</sup> 53,981	<sup>r</sup> 3,699	<sup>r</sup> 6,676
	Blowout 3.5 g.p.f.:					
32610 48	Vitreous china <sup>3</sup> .....	5	(D)	(D)	(D)	(D)
	Any bowl style:					
19001 17	All materials other than vitreous china <sup>3</sup> .....	7	(D)	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china).....	10	<sup>a</sup> 1,732,804	<sup>a</sup> 1,785,973	<sup>a</sup> 62,326	<sup>a</sup> 329,642
	Urinals.....	(NA)	70,058	72,745	7,968	22,279
34310 38	Metal.....	7	<sup>a</sup> 1,033	<sup>b</sup> 1,020	<sup>b</sup> 569	(D)
32610 36	Vitreous china.....	9	69,025	71,725	7,399	(D)
	Kitchen sinks, not including bar sinks <sup>4</sup> .....	(NA)	1,267,117	1,296,517	84,793	<sup>r</sup> 163,174
34310 41	Cast iron (enameled) <sup>4</sup> .....	3	(D)	(D)	29,342	(D)
34310 42	Steel (enameled).....	7	<sup>b</sup> 90,570	<sup>b</sup> 92,569	<sup>b</sup> 2,852	23,228
34310 47	Steel (stainless).....	7	<sup>a</sup> 943,356	<sup>b</sup> 936,724	45,299	<sup>b</sup> 87,023
19001 07	All other materials <sup>4</sup> .....	12	(D)	(D)	<sup>b</sup> 7,300	(D)
19001 08	Bar sinks (all materials).....	24	101,286	103,202	<sup>r</sup> 6,168	<sup>r</sup> 11,874
	Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup> .....	(NA)	<sup>r</sup> 203,755	<sup>r</sup> 203,047	<sup>r</sup> 12,140	24,624
34310 54	Metal.....	9	<sup>b</sup> 14,912	<sup>a</sup> 15,022	<sup>b</sup> 4,688	<sup>b</sup> 4,347
30880 33	Plastics <sup>5</sup> .....	6	<sup>b</sup> 182,228	<sup>b</sup> 181,483	<sup>b</sup> 3,505	(D)
32610 54	Vitreous china <sup>5</sup> .....	4	(D)	(D)	(D)	2,685
32722 84	Concrete and all other materials <sup>5</sup> .....	4	(D)	(D)	(D)	(D)
	Bathtubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>5</sup> .....	(NA)	<sup>r</sup> 1,149,636	<sup>r</sup> 1,181,012	<sup>r</sup> 175,426	<sup>r</sup> 146,304
34310 61	Cast iron (enameled) <sup>5</sup> .....	2	(D)	(D)	(D)	(D)
34310 62	Steel (enameled).....	5	<sup>b</sup> 238,341	<sup>b</sup> 235,448	<sup>b</sup> 15,431	(D)
30880 12	Fiberglass (FRP) gel coat.....	30	<sup>a</sup> 666,359	<sup>a</sup> 666,877	<sup>a</sup> 110,598	<sup>a</sup> 59,503
30880 13	Fiberglass (FRP) acrylic.....	29	<sup>a</sup> 57,109	<sup>a</sup> 54,682	<sup>a</sup> 14,925	9,419
30880 14	Cultured marble <sup>6</sup> .....	56	<sup>b</sup> 6,337	<sup>b</sup> 6,286	<sup>b</sup> 3,491	(D)
30880 15	Other plastics (PVC, ABS) <sup>6</sup> .....	11	<sup>b</sup> 96,542	<sup>b</sup> 113,637	<sup>b</sup> 7,736	(D)

See footnotes at end of table.

Table 22. **Production, Shipments, and Stocks of Plumbing Fixtures: 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>THIRD QUARTER—Con.</b>						
Plumbing fixtures—Con.						
Bathtubs, including wall surrounds when sold as combined units, not including whirlpool bath—Con.						
19001 09	All other materials <sup>6</sup> .....	2	(D)	(D)	(D)	(D)
	Shower receptors, sold separately .....	(NA)	<sup>r</sup> 88,648	<sup>r</sup> 84,779	5,505	17,561
30886 55	Plastics .....	25	<sup>b</sup> 84,221	<sup>b</sup> 79,258	<sup>b</sup> 4,179	(D)
19001 10	All other materials .....	35	<sup>a</sup> 4,426	<sup>a</sup> 5,521	<sup>a</sup> 1,326	(D)
	Shower stalls, including receptor <sup>7</sup> .....	(NA)	<sup>r</sup> 271,415	<sup>r</sup> 268,992	<sup>r</sup> 56,581	<sup>r</sup> 26,208
34310 74	Metal <sup>7</sup> .....	2	(D)	(D)	(D)	(D)
30880 21	Fiberglass (FRP) gel coat .....	26	<sup>a</sup> 179,764	<sup>a</sup> 178,905	<sup>a</sup> 35,176	<sup>b</sup> 16,446
30880 22	Fiberglass (FRP) acrylic .....	15	<sup>a</sup> 28,589	<sup>a</sup> 27,434	<sup>a</sup> 10,750	<sup>r</sup> 3,100
30880 23	Other plastics <sup>7</sup> .....	13	<sup>b</sup> 28,568	<sup>b</sup> 28,269	<sup>b</sup> 2,394	(D)
19001 11	All other materials <sup>7</sup> .....	22	(D)	(D)	(D)	(D)
	Wall surrounds, sold as separate units .....	(NA)	<sup>r</sup> 272,586	<sup>r</sup> 269,229	<sup>r</sup> 16,598	<sup>r</sup> 33,999
30880 70	Showers (all materials) .....	57	<sup>b</sup> 74,780	<sup>b</sup> 75,807	<sup>b</sup> 5,192	(D)
30880 71	Bathtubs (all materials) .....	47	<sup>b</sup> 197,806	<sup>b</sup> 193,422	<sup>b</sup> 11,406	(D)
19222 08	Bidets (all materials) .....	9	<sup>r</sup> 11,345	12,101	1,591	<sup>r</sup> 7,086
	Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> .....	(NA)	140,288	136,953	94,557	29,725
34310 86	Cast iron (enameled) <sup>8</sup> .....	2	(D)	(D)	(D)	(D)
30880 26	Fiberglass (FRP) gel coat .....	22	<sup>b</sup> 11,798	<sup>b</sup> 11,713	<sup>b</sup> 7,974	<sup>b</sup> 2,048
30880 27	Fiberglass (FRP) acrylic .....	36	<sup>a</sup> 113,048	<sup>a</sup> 112,019	<sup>a</sup> 77,567	<sup>b</sup> 24,360
30880 28	Cultured marble .....	55	<sup>b</sup> 2,112	<sup>b</sup> 1,994	<sup>b</sup> 2,286	<sup>b</sup> 2,176
30886 29	Other plastics <sup>8</sup> .....	8	<sup>a</sup> 12,081	<sup>a</sup> 9,818	<sup>r</sup> 4,342	(D)
19001 12	All other materials <sup>8</sup> .....	2	(D)	(D)	(D)	(D)
19001 15	Hot tubs and spas (noninstitutional, all materials) .....	29	<sup>b</sup> 43,177	<sup>b</sup> 47,393	<sup>b</sup> 121,293	<sup>r</sup> 5,844
	All other fixtures not described above .....	(NA)	(X)	(X)	<sup>r</sup> 15,707	(X)
30882 20	Plastics .....	7	(X)	(X)	<sup>b</sup> 109	(X)
19002 20	All other materials .....	12	(X)	(X)	<sup>b</sup> 15,599	(X)
<b>FOURTH QUARTER</b>						
	Plumbing fixtures .....	(NA)	(X)	(X)	787,839	(X)
	Drinking fountains <sup>1</sup> .....	(NA)	10,998	11,111	3,361	497
34310 15	Metal <sup>1</sup> .....	5	(D)	(D)	(D)	(D)
32610 12	Vitreous china <sup>1</sup> .....	3	(D)	(D)	(D)	(D)
19001 02	All other materials <sup>1</sup> .....	2	(D)	(D)	(D)	(D)
	Lavatories <sup>2</sup> .....	(NA)	1,852,935	1,792,570	91,392	587,614
34310 17	Cast iron (enameled) <sup>2</sup> .....	4	(D)	(D)	(D)	(D)
34310 18	Steel (enameled) .....	6	395,742	392,420	6,196	145,857
34310 19	Steel (stainless) <sup>2</sup> .....	7	7,454	7,336	1,589	(D)
32610 17	Vitreous china .....	11	<sup>a</sup> 792,530	<sup>a</sup> 777,219	37,698	<sup>a</sup> 337,649
30880 04	Cultured marble .....	80	<sup>b</sup> 491,031	<sup>b</sup> 463,155	<sup>b</sup> 33,453	<sup>b</sup> 57,840
30880 31	Other plastics <sup>2</sup> .....	8	<sup>b</sup> 166,178	<sup>b</sup> 152,440	<sup>b</sup> 12,456	(D)
19001 03	All other materials <sup>2</sup> .....	3	(D)	(D)	(D)	(D)
	Water closet bowls, 1.6 g.p.f., excluding flush tank unless integral <sup>3</sup> .....	(NA)	<sup>r</sup> 1,911,947	<sup>r</sup> 1,983,175	<sup>r</sup> 111,880	<sup>r</sup> 645,476
	Vitreous china:					
	17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 18, 22	Gravity and pressurized .....	10	<sup>r</sup> 539,558	<sup>r</sup> 529,160	<sup>r</sup> 24,156	<sup>r</sup> 226,298
	One-piece:					
32610 25, 26	Gravity and pressurized <sup>3</sup> .....	1	(D)	(D)	(D)	(D)
	Flushometer valve:					
32610 28	Floor mounted <sup>3</sup> .....	4	(D)	(D)	(D)	(D)
	Less than 17 inches from floor to rim of bowl:					
	Close coupled for use with flush tank:					
32610 32, 34	Gravity and pressurized .....	7	<sup>r</sup> 1,028,120	<sup>r</sup> 1,084,453	<sup>r</sup> 43,083	<sup>r</sup> 317,355
	One-piece:					
32610 38	Gravity <sup>3</sup> .....	5	<sup>r</sup> 83,525	98,420	(D)	(D)
32610 42	Pressurized <sup>3</sup> .....	3	(D)	(D)	(D)	(D)

See footnotes at end of table.

**Table 22. Production, Shipments, and Stocks of Plumbing Fixtures: 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Quantity produced	Shipments		Stocks, end of quarter
				Quantity	Value	
<b>FOURTH QUARTER—Con.</b>						
Plumbing fixtures—Con.						
Flushometer valve:						
32610 44	Wall mounted <sup>3</sup> .....	5	(D)	'65,826	'4,229	'13,198
32610 46	Floor mounted .....	5	'53,932	'55,091	'3,712	'5,480
Blowout 3.5 g.p.f.:						
32610 48	Vitreous china <sup>3</sup> .....	5	(D)	(D)	(D)	(D)
Any bowl style:						
19001 17	All materials other than vitreous china <sup>3</sup> .....	7	(D)	(D)	(D)	(D)
32610 31	Flush tanks (vitreous china) .....	10	<sup>a</sup> 1,687,233	<sup>a</sup> 1,739,084	<sup>a</sup> 59,801	<sup>a</sup> '274,276
Urinals .....						
34310 38	Metal .....	(NA)	71,016	'75,218	'7,910	20,099
32610 36	Vitreous china .....	9	<sup>a</sup> 523	<sup>b</sup> 877	<sup>b</sup> 307	(D)
Kitchen sinks, not including bar sinks <sup>4</sup> .....						
34310 41	Cast iron (enameled) <sup>4</sup> .....	3	(D)	(D)	29,968	(D)
34310 42	Steel (enameled) .....	7	<sup>b</sup> 78,976	<sup>b</sup> 103,700	<sup>b</sup> 3,654	16,353
34310 47	Steel (stainless) .....	7	<sup>a</sup> 971,699	<sup>b</sup> 993,085	48,458	<sup>b</sup> 90,336
19001 07	All other materials <sup>4</sup> .....	12	(D)	(D)	<sup>b</sup> 9,300	(D)
19001 08	Bar sinks (all materials) .....	24	97,653	98,600	'6,024	'11,030
Wash sinks and service sinks, mop sinks, sink and laundry tray combinations, and laundry trays <sup>5</sup> .....						
34310 54	Metal .....	(NA)	'204,602	'203,614	'12,439	24,797
30880 33	Plastics <sup>5</sup> .....	9	<sup>b</sup> 15,953	<sup>a</sup> 15,861	<sup>b</sup> 5,084	<sup>b</sup> 4,471
32610 54	Vitreous china <sup>5</sup> .....	6	<sup>b</sup> '182,228	<sup>b</sup> '181,483	<sup>b</sup> '3,505	(D)
32722 84	Concrete and all other materials <sup>5</sup> .....	4	(D)	(D)	(D)	'2,724
Bathubs, including wall surrounds when sold as combined units, not including whirlpool baths <sup>6</sup> .....						
34310 61	Cast iron (enameled) <sup>6</sup> .....	(NA)	'1,049,790	'1,041,520	156,870	'143,550
34310 62	Steel (enameled) .....	2	(D)	(D)	(D)	(D)
30880 12	Fiberglass (FRP) gel coat .....	5	<sup>b</sup> 195,328	<sup>b</sup> 204,065	<sup>b</sup> 13,749	(D)
30880 13	Fiberglass (FRP) acrylic .....	30	<sup>a</sup> '585,891	<sup>a</sup> '589,079	<sup>a</sup> 97,381	<sup>a</sup> '57,667
30880 14	Cultured marble <sup>6</sup> .....	29	<sup>a</sup> 46,476	<sup>a</sup> 46,502	<sup>a</sup> '12,835	9,542
30880 15	Other plastics (PVC, ABS) <sup>6</sup> .....	56	<sup>b</sup> 6,087	<sup>b</sup> 5,534	<sup>b</sup> 3,047	(D)
19001 09	All other materials <sup>6</sup> .....	11	<sup>b</sup> 113,972	<sup>b</sup> 94,474	<sup>b</sup> 6,433	(D)
Shower receptors, sold separately .....						
30886 55	Plastics .....	2	(D)	'66,244	4,642	17,561
19001 10	All other materials .....	25	<sup>b</sup> '62,190	<sup>b</sup> '60,456	<sup>b</sup> 3,252	(D)
Shower stalls, including receptor <sup>7</sup> .....						
34310 74	Metal <sup>7</sup> .....	35	'4,926	<sup>a</sup> '5,788	<sup>a</sup> '1,390	(D)
30880 21	Fiberglass (FRP) gel coat .....	(NA)	'242,213	'236,256	'49,325	'26,747
30880 22	Fiberglass (FRP) acrylic .....	2	(D)	(D)	(D)	(D)
30880 23	Other plastics <sup>7</sup> .....	26	<sup>a</sup> '158,483	<sup>a</sup> 154,317	<sup>a</sup> 29,903	<sup>b</sup> '17,608
19001 11	All other materials <sup>7</sup> .....	15	<sup>a</sup> '23,867	<sup>a</sup> 23,278	<sup>a</sup> 8,968	'2,816
Wall surrounds, sold as separate units .....						
30880 70	Showers (all materials) .....	13	<sup>b</sup> '25,153	<sup>b</sup> '24,061	<sup>b</sup> '1,908	(D)
30880 71	Bathtubs (all materials) .....	22	(D)	(D)	(D)	(D)
19222 08	Bidets (all materials) .....	(NA)	'220,321	'247,167	'15,869	31,376
Whirlpool baths, not spas or hot tubs (noninstitutional) <sup>8</sup> .....						
34310 86	Cast iron (enameled) <sup>8</sup> .....	57	<sup>b</sup> '49,722	<sup>b</sup> '69,877	<sup>b</sup> '4,815	(D)
30880 26	Fiberglass (FRP) gel coat .....	47	<sup>b</sup> '170,599	<sup>b</sup> '177,291	<sup>b</sup> '11,053	(D)
30880 27	Fiberglass (FRP) acrylic .....	9	'11,700	11,130	1,447	'7,641
30880 28	Cultured marble .....	(NA)	113,410	112,135	74,180	31,400
30886 29	Other plastics <sup>8</sup> .....	2	(D)	(D)	(D)	(D)
19001 12	All other materials <sup>8</sup> .....	22	<sup>b</sup> 9,182	<sup>b</sup> 9,792	<sup>b</sup> 6,665	<sup>b</sup> 1,830
Hot tubs and spas (noninstitutional, all materials) .....						
30882 20	Plastics .....	36	<sup>a</sup> 93,755	<sup>a</sup> 89,686	<sup>a</sup> 57,672	<sup>b</sup> 26,543
19002 20	All other materials .....	55	<sup>b</sup> 2,829	<sup>b</sup> '2,759	<sup>b</sup> '3,166	<sup>b</sup> 1,991
All other fixtures not described above .....						
30882 20	Plastics .....	8	<sup>a</sup> '6,245	<sup>a</sup> '8,349	'4,182	(D)
19002 20	All other materials .....	2	(D)	(D)	(D)	(D)
All other fixtures not described above .....						
30882 20	Plastics .....	7	(X)	(X)	'12,685	(X)
19002 20	All other materials .....	12	(X)	(X)	<sup>b</sup> '1,109	(X)
All other fixtures not described above .....						
30882 20	Plastics .....	7	(X)	(X)	<sup>b</sup> '12,577	(X)
19002 20	All other materials .....	12	(X)	(X)		(X)

See footnotes at end of table.

Table 22. **Production, Shipments, and Stocks of Plumbing Fixtures: 1997**—Con.

D Withheld to avoid disclosing data for individual companies. NA Not available. <sup>c</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>“Drinking fountains, metal,” “Drinking fountains, vitreous china,” and “Drinking fountains, all other materials” are included with “Drinking fountains” to avoid disclosing data for individual companies.

<sup>2</sup>“Lavatories, cast iron (enameled),” “Lavatories, all other materials,” and first and fourth quarter Stocks, end of quarter for “Lavatories other plastics” and “Lavatories, steel (stainless)” are included with “Lavatories” to avoid disclosing data for individual companies.

<sup>3</sup>“Water closet bowls, 17 inches from floor to rim of bowl, one-piece, and flushometer valve,” “Water closet bowls, less than 17 inches from floor to rim of bowl, one-piece, and flushometer valve, wall mounted,” “Blowout 3.5 gpf,” and “Any bowl style” are included with “Water closet bowls” to avoid disclosing data for individual companies. individual companies.

<sup>4</sup>“Kitchen sinks, cast iron (enameled),” and “Kitchen sinks, all other materials” are included with “Kitchen sinks” to avoid disclosing data for individual companies.

<sup>5</sup>“Wash sinks, vitreous china,” “Wash sinks, concrete and all other materials,” and Stocks, end of quarter for “Wash sinks, plastics” are included with “Wash sinks” total to avoid disclosing data for individual companies.

<sup>6</sup>“Bathtubs, cast iron (enameled),” “Bathtubs, all other materials,” and Stocks, end of quarter for “Bathtubs, other plastics ” and “Bathtubs, cultured marble are included with “Bathtubs” to avoid disclosing data for individual companies.

<sup>7</sup>“Shower stalls, all other materials,” “Shower stalls, metal,” and Stocks, end of quarter for “Shower stalls, other plastics” are included with “Shower stalls” to avoid disclosing data for individual companies.

<sup>8</sup>“Whirlpool baths, all other materials,” “Whirlpool baths, cast iron (enameled),” and Stocks, end of quarter for “Whirlpool baths, other plastics” are included with “Whirlpool baths” to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>25 to 50 percent of this item is estimated. <sup>b</sup>Over 50 percent of this item is estimated.

Table 23. **Shipments, Exports, Imports, and Apparent Consumption of Plumbing Fixtures: 1996 to 1998**

[Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Manufacturers' shipments (value, f.o.b. plant)	Exports of domestic merchandise <sup>1 2</sup> (value at port)	Value of imports for consumption <sup>1 3 4</sup>	Apparent consumption <sup>5</sup>
<b>1998</b>					
	Plumbing fixtures .....	3,293,159	177,580	324,954	3,440,533
32610 pt.	Vitreous.....	883,689	65,656	68,040	886,073
34310 pt.	Metal .....	700,833	71,281	163,503	793,055
30880 pt.	Plastics and fiberglass.....	1,708,637	40,643	93,411	1,761,405
<b>1997</b>					
	Plumbing fixtures .....	3,088,825	189,747	264,666	3,163,744
32610 pt.	Vitreous.....	876,820	68,421	50,547	858,946
34310 pt.	Metal .....	672,814	78,406	138,207	732,615
30880 pt.	Plastics and fiberglass.....	1,539,191	42,920	75,912	1,572,183
<b>1996</b>					
	Plumbing fixtures .....	2,935,659	132,158	261,695	3,065,196
32610 pt.	Vitreous.....	859,693	58,465	64,771	865,999
34310 pt.	Metal .....	643,775	35,836	128,434	736,373
30880 pt.	Plastics and fiberglass.....	1,432,191	37,857	68,490	1,462,824

pt. Part.

<sup>1</sup>For comparison of SIC-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>4</sup>This dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry into the United States plus U.S. import duties.

<sup>5</sup>Apparent consumption is derived by subtracting exports from total of manufacturers' shipments plus imports.

## HISTORICAL NOTE

Data on plumbing fixtures have been collected by the Census Bureau since 1946. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche. For further information, contact the Census Bureau, Customer Services, 301-457-4100.

## FUNDING

This survey is funded by the Plumbing Manufacturers' Institute and by the International Cast Polymers Association.

## CONTACT FOR DATA USERS

For additional information about these data, contact Renee Coley, 301-457-4767.

# Chapter 4.

## Chemicals and Related Products

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### GENERAL INFORMATION

This section contains data for chemicals and related products. Included in this section is information regarding inorganic chemicals and fertilizer materials, industrial gases, paint and allied products, and pharmaceutical preparations. The inorganic chemicals and fertilizer materials group covers inorganic chemicals and fertilizer materials including chlorine, sodium hydroxide, titanium dioxide, inorganic acids, inorganic aluminum compounds, sodium and potassium compounds, ammonia, urea,

phosphoric and sulfuric acid, and superphosphates and phosphatic fertilizer materials. The industrial gases group covers oxygen, helium, carbon dioxide, argon, nitrogen, and all other industrial gases. The paint and allied products group covers special-purpose coatings, architectural coatings, and original equipment manufactures (OEM) coatings. Finally, the pharmaceutical preparations group covers all pharmaceutical preparations for human and veterinary use, including antacids, cold remedies, dermatological preparations, insulin preparations, laxatives, and vitamin preparations.

### **INORGANIC CHEMICALS—MA325A (FORMERLY MA28A) AND FERTILIZER MATERIALS AND RELATED PRODUCTS—MA325B (FORMERLY MA28B)**

### INTRODUCTION

The inorganic chemicals and fertilizer materials included in this report cover inorganic chemicals and fertilizer materials manufactured in the United States. They are collected in surveys MQ325A and MA325A, Inorganic Chemicals, and in surveys MQ325B and MA325B, Fertilizer Materials. In the manufacturing of these products, a chemical reaction must take place, physically altering the chemical makeup of the inorganic chemical or fertilizer material. If a chemical is mined, with no further transformation of that chemical, that chemical and the establishment mining that chemical are considered out of scope of manufacturing. Also, if a company is just mixing two different fertilizer materials together, with no chemical reaction occurring, they are considered in scope of manufacturing, but out of scope of inorganic chemicals and fertilizer materials.

The unit of measure (basis) for most of the quantities of inorganic chemicals and fertilizer materials contained in this report is 100 percent of the chemical compound. For example, if a company manufactures 100 tons of 100 percent HCl (hydrochloric acid), that company would report 100 tons of production. However, if the company manufactured 100 tons of a diluted HCl, about 75 percent HCl concentrate, that company would report 75 tons as their production. This is the amount of 100 percent HCl produced in the 75 percent solution.

The Current Industrial Reports (CIRs) on inorganic chemicals and fertilizer materials are annually compared with the Census Bureau's annual survey of manufactures

(ASM). The ASM collects information on product shipments, as well as numerous other statistics, including number of employees, wages, plant worker, hours, inventories, cost of materials, and resales. The value of product shipments is reconciled between the two reports in the time period after the CIR annual report is released, but before the ASM is released. Any revisions to the CIR surveys are then carried the following year.

The comparison of the CIR surveys on inorganic chemicals and fertilizer materials with the ASM product classes for 1997 and 1996 follows (value is in millions of dollars):

The value of shipments for the five-digit product classes for inorganic chemicals and fertilizer materials are generally within 2 percent. The product classes that differ by more than 2 percent are most likely a result of ASM sampling differences. The CIR reports are complete coverage (universe) surveys for the product classes covered; whereas, the ASM is a sample survey that uses a weighting factor to account for companies not sampled.

### SUMMARY OF FINDINGS

The value of shipments of alkalis and chlorine (NAICS 325181) amounted to \$2,904.9 million in 1998, a 5-percent decrease from the 1997 level of \$3,067.3 million. Value of shipments of chlorine (NAICS 3251811) decreased 33 percent to \$828.0 million, from \$1,231.0 million in 1997. Value of shipments of sodium hydroxide (NAICA 3251814) increased 17 percent to \$1,680.1 million in 1998, from \$1,439.5 million in 1997. Value of shipments of other alkalis (NAICS 3251817) remained virtually unchanged at \$387.4 for 1998 and \$386.7 for 1997.



Titanium dioxide (NAICS 3251311) production decreased slightly to 1,458.7 thousand short tons in 1998, from 1,466.3 thousand short tons in 1997. The unit price also decreased slightly to \$1,646.73 per short ton in 1998, from \$1,694.33 per short ton in 1997.

Shipments of inorganic chemicals, n.e.c. (NAICS 325188), remained virtually unchanged from the 1997 total of \$14,318.8 million to \$14,236.5 million in 1998. Leading the industry in shipments were potassium and sodium compounds (NAICS 325188A), which decreased 4 percent, from \$2,056.2 million in 1997 to \$1,969.9 million in 1998; and other inorganic chemicals, n.e.c. (NAICS 325188G), with \$7,143.0 million in shipments in 1998, virtually unchanged from 1997 shipments of \$7,168.2 million.

United States production of sulfuric acid in 1998 totaled 48,512.5 thousand short tons (100 percent H<sub>2</sub>SO<sub>4</sub>), approximately 1 percent above the 1997 figure of

47,929.2 thousand short tons. Value of shipments, including interplant transfers in 1998 amounted to \$683.0 million, compared to the 1997 value of \$576.5 million.

Value of shipments of synthetic ammonia, nitric acid, and ammonium compounds decreased 17 percent to \$2,951.4 million in 1998, from the 1997 level of \$3,478.3 million. Shipments of urea decreased 15 percent to \$667.1 million in 1998, and shipments of phosphoric acid increased 7.2 percent to \$1,514.7 million.

Production of superphosphate and other phosphatic fertilizer materials for 1998 decreased 2 percent to 10,258.5 thousand short tons (100 percent P<sub>2</sub>O<sub>5</sub>). Value of shipments amounted to \$3,046.5 million in 1998, compared to the 1997 value of \$3,691.8 million.

**Table 1. Summary of Production and Shipments of Inorganic Chemicals and Fertilizer Materials: 1994 to 1998**

[Quantity in thousands of short tons. Value in millions of dollars]

Product code	Product description	Year	Total production (quantity)	Total shipments, including interplant transfers	
				Quantity	Value
325181	Alkalies and chlorine <sup>1</sup> .....	1998 .....	(X)	(X)	2,904.9
		1997 .....	(X)	(X)	3,067.2
		1996 .....	(X)	(X)	3,211.6
		1995 .....	(X)	(X)	3,168.5
		1994 .....	(X)	(X)	2,275.1
3251811000	Chlorine (100 percent Cl) .....	1998 .....	(X)	(X)	828.0
		1997 .....	(X)	(X)	1,231.0
		1996 .....	(X)	(X)	948.0
		1995 .....	(X)	(X)	800.1
		1994 .....	(X)	(X)	840.9
3251814000	Sodium hydroxide (caustic soda) .....	1998 .....	(X)	(X)	1,680.1
		1997 .....	(X)	(X)	1,439.5
		1996 .....	(X)	(X)	1,859.6
		1995 .....	(X)	(X)	1,971.3
		1994 .....	(X)	(X)	1,051.2
3251817000	Other alkalies .....	1998 .....	(X)	(X)	387.4
		1997 .....	(X)	(X)	386.7
		1996 .....	(X)	(X)	394.4
		1995 .....	(X)	(X)	387.6
		1994 .....	(X)	(X)	376.2
325181W000	Alkalies and chlorine, n.s.k. <sup>1</sup> .....	1998 .....	(X)	(X)	9.4
		1997 .....	(X)	(X)	10.0
		1996 .....	(X)	(X)	10.0
		1995 .....	(X)	(X)	9.5
		1994 .....	(X)	(X)	6.9
325131 pt.	Inorganic color pigments .....	1998 .....	(X)	(X)	2,526.1
		1997 .....	(X)	(X)	2,606.0
		1996 .....	(X)	(X)	2,486.7
		1995 .....	(X)	(X)	2,284.2
		1994 .....	(X)	(X)	2,470.9
3251311000	Titanium dioxide (composite and pure) (commodity weight) .....	1998 .....	1,458.7	1,470.3	2,421.2
		1997 .....	1,466.3	1,475.0	2,499.2
		1996 .....	1,342.4	1,352.8	2,332.7
		1995 .....	1,382.3	1,362.5	2,132.9
		1994 .....	1,379.9	1,397.9	2,318.1

See footnotes at end of table.

**Table 1. Summary of Production and Shipments of Inorganic Chemicals and Fertilizer Materials: 1994 to 1998—Con.**

[Quantity in thousands of short tons. Value in millions of dollars]

Product code	Product description	Year	Total production (quantity)	Total shipments, including interplant transfers	
				Quantity	Value
3251880000	Inorganic chemicals, n.e.c. <sup>1</sup>	1998	(X)	(X)	14,236.5
		1997	(X)	(X)	14,318.8
		1996	(X)	(X)	14,493.8
		1995	(X)	(X)	14,178.7
		1994	(X)	(X)	12,675.6
3251881000	Sulfuric acid, gross (new and fortified)	1998	48,512.5	13,042.7	684.0
		1997	47,929.2	12,961.7	576.5
		1996	47,770.3	13,014.8	571.7
		1995	47,519.3	12,677.7	539.8
		1994	44,861.9	11,767.2	461.9
3251884000	Inorganic acids (except nitric, phosphoric, and sulfuric)	1998	(X)	(X)	636.7
		1997	(X)	(X)	629.1
		1996	(X)	(X)	636.8
		1995	(X)	(X)	580.8
		1994	(X)	(X)	557.6
3313110100	Aluminum oxide (except natural alumina)	1998	5,001.0	5,019.5	1,109.3
		1997	5,072.1	5,066.3	1,035.5
		1996	4,734.1	4,816.9	1,022.7
		1995	4,764.0	4,871.9	1,035.7
		1994	4,469.9	4,484.0	812.9
3251887000	Aluminum compounds	1998	(X)	(X)	767.6
		1997	(X)	(X)	780.5
		1996	(X)	(X)	745.4
		1995	(X)	(X)	678.6
		1994	(X)	(X)	602.4
325188A000	Potassium and sodium compounds (except bleaches, alkalies, and alums)	1998	(X)	(X)	1,969.9
		1997	(X)	(X)	2,056.2
		1996	(X)	(X)	2,036.1
		1995	(X)	(X)	1,988.6
		1994	(X)	(X)	1,872.1
325188D000	Chemical catalytic preparations	1998	(X)	(X)	1,686.7
		1997	(X)	(X)	1,831.9
		1996	(X)	(X)	1,703.5
		1995	(X)	(X)	1,625.4
		1994	(X)	(X)	1,424.0
325188G000	Other inorganic chemicals, n.e.c.	1998	(X)	(X)	7,143.0
		1997	(X)	(X)	7,168.2
		1996	(X)	(X)	7,571.6
		1995	(X)	(X)	7,499.3
		1994	(X)	(X)	6,733.7
325188W000	Industrial inorganic chemicals, n.s.k. <sup>1</sup>	1998	(X)	(X)	239.4
		1997	(X)	(X)	240.8
		1996	(X)	(X)	238.4
		1995	(X)	(X)	231.0
		1994	(X)	(X)	196.8
3256121000	Household bleaching compounds	1998	(S)	(S)	(S)
		1997	256.7	255.5	967.8
		1996	304.2	314.9	891.1
		1995	307.2	319.8	922.5
		1994	312.9	306.7	954.8
3253111120	Ammonia, synthetic anhydrous <sup>2</sup>	1998	18,474.9	8,803.1	1,214.2
		1997	17,890.7	8,588.6	1,577.9
		1996	17,922.8	9,919.1	1,689.7
		1995	17,402.2	9,722.8	1,661.6
		1994	17,869.1	10,525.3	1,540.8
3253111201	Ammonium nitrate, original melt liquor <sup>3</sup>	1998	9,078.6	(X)	(X)
		1997	8,604.4	(X)	(X)
		1996	8,497.8	(X)	(X)
		1995	8,489.1	(X)	(X)
		1994	8,567.6	(X)	(X)
3253111240	Ammonium sulfate <sup>2</sup>	1998	2,787.4	2,861.5	181.3
		1997	2,710.7	2,544.0	180.6
		1996	2,662.0	2,543.5	213.6
		1995	2,646.7	2,551.7	195.3
		1994	2,584.1	2,484.9	168.8

See footnotes at end of table.

**Table 1. Summary of Production and Shipments of Inorganic Chemicals and Fertilizer Materials: 1994 to 1998—Con.**

[Quantity in thousands of short tons. Value in millions of dollars]

Product code	Product description	Year	Total production (quantity)	Total shipments, including interplant transfers	
				Quantity	Value
3253114000	Urea (100 percent) .....	1998 .....	8,865.0	5,585.8	667.1
		1997 .....	8,189.9	5,342.0	772.3
		1996 .....	8,548.3	5,781.4	911.9
		1995 .....	8,116.7	5,242.8	848.3
		1994 .....	8,360.3	5,456.9	726.1
3253111111	Nitric acid (100 percent) .....	1998 .....	9,285.1	1,506.1	159.9
		1997 .....	9,432.7	1,804.5	216.2
		1996 .....	9,204.8	1,460.9	196.9
		1995 .....	8,839.0	1,291.1	168.2
		1994 .....	8,713.7	931.8	116.5
3253121000	Phosphoric acid (100 percent P <sub>2</sub> O <sub>5</sub> ) .....	1998 .....	13,891.2	4,649.4	1,514.7
		1997 .....	13,158.7	4,587.5	1,405.1
		1996 .....	13,210.0	4,401.8	1,226.8
		1995 .....	13,133.8	4,409.3	1,219.5
		1994 .....	12,792.0	4,227.7	1,103.1
3251881000	Sulfuric acid, gross (100 percent) .....	1998 .....	48,512.5	13,042.7	683.0
		1997 .....	47,929.2	12,961.7	576.5
		1996 .....	47,770.3	13,014.8	571.7
		1995 .....	47,519.3	12,677.7	539.3
		1994 .....	44,861.9	11,767.2	461.9
3253124000	Superphosphates and other fertilizer materials (100 percent P <sub>2</sub> O <sub>5</sub> ) .....	1998 .....	10,258.5	10,292.9	3,046.5
		1997 .....	10,473.2	10,379.9	3,691.8
		1996 .....	10,547.2	10,500.9	3,927.6
		1995 .....	10,364.2	10,231.0	3,594.3
		1994 .....	10,041.6	9,966.9	2,920.7

n.e.c. Not elsewhere classified. n.s.k. Not specified by kind. †Revised by 5 percent or more from previously published data.  
 S Does not meet publication standards. X Not applicable.

<sup>1</sup>Totals include values for industrial inorganic chemicals not specified by kind (n.s.k.). N.s.k. represents value of shipments for establishments that did not provide detailed information by type of product. These establishments, typically with less than 10 employees, are not included on the mailing panel. N.s.k. value has been estimated based on the rate of change for reporting establishments applied to previous year's data.

<sup>2</sup>Excludes data for byproduct ammonia liquor and ammonium sulfate published by the U.S. Department of Energy.

<sup>3</sup>Represents total amount of original melt liquor produced for all purposes.

**Table 2a. Production and Shipments of Selected Inorganic Chemicals: 1998 and 1997**

[Quantity in short tons (unless otherwise noted). Value in thousands of dollars]

Product code	Product description	1998			1997		
		Total production (quantity)	Total shipments, including interplant transfers		Total production (quantity)	Total shipments, including interplant transfers	
			Quantity	Value		Quantity	Value
325181	Alkalies and chlorine <sup>1</sup> . . . . .	(X)	(X)	2,904,901	(X)	(X)	3,067,206
3251811	Chlorine (100 percent Cl) . . . . .	(X)	(X)	827,972	(X)	(X)	1,231,024
3251811011	Gas <sup>2</sup> . . . . .	12,841,273	474,962	48,181	12,922,235	517,683	73,758
3251811021	Liquid . . . . .	10,541,548	5,913,148	779,791	10,427,150	6,496,444	1,157,266
3251814	Sodium hydroxide (caustic soda) . . . . .	(X)	(X)	1,680,090	(X)	(X)	1,439,524
3251814011	Sodium hydroxide, total liquid (all processes) (100 percent NaOH) <sup>3</sup> . . . . .	11,730,830	(X)	(X)	11,972,801	(X)	(X)
3251814021	Liquid, 68 to 74 percent <sup>4</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251814031	Liquid, all other <sup>4</sup> . . . . .	11,687,909	(D)	(D)	11,895,871	(D)	(D)
3251814041	Dry (all forms) <sup>5</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251817	Other alkalies . . . . .	(X)	(X)	387,436	(X)	(X)	386,664
	Potassium hydroxide (caustic potash) (88 to 92 percent KOH):						
3251817011	Liquid . . . . .	495,549	421,796	176,039	532,754	(D)	(D)
3251817021	Solid . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251817031	Finished sodium bicarbonate . . . . .	543,404	545,549	152,167	522,028	<sup>6</sup> 523,352	173,321
3251817051	Potassium carbonate . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
2123913111	Sodium carbonate (soda ash):						
	Natural and synthetic <sup>6</sup> . . . . .	11,133	(NA)	(NA)	11,795	(NA)	(NA)
3251817061	Alkalies, n.e.c., including soda ash, sal soda, and modified sodas; excluding alkaline detergents . . . . .	(X)	(X)	(D)	(X)	(X)	27,886
325181WYWW	Alkalies and chlorine, n.s.k. <sup>1</sup> . . . . .	(X)	(X)	9,403	(X)	(X)	9,994
325131	Inorganic color pigments . . . . .	(X)	(X)	2,526,126	(X)	(X)	2,606,048
3251311000	Titanium dioxide (composite and pure) commodity weight) . . . . .	1,458,657	1,470,315	2,421,216	1,466,256	1,475,026	2,499,188
3251317111	Chrome green (C.P.) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251317121	Chrome yellow and orange (C.P.) . . . . .	(D)	(D)	(D)	(D)	6,433	19,201
3251317131	Molybdate chrome orange (C.P.) . . . . .	(D)	(D)	(D)	880	(D)	(D)
3251317141	Zinc yellow (zinc chromate) (C.P.) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251317151	Other chrome colors (C.P.) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188	Inorganic chemicals, n.e.c. <sup>7</sup> . . . . .	(X)	(X)	14,236,515	(X)	(X)	14,318,753
3251881000	Sulfuric acid, gross (new and fortified) <sup>8</sup> . . . . .	48,512,519	13,042,664	683,958	47,929,222	12,961,745	<sup>5</sup> 576,500
3251814	Inorganic acids (except nitric, phosphoric, and sulfuric) . . . . .	(X)	(X)	636,726	(X)	(X)	629,138
3251884011	Boric (boracic) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
	Hydrochloric acid, including anhydrous (100 percent HCl) <sup>9</sup> . . . . .	4,658,730	1,800,121	159,594	4,569,468	<sup>1</sup> 1,777,191	<sup>1</sup> 145,625
3251884021	From salt and acid <sup>10</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251884025	From chlorine and hydrogen . . . . .	368,783	<sup>a</sup> 253,547	41,525	398,982	282,619	41,166
3251884031	Byproduct and other <sup>10</sup> . . . . .	4,289,947	1,546,574	118,069	4,170,486	<sup>1</sup> 1,494,572	<sup>1</sup> 104,459
3251884041	Hydrocyanic, including anhydrous (100 percent HCN) . . . . .	549,717	164,627	128,658	574,976	153,265	112,403
	Hydrofluoric (100 percent HF):						
	Produced and withdrawn from system:						
3251884045	Anhydrous . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251884051	Technical . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251884055	Mixed (sulfuric and nitric) (commodity weight) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3251884065	Other inorganic acids, n.e.c., including chlorosulfonic and perchloric . . . . .	(X)	(X)	114,592	(X)	(X)	152,396
3313110100	Aluminum oxide (except natural alumina) . . . . .	5,001,000	5,019,537	1,109,308	5,072,140	5,066,302	1,035,502
3251887	Aluminum compounds . . . . .	(X)	(X)	767,598	(X)	(X)	<sup>7</sup> 80,472
	Chloride:						
3251887011	Liquid and crystal (100 percent AlCl <sub>3</sub> ) . . . . .	<sup>a</sup> 31,361	(D)	(D)	33,629	(D)	(D)
3251887021	Anhydrous (100 percent AlCl <sub>3</sub> ) . . . . .	29,677	29,624	32,566	28,111	28,297	29,477
3251887031	Hydroxide, trihydrate (100 percent Al <sub>2</sub> O <sub>3</sub> ·3H <sub>2</sub> O) . . . . .	1,078,691	1,084,314	278,658	1,032,445	1,111,324	<sup>2</sup> 269,921
3251887041	Fluoride technical . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
	Sulfate:						
3251887051	Commercial (17 percent Al <sub>2</sub> O <sub>3</sub> ), including municipalities . . . . .	1,165,811	1,128,967	113,903	1,161,136	1,100,237	111,386
3251887061	Iron-free (17 percent Al <sub>2</sub> O <sub>3</sub> ) . . . . .	134,113	131,321	17,213	122,281	124,104	13,498
3251887071	Aluminates (sodium aluminate, potassium aluminate, etc. (100 percent by weight) . . . . .	(D)	(D)	(D)	321,129	320,330	43,925
3251887081	Other inorganic aluminum compounds (e.g., light aluminum hydroxide, and cryolite) . . . . .	(X)	(X)	203,865	(X)	(X)	(D)

See footnotes at end of table.

Table 2a. **Production and Shipments of Selected Inorganic Chemicals: 1998 and 1997—Con.**

[Quantity in short tons (unless otherwise noted). Value in thousands of dollars]

Product code	Product description	1998			1997		
		Total production (quantity)	Total shipments, including interplant transfers		Total production (quantity)	Total shipments, including interplant transfers	
			Quantity	Value		Quantity	Value
325188	Inorganic chemicals, n.e.c.—Con.						
325188A	Potassium and sodium compounds (except bleaches, alkalis, and alums) . . . . .	(X)	(X)	1,969,862	(X)	(X)	2,056,204
	Potassium compounds, n.e.c.:						
325188A111	Iodide (100 percent KI) . . . . .	969	984	11,641	1,056	1,046	14,868
325188A114	Sulfate (100 percent K <sub>2</sub> SO <sub>4</sub> ) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188A117	Pyrophosphate (tetrapotassium pyrophosphate) (100 percent K <sub>4</sub> P <sub>2</sub> O <sub>7</sub> ) . . . . .	28,575	25,114	29,672	29,148	26,120	28,201
325188A124	Potassium phosphates (100 percent by weight) . . . . .	24,559	24,920	25,221	23,418	22,025	21,409
325188A127	Potassium silicates (100 percent by weight) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188A131	Other potassium salts and compounds, n.e.c., including potassium chlorate, nitrate, and perchlorate . . . . .	(X)	(X)	88,857	(X)	(X)	96,021
325188A134	Sodium (metal) (100 percent Na) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
	Sodium compounds, n.e.c.:						
325188A137	Sodium bromides (100 percent by weight) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188A141	Chlorate (100 percent NaClO <sub>3</sub> ) . . . . .	779,226	776,186	235,289	625,949	614,200	211,788
325188A147	Hydrosulfide (sodium sulfhydrate) (100 percent NaSH) . . . . .	113,494	113,706	32,587	114,736	114,148	32,242
325188A151	Hydrosulfite (100 percent Na <sub>2</sub> S <sub>2</sub> O <sub>4</sub> ) . . . . .	111,024	110,344	121,144	(D)	(D)	(D)
	Phosphate:						
325188A154	Monobasic (100 percent NaH <sub>2</sub> S <sub>2</sub> PO <sub>4</sub> ) <sup>11</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188A157	Dibasic (100 percent Na <sub>2</sub> HPO <sub>4</sub> ) <sup>11</sup> . . . . .	18,169	18,265	<sup>a</sup> 21,399	18,130	17,839	<sup>a</sup> 19,932
325188A161	Tribasic (100 percent Na <sub>3</sub> PO <sub>4</sub> ) . . . . .	21,314	21,804	12,611	(D)	17,689	<sup>a</sup> 10,586
325188A164	Tetrabasic (pyro) (100 percent Na <sub>4</sub> P <sub>2</sub> O <sub>7</sub> ) . . . . .	(D)	11,728	11,304	(D)	(D)	(D)
325188A167	Meta (100 percent NaPO <sub>3</sub> ) . . . . .	46,523	43,208	35,105	41,051	41,196	35,061
325188A171	Acid pyro . . . . .	32,998	33,274	<sup>a</sup> 34,266	34,175	34,003	<sup>a</sup> 33,048
325188A174	Tripoly (100 percent Na <sub>5</sub> P <sub>3</sub> O <sub>10</sub> ) . . . . .	225,957	225,959	155,312	(D)	(D)	(D)
325188A177	Other sodium phosphates . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
	Silicates:						
325188A181	Soluble silicate glass (water glass, solid, and liquid) (anhydrous) <sup>12</sup> . . . . .	<sup>a</sup> 1,208,674	(D)	(D)	1,213,753	(D)	(D)
325188A184	Metasilicate pentahydrate (100 percent Na <sub>2</sub> SiO <sub>3</sub> ) . . . . .	<sup>a</sup> 41,236	<sup>a</sup> 31,809	<sup>a</sup> 11,487	40,371	39,330	11,288
325188A187	Metasilicate anhydrous (100 percent Na <sub>2</sub> SiO <sub>3</sub> ) . . . . .	35,691	<sup>a</sup> 24,021	13,230	42,855	41,244	16,166
325188A197	Silicofluoride (100 percent Na <sub>2</sub> SiF <sub>6</sub> ) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
	Sulfate:						
325188A1A1	High purity (100 percent Na <sub>2</sub> SO <sub>4</sub> ) . . . . .	(D)	<sup>a</sup> 420,666	<sup>a</sup> 35,173	(D)	<sup>f</sup> 520,782	<sup>a</sup> 41,856
325188A1A4	Lower purity (100 percent Na <sub>2</sub> SO <sub>4</sub> ) and Glauber's salt (100 percent Na <sub>2</sub> SO <sub>4</sub> ·10H <sub>2</sub> O) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188A1A7	Sulfite (100 percent Na <sub>2</sub> SO <sub>3</sub> ) . . . . .	125,190	(D)	(D)	123,135	159,999	33,916
325188A1B1	Thiosulfate (hypo) (100 percent Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ·5H <sub>2</sub> O) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188A211	Other sodium compounds, n.e.c., including sodium bisulfate, bifluoride, borate, fluoride, and other silicates; excluding bleaches . . . . .	(X)	(X)	691,721	(X)	(X)	761,330
325188D000	Chemical catalytic preparations . . . . .	(X)	(X)	1,686,721	(X)	(X)	<sup>f</sup> 1,831,929
325188G	Other inorganic chemicals, n.e.c. . . . .	(X)	(X)	7,142,951	(X)	(X)	7,168,166
325188G011	Reagent and high purity grades of inorganic chemicals refined from purchased technical grades . . . . .	(X)	(X)	34,240	(X)	(X)	46,735
325188G014	Antimony compounds, excluding pigment grades . . . . .	(X)	(X)	91,423	(X)	(X)	95,780
	Barium compounds:						
325188G017	Carbonate (precipitated) (100 percent BaCO <sub>3</sub> ) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G021	Sulfate (100 percent BaSO <sub>4</sub> ) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G024	Other barium compounds, including barium chloride, nitrate, peroxide, and sulfide; excluding pigment grades . . . . .	(X)	(X)	21,294	(X)	(X)	<sup>f</sup> 23,853
325188G027	Bismuth compounds, excluding bismuth carbonate <sup>13</sup> . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
325188G031	Bromine (isolated) (100 percent Br) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G034	Cadmium compounds . . . . .	(X)	(X)	(D)	(X)	(X)	<sup>f</sup> 8,502
	Calcium compounds:						
325188G037	Carbide (commercial) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G041	Carbonate (precipitated) (100 percent CaCO <sub>3</sub> ) . . . . .	1,742,374	1,739,264	252,462	1,727,839	1,722,971	248,133
325188G044	Chloride (100 percent CaCl <sub>2</sub> ) . . . . .	1,010,008	827,552	72,691	<sup>f</sup> 1,051,854	<sup>f</sup> 901,274	89,210
	Phosphates:						
325188G047	Monobasic (100 percent CaH <sub>4</sub> (PO <sub>4</sub> ) <sub>2</sub> ) (21 percent P) . . . . .	866,676	880,051	210,347	840,594	825,183	207,111
325188G051	Dibasic (100 percent CaHPO <sub>4</sub> ) (18.5 percent P) . . . . .	581,099	574,407	<sup>a</sup> 198,041	645,884	645,586	<sup>a</sup> 199,637
	Tribasic (100 percent Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> ) (18 percent P):						
325188G054	Animal feed grades . . . . .	502,166	514,578	121,390	522,088	515,109	122,457
325188G054	Other grades . . . . .	31,673	(S)	(S)	(D)	(S)	(S)
325188G057	Other inorganic calcium compounds . . . . .	(X)	(X)	39,451	(X)	(X)	66,546
	Carbon activated:						
325998H1E4	Granular carbons (dry weight) . . . . .	97,630	84,286	207,740	99,504	97,798	211,812
325998H1E7	Pulverized carbons (dry weight) . . . . .	67,835	59,991	63,749	73,658	67,139	68,422

See footnotes at end of table.

Table 2a. **Production and Shipments of Selected Inorganic Chemicals: 1998 and 1997—Con.**

[Quantity in short tons (unless otherwise noted). Value in thousands of dollars]

Product code	Product description	1998			1997		
		Total production (quantity)	Total shipments, including interplant transfers		Total production (quantity)	Total shipments, including interplant transfers	
			Quantity	Value		Quantity	Value
325188	Inorganic chemicals, n.e.c.—Con.						
325188G	Other inorganic chemicals, n.e.c.—Con.						
	Chromium compounds:						
325188G061	Sodium bichromate and chromate (hydrous) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G064	Other chromium compounds, including potassium bichromate and excluding chrome colors . . . . .	(X)	(X)	78,263	(X)	(X)	95,758
	Copper compounds:						
325188G067	Cuprous oxide (100 percent Cu <sub>2</sub> O) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G074	Other copper compounds, including copper cyanide and copper sulfate . . . . .	(X)	(X)	80,848	(X)	(X)	78,167
325188G077	Gold compounds . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
325188G081	Hydrogen peroxide (100 percent by weight) <sup>14</sup> . . . . .	356,804	348,937	262,170	337,206	327,982	246,573
325188G084	Iodine, crude or resublimed (100 percent I) (quantity in pounds) . . . . .	3,339,575	3,170,756	24,691	3,037,009	3,021,246	20,869
	Iron compounds:						
325188G087	Ferric chloride (100 percent FeCl <sub>3</sub> ) . . . . .	195,520	203,360	31,544	211,770	210,538	39,481
325188G091	Iron oxides and hydroxides (100 percent by weight), excluding iron oxide pigments . . . . .	45,746	(D)	(D)	46,138	(D)	(D)
325188G094	Other iron compounds, including ferrous sulfate . . . . .	(X)	(X)	41,788	(X)	(X)	60,132
325188G097	Lithium compounds . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
	Magnesium compounds:						
325188G0A1	Chloride (100 percent MgCl <sub>2</sub> ) . . . . .	636,134	312,147	11,649	786,761	354,018	11,911
325188G0A4	Sulfate (100 percent MgSO <sub>4</sub> ) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0A7	Other magnesium compounds, including magnesium and epsom salts . . . . .	(X)	(X)	80,563	(X)	(X)	80,406
	Manganese compounds:						
325188G0B1	Dioxide (100 percent MnO <sub>2</sub> ) . . . . .	63,741	69,992	109,398	72,131	69,386	105,998
325188G0B4	Other manganese compounds, including potassium, and other permanganates, battery grade, and manganese sulfate . . . . .	(X)	(X)	55,722	(X)	(X)	65,374
	Mercury and compounds:						
325188G0B7	Mercury, redistilled (quantity in pounds) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0C1	Other mercury compounds, including mercuric oxide; excluding mercuric fulminate and medicinal grades. . . . .	(X)	(X)	(D)	(X)	(X)	(D)
	Molybdenum compounds:						
325188G0C4	Oxides (100 percent by weight) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0C7	Molybdates (ammonium molybdate, sodium molybdates, etc.) (100 percent by weight) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0D1	Other molybdenum compounds . . . . .	(X)	(X)	28,539	(X)	(X)	29,786
	Nickel compounds:						
325188G0D4	Oxides and hydroxides (100 percent by weight) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0D7	Chloride (100 percent NiCl <sub>2</sub> ) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0E1	Sulfate (100 percent NiSO <sub>4</sub> ) . . . . .	<sup>a</sup> 2,162	(D)	(D)	(D)	(D)	(D)
325188G0E4	Other nickel compounds . . . . .	(X)	(X)	<sup>a</sup> 56,219	(X)	(X)	55,298
	Phosphorus and compounds:						
325188G0E7	Phosphorus, elemental (technical) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0F1	Oxychloride (100 percent POCl <sub>3</sub> ) . . . . .	33,160	(D)	(D)	37,756	(D)	(D)
325188G0F4	Pentasulfide (100 percent P <sub>2</sub> S <sub>5</sub> ) . . . . .	(D)	49,178	45,877	58,538	48,747	46,394
325188G0F7	Trichloride (chloride) (100 percent PCl <sub>3</sub> ) . . . . .	(D)	<sup>a</sup> 73,393	<sup>a</sup> 37,535	259,886	59,169	38,009
325188G0G1	Other phosphorus compounds, including phosphorus pentoxide . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
325188G0G4	Rare earth compounds . . . . .	(X)	(X)	77,224	(X)	(X)	84,468
	Silicon compounds:						
325188G0G7	Silicon tetrachloride (100 percent SiCl <sub>4</sub> ) . . . . .	44,355	(D)	(D)	48,580	(D)	(D)
325188G0H1	Silica gel . . . . .	(X)	(X)	47,054	(X)	(X)	46,865
325188G0H4	Other silicon compounds . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
325188G0H7	Silver compounds . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
	Strontium compounds:						
325188G0J1	Carbonate (100 percent SO <sub>2</sub> ) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0J4	Other strontium compounds . . . . .	(X)	(X)	(D)	(X)	(X)	5,940
	Sulfur and sulfur compounds:						
325188G0J7	Sulfur, recovered elemental (thousand metric tons) <sup>15</sup> . . . . .	9,600	10,100	306	10,100	10,500	365
325188G0K1	Sulfur dioxide (produced for sale) (100 percent SO <sub>2</sub> ) . . . . .	204,315	185,953	29,622	206,426	191,704	34,700
325188G0K4	Other sulfur compounds, including sulfur chloride . . . . .	(X)	(X)	96,582	(X)	(X)	121,125
325188G0L1	Tin compounds . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
	Tungsten compounds:						
325188G0L4	Tungstates (ammonium tungstate, sodium tungstate, etc.) (100 percent by weight) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0L7	All other tungsten compounds . . . . .	(X)	(X)	(D)	(X)	(X)	(D)

See footnotes at end of table.

Table 2a. **Production and Shipments of Selected Inorganic Chemicals: 1998 and 1997—Con.**

[Quantity in short tons (unless otherwise noted). Value in thousands of dollars]

Product code	Product description	1998			1997		
		Total production (quantity)	Total shipments, including interplant transfers		Total production (quantity)	Total shipments, including interplant transfers	
			Quantity	Value		Quantity	Value
325188	Inorganic chemicals, n.e.c.—Con.						
325188G	Other inorganic chemicals, n.e.c.—Con.						
	Zinc compounds:						
325188G0M1	Sulfate (100 percent ZnSO <sub>4</sub> ·H <sub>2</sub> O) . . . . .	<sup>a</sup> 59,954	<sup>a</sup> 51,873	<sup>a</sup> 27,541	47,799	42,273	23,602
325188G0M4	Oxide and peroxide (100 percent by weight) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0M7	Chloride (100 percent ZnCl <sub>2</sub> ) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0N1	Other zinc compounds, excluding pigment grades . . . . .	(X)	(X)	26,263	(X)	(X)	26,773
325188G0N4	Platinum, radium, tantalum, and thallium . . . . .	(X)	(X)	(D)	(X)	(X)	(D)
325188G0P4	All other inorganic chemicals, including nuclear fuels titanium tetrachloride, and other titanium compounds . . . . .	(X)	(X)	<sup>a</sup> 2,452,138	(X)	(X)	2,188,546
325188WYWW	Industrial inorganic chemicals, n.s.k. <sup>1</sup> . . . . .	(X)	(X)	239,391	(X)	(X)	240,842
	Chlorine and other inorganic bleaching compounds . . . . .	729,274	680,058	1,293,703	676,892	678,182	<sup>1</sup> 1,284,350
3256121	Household . . . . .	(S)	(S)	(S)	<sup>1</sup> 256,665	<sup>1</sup> 255,499	<sup>1</sup> 967,842
3256121150	Liquid (sodium hypochlorite, etc.) (less than 7 percent available chlorine or equivalent oxidizing value) (100 percent Cl equivalent) . . . . .	(S)	(S)	(S)	<sup>1</sup> 185,307	<sup>1</sup> 180,865	<sup>1</sup> 770,846
3256121170	Dry (calcium hypochlorite, etc.) (less than 50 percent available chlorine or equivalent oxidizing value) (100 percent Cl equivalent) . . . . .	66,960	69,794	186,266	<sup>1</sup> 71,358	<sup>1</sup> 74,634	<sup>1</sup> 196,996
325188G	Industrial . . . . .	428,321	423,620	279,182	420,227	422,683	<sup>1</sup> 316,508
325188G0N7	Liquid (sodium hypochlorite, etc.) (7 percent or more available chlorine or equivalent oxidizing value) (100 percent Cl equivalent) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0P1	Dry (calcium hypochlorite, etc.) (50 percent or more available chlorine or equivalent oxidizing value) (100 percent Cl equivalent) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. n.s.k. Not specified by kind. <sup>1</sup>Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

<sup>1</sup>Totals include values for industrial inorganic chemicals not specified by kind (n.s.k). N.s.k. represents value of shipments for establishments that did not provide detailed information by type of product. These establishments, typically with less than 10 employees, are not included on Current Industrial Report (CIR) MA325A mailing panel. N.s.k. value has been estimated based on rate of change for reporting establishments applied to previous year's data.

<sup>2</sup>Includes quantities liquefied for use, storage, or shipments.

<sup>3</sup>Includes quantities later evaporated to dry caustic soda and reported as such.

<sup>4</sup>Includes some liquid shipped as interplant transfers to other establishments for further processing to dry forms. Product code 3251814021, "Sodium hydroxide liquid, 68 to 74 percent," is combined with product code 3251814031, "Sodium hydroxide liquid, all other," to avoid disclosing data for individual companies.

<sup>5</sup>Includes unspecified amounts produced from liquid caustic received from other establishments.

<sup>6</sup>Source: U.S. Geological Survey. Quantity in thousand short tons.

<sup>7</sup>Includes value of inorganic chemicals shipped by establishments classified in both "manufacturing" and "nonmanufacturing" industries.

<sup>8</sup>Detail data for sulfuric acid are contained in Table 2b.

<sup>9</sup>Includes anhydrous hydrochloric acid production. Quantity of shipments is 199,977 short tons in 1998 and 181,292 short tons in 1997; value of shipments of \$32,828 in 1998 and \$43,519 in 1997. Quantity of production is withheld to avoid disclosing data for individual companies.

<sup>10</sup>Product code 3251884021, "Hydrochloric acid produced from salt and acid" is combined with product code 3251884031, "Hydrochloric acid byproduct and other" to avoid disclosing data for individual companies.

<sup>11</sup>Represents quantities produced only for sale or interplant transfer.

<sup>12</sup>Quantity produced excludes quantities consumed in manufacture of meta-, ortho-, and sequisilicates. Shipments data include unspecified amounts shipped to other plants for use in manufacturing meta-, ortho-, and sequisilicates.

<sup>13</sup>Product code 325188G031, "Bismuth compounds," excludes bismuth carbonate, which is classified as a medicinal chemical and is out of scope of this survey.

<sup>14</sup>Production includes unspecified amounts of hydrogen peroxide produced but not withdrawn from system.

<sup>15</sup>Source: U.S. Geological Survey. Quantity in thousand metric tons; value in million dollars. Includes data for Puerto Rico and the Virgin Islands. Quantities and values include "Frasch sulfur" to conform with proprietary data requirements.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>20 percent or more is estimated.

**Table 2b. Production and Shipments of Fertilizer Materials: 1998 and 1997**

[Quantity in thousands of short tons. Value in millions of dollars]

Product code	Chemical and basis	1998			1997		
		Total production (quantity)	Total shipments, including interplant transfers		Total production (quantity)	Total shipments, including interplant transfers	
			Quantity	Value		Quantity	Value
3251881000	Sulfuric acid, gross (new and fortified) . . . . .	48,512.5	13,042.7	683.0	47,929.2	12,961.7	'576.5
	By feedstock:						
3251881111	Elemental sulfur . . . . .	39,519.0	7,832.4	440.9	38,957.7	7,637.4	'389.9
3251881121	Smelting metallic sulfide ore . . . . .	3,744.6	3,268.8	87.4	3,847.1	3,378.9	'57.6
3251881131	Decomposition of alkylation and other spent acid . . . . .	4,852.4	1,660.4	134.8	4,774.5	1,700.9	114.5
3251881141	Other . . . . .	396.5	281.1	19.8	350.0	244.6	14.5
	By grade:						
3251881211	Oleum under 40 percent . . . . .	(D)	(D)	(D)	'1,424.6	'857.3	'46.7
3251881221	Oleum 40 percent and more . . . . .	(D)	(D)	(D)	'338.5	'224.8	'15.8
3251881231	Other than oleum <sup>1</sup> . . . . .	46,684.5	11,925.3	615.3	46,166.1	11,879.7	'513.9
3253111000	Synthetic ammonia, nitric acid, and ammonium compounds . . . . .	(X)	(X)	2,951.4	(X)	(X)	3,478.3
3253111111	Nitric acid (100 percent HNO <sub>3</sub> ) <sup>2</sup> . . . . .	9,285.1	1,506.1	159.9	9,432.7	1,804.5	216.2
3253111120	Ammonia, synthetic anhydrous (100 percent NH <sub>3</sub> ) <sup>3</sup> . . . . .	18,474.9	8,803.1	1,214.2	17,890.7	8,588.6	1,577.9
3253111121	Fertilizer use . . . . .	15,860.6	7,238.8	1,014.7	15,348.7	6,816.7	1,285.0
3253111131	Other uses . . . . .	2,614.3	1,564.4	199.5	2,542.1	1,771.9	293.0
	Ammonium nitrate:						
3253111201	Original melt liquor (100 percent NH <sub>4</sub> NO <sub>3</sub> ) <sup>4</sup> . . . . .	9,078.6	4,519.4	597.3	8,604.4	4,365.9	614.3
	Consumed in the manufacture of:						
3253111211	Other nitrogen solutions (100 percent NH <sub>4</sub> NO <sub>3</sub> ) . . . . .	253.2	(X)	(X)	245.3	(X)	(X)
3253111216	Ammonium nitrate-urea solutions . . . . .	4,039.7	(X)	(X)	3,799.9	(X)	(X)
3253111221	High density prill and granular . . . . .	2,605.3	2,490.9	291.9	2,528.2	2,444.9	r/ 318.5
3253111226	Low density prill and grained . . . . .	1,657.1	1,630.4	246.8	1,653.3	1,619.1	250.4
3253111231	All other (liquor sales, etc.) . . . . .	523.4	398.0	58.5	377.7	'301.9	45.4
3253111240	Ammonium sulfate, synthetic and byproduct other than coke oven byproduct (100 percent (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> ) <sup>3</sup> . . . . .	2,787.4	2,861.5	181.3	2,710.7	2,544.0	180.6
3253111241	Synthetic . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3253111246	Byproduct, other than coke oven . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3253111250	Nitrogen solutions (100 percent N), including mixtures containing urea . . . . .	3,888.1	3,575.0	756.2	3,627.0	3,214.6	815.6
3253111251	Ammonium nitrate/urea solutions . . . . .	3,803.8	3,491.0	739.6	3,495.6	3,083.9	787.9
3253111256	All other compounds and solutions (e.g. CAN17, AN20, AAN and others) and solutions containing free ammonia, including data for solutions containing two or more products such as (a) ammonia, ammonium-nitrate; (b) ammonia, urea; (c) ammonia, ammonium-nitrate, urea . . . . .	84.3	84.0	16.6	131.4	130.6	27.7
3253111261	Other ammonium compounds, including ammonium chloride, gray and white . . . . .	(X)	(X)	42.6	(X)	(X)	73.7
3253114000	Urea original melt liquor (100 percent) . . . . .	8,865.0	5,585.8	667.1	8,189.9	5,342.0	772.3
	Consumed in the manufacture of:						
3253114011	Urea-ammonium nitrate solutions . . . . .	3,032.4	(X)	(X)	2,776.5	(X)	(X)
3253114021	Prills . . . . .	2,010.2	1,900.2	237.2	2,455.1	2,412.5	348.7
3253114031	Granular . . . . .	3,544.1	3,435.7	402.2	2,696.3	2,665.1	390.0
3253114041	All other (liquor sales, melamine, feedstock, other) . . . . .	278.3	249.9	27.7	262.0	264.4	33.6
3253121000	Phosphoric acid (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	13,891.2	4,649.4	1,514.7	13,158.7	4,587.5	1,405.1
3253121111	Thermal . . . . .	310.8	179.0	115.8	299.1	169.2	117.9
3253121121	Wet . . . . .	13,580.4	4,470.3	1,398.8	12,859.6	4,418.3	1,287.2
	By use:						
3253121211	Fertilizer . . . . .	12,692.6	(D)	(D)	11,979.7	(D)	(D)
3253121221	Feed and other . . . . .	887.7	(D)	(D)	880.0	(D)	(D)
	By grade:						
3253121311	Ortho (less than 65 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	12,028.0	3,271.9	1,010.1	11,411.1	3,251.2	897.1
3253121321	Super (65 percent or more P <sub>2</sub> O <sub>5</sub> ) . . . . .	1,552.3	1,198.4	388.8	1,448.5	1,167.1	390.1
3253124000	Superphosphates and other phosphatic fertilizer materials:						
	Gross weight <sup>5</sup> . . . . .	19,678.0	19,659.9	(X)	21,190.7	20,490.4	(X)
325312411, 121	Phosphoric oxide content (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	10,258.5	10,292.9	3,046.5	10,473.2	10,379.9	3,691.8
	Normal, enriched, and concentrated superphosphates:						
	Gross weight . . . . .	1,469.6	1,341.3	(X)	1,619.6	1,428.5	(X)
3253124131	Phosphoric oxide content (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	656.5	633.2	203.8	728.0	675.9	'218.5
	Monoammonium phosphates:						
	Gross weight . . . . .	3,769.4	3,758.3	(X)	3,499.5	3,496.1	(X)
3253124211	Phosphoric oxide content (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	2,017.5	2,007.9	596.7	1,852.5	1,863.1	667.3
	Diammonium phosphates:						
	Gross weight . . . . .	13,790.6	13,944.8	(X)	15,539.1	15,005.3	(X)
3253124221, 231	Phosphoric oxide content (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	7,224.1	7,299.0	2,131.1	7,631.7	7,564.3	2,704.6
	Other ammonium phosphates and other phosphatic fertilizer materials:						
	Gross weight . . . . .	648.4	615.6	(X)	532.6	560.4	(X)
	Phosphoric oxide content (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	360.4	352.7	115.0	261.1	276.6	101.4

D Withheld to avoid disclosing data for individual companies. 'Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Data for "Other than oleum" includes chamber process acid.

<sup>2</sup>Includes unspecified amounts of nitric acid produced but not withdrawn from system.

<sup>3</sup>Excludes data for byproduct ammonia liquor and ammonium sulfate published by the Department of Energy.

<sup>4</sup>Represents total amount of original solution produced, including amounts used for fertilizer, explosives, and other uses and amounts consumed in manufacturing other products such as "Nitrogen solutions" (product code 3253111250).

<sup>5</sup>Value for gross weight and (100 percent P<sub>2</sub>O<sub>5</sub>) are the same value for each 3253144000 product code.



**Table 3. Quantities of Selected Inorganic Acids and Fertilizer Materials Produced and Consumed in Same Plant: 1998 and 1997**

[Thousands of short tons]

Product code	Product description	Basis	Consumed in producing plants	
			1998	1997
3251884021	Hydrochloric acid, including anhydrous	100 percent HCl	2,765.5	2,949.0
3251884025	From salt and acid <sup>1</sup>	do	(D)	(D)
3251884031	From chlorine and hydrogen	do	<sup>a</sup> 97.5	87.9
3251884031	Byproduct and other <sup>1</sup>	do	2,668.0	2,861.2
3251884041	Hydrocyanic acid, including anhydrous	100 percent HCN	379.0	426.7
3251884045, 4051	Hydrofluoric acid: Anhydrous and technical	100 percent HF	(D)	(D)
3251884055	Mixed acids (sulfuric and nitric)	Commodity weight	(D)	(D)
3251881000	Sulfuric acid, gross (new and fortified)	100 percent H <sub>2</sub> SO <sub>4</sub>	34,998.9	34,165.4
3253111111	Nitric acid	100 percent HNO <sub>3</sub>	8,353.8	8,399.0
3253111120	Ammonia (synthetic) anhydrous <sup>2</sup>	100 percent NH <sub>3</sub>	9,646.8	8,049.2
3253111211	Ammonium nitrate: Other nitrogen solutions <sup>3</sup>	100 percent NH <sub>4</sub> NO <sub>3</sub>	247.2	245.3
3253111216	Urea-ammonium nitrate solutions	do	4,039.6	3,805.7
3253111221	High density prill and grained	do	(D)	(D)
3253111226	Low density prill and granular	do	(D)	(D)
3253111231	All other (liquor sales, etc.)	do	22.4	<sup>r</sup> 13.7
3253111240	Ammonium sulfate <sup>2</sup>	100 percent (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	68.4	70.3
3253114011	Urea: Urea-ammonium nitrate solutions <sup>3</sup>	100 percent urea	3,032.4	2,776.5
3253114021	Prills	do	(D)	(D)
3253114031	Granular	do	(D)	(D)
3253114041	All other (liquor sales, melamine, feedstock, other)	do	(D)	(D)
3253121000	Phosphoric acid	100 percent P <sub>2</sub> O <sub>5</sub>	9,126.5	8,708.5
3253121111	Thermal	do	(D)	(D)
3253121121	Wet	do	(D)	(D)
3253144000	Superphosphates and other fertilizer materials	do	38.2	47.2

D Withheld to avoid disclosing data for individual companies. <sup>r</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Product code 3251884021, "Hydrochloric acid from salt and acid," is combined with product code 3251884031, "Hydrochloric acid byproduct and other" to avoid disclosing data for individual companies.

<sup>2</sup>Excludes data for byproduct ammonia liquor and ammonium sulfate published by the Department of Energy.

<sup>3</sup>Excludes amount converted to solid nitrate.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>20 percent or more of this item is estimated.

**Table 4. Summary of Selected Fertilizer Materials/Interplant Transfers: 1998 and 1997**

[Quantity in thousands of short tons. Value in millions of dollars]

Product code	Product description	Basis	1998		1997	
			Quantity	Value	Quantity	Value
3251881000	Sulfuric acid, gross (new and fortified)	100 percent H <sub>2</sub> SO <sub>4</sub>	2,356.9	47.6	2,121.2	<sup>r</sup> 51.0
3251881211	Oleum under 40 percent	do	(D)	(D)	(D)	(D)
3251881221	Oleum 40 percent or more	do	(D)	(D)	(D)	(D)
3251881231	Other than oleum <sup>1</sup>	do	(D)	(D)	(D)	(D)
3253111120	Ammonia, synthetic anhydrous <sup>2</sup>	100 percent NH <sub>3</sub>	641.5	79.7	903.8	137.9
3253111121	Fertilizer use	do	(D)	(D)	(D)	(D)
3253111131	Other uses	do	(D)	(D)	(D)	(D)
3253111240	Ammonium sulfate <sup>2</sup>	100 percent (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	(D)	(D)	(D)	(D)
3253111111	Nitric acid	100 percent HNO <sub>3</sub>	(D)	(D)	(D)	(D)
3253114000	Urea	100 percent urea	(D)	(D)	(D)	(D)
3253121000	Phosphoric acid	100 percent P <sub>2</sub> O <sub>5</sub>	1,944.6	595.6	1,998.7	485.9
3253144000	Superphosphates and other phosphatic fertilizer materials	do	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies. <sup>r</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Data for "Other than oleum" include chamber process acid.

<sup>2</sup>Excludes data for byproduct ammonia liquor and ammonium sulfate published by the Department of Energy.

**Table 5. Sodium Sulfate, Production and Number of Establishments by Process: 1998 and 1997**

[Net tons of 100 percent Na<sub>2</sub>SO<sub>4</sub>]

Process	Number of establishments <sup>1</sup>		Production	
	1998	1997	1998	1997
<b>Total</b> .....	<b>16</b>	<b>15</b>	<b>629,267</b>	<b><sup>r</sup>705,969</b>
Natural.....	2	2	(D)	(D)
Viscose rayon .....	2	2	(D)	(D)
Sodium dichromate.....	1	1	(D)	(D)
Phenol, boric acid, formic acid, and other .....	11	10	154,294	<sup>r</sup> 185,930

D Withheld to avoid disclosing data for individual companies. <sup>r</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Processes used to manufacture sodium sulfate are specified in the SRI, Directory of Chemical Producers, 1998.

Note: Net tons includes Glauber's salt converted to 100 percent Na<sub>2</sub>SO<sub>4</sub>.

**Table 6. Production of Specified Inorganic Chemicals by States: 1998 and 1997**

[Short tons]

Geographic area	Hydrochloric acid (100 percent HCl) (3251884021, 4025 and 4031)		Aluminum sulfate commercial (17 percent Al <sub>2</sub> O <sub>3</sub> ) (3251887051)		Chlorine gas (3251811011)		Sodium hydroxide (all processes) (3251814011)	
	1998	1997	1998	1997	1998	1997	1998	1997
<b>United States</b> .....	<b>4,658,730</b>	<b>4,569,468</b>	<b>1,165,811</b>	<b>1,161,136</b>	<b>12,841,273</b>	<b>12,922,235</b>	<b>11,730,830</b>	<b>11,972,801</b>
Alabama .....	(D)	(D)	(D)	(D)	(D)	670,703	(D)	(D)
Arkansas.....	(D)	(D)	(D)	(D)	-	-	-	-
California.....	(D)	(D)	72,007	80,547	-	-	(D)	(D)
Colorado .....	-	-	(D)	(D)	-	-	-	-
Delaware.....	(D)	(D)	-	-	(D)	(D)	(D)	(D)
Florida .....	-	-	(D)	(D)	-	-	-	-
Georgia .....	(D)	(D)	(D)	100,139	(D)	(D)	(D)	(D)
Illinois .....	(D)	(D)	(D)	(D)	-	-	-	-
Indiana .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Kansas .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Kentucky .....	337,609	(D)	-	-	(D)	(D)	(D)	(D)
Louisiana .....	1,372,953	1,353,400	(D)	(D)	4,899,717	5,051,976	4,947,746	5,108,591
Maine.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Maryland.....	(D)	(D)	(D)	(D)	-	-	(D)	(D)
Massachusetts.....	-	-	(D)	(D)	-	-	-	-
Michigan .....	(D)	(D)	(D)	(D)	-	-	-	-
Minnesota.....	-	-	(D)	(D)	-	-	-	-
Mississippi .....	-	-	(D)	(D)	(D)	(D)	-	-
Missouri.....	(D)	(D)	-	-	-	-	-	-
Montana .....	-	-	(D)	(D)	-	-	-	-
Nevada .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
New Jersey .....	(D)	(D)	(D)	(D)	-	-	-	-
New Mexico .....	(D)	(D)	-	-	-	-	-	-
New York .....	(D)	(D)	-	-	(D)	(D)	(D)	(D)
North Carolina.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Ohio.....	(D)	(D)	(D)	(D)	(D)	(D)	-	-
Oklahoma .....	-	-	-	-	(D)	(D)	(D)	(D)
Oregon .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Pennsylvania .....	(D)	(D)	(D)	(D)	-	-	(D)	(D)
South Carolina.....	-	-	(D)	(D)	-	-	-	-
Tennessee .....	(D)	(D)	62,573	62,058	(D)	(D)	(D)	(D)
Texas.....	(D)	1,744,447	<sup>a</sup> 44,028	<sup>a</sup> 36,267	(D)	(D)	(D)	(D)
Utah.....	-	-	(D)	(D)	(D)	(D)	-	-
Virginia .....	-	-	(D)	(D)	-	-	-	-
Washington.....	(D)	40,089	(D)	(D)	(S)	431,439	(S)	482,419
West Virginia.....	(D)	(D)	-	-	(D)	(D)	(D)	(D)
Wisconsin.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Wyoming.....	-	-	-	-	-	-	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. S Does not meet publication standards.

Note: The percent of estimation of each item is indicated as follows: <sup>a</sup>20 percent or more estimated.

**Table 7. Total Shipments (Including Interplant Transfers) of Sulfuric Acid by States: 1998 and 1997**

[Quantity in thousands of short tons of 100 percent H<sub>2</sub>SO<sub>4</sub>. Value in millions of dollars]

State	1998		1997	
	Quantity	Value	Quantity	Value
<b>United States</b> .....	<b>13,042.7</b>	<b>683.0</b>	<b>12,961.7</b>	<b>576.5</b>
Arizona .....	(D)	(D)	(D)	(D)
California .....	779.2	(D)	848.5	(D)
Florida .....	947.5	30.5	950.0	30.0
Georgia .....	447.7	20.4	<sup>1</sup> 419.9	<sup>1</sup> 18.7
Illinois .....	(D)	(D)	(D)	(D)
Louisiana .....	1,979.0	130.5	1,936.9	92.4
New Jersey .....	(D)	(D)	(D)	(D)
Ohio .....	(D)	(D)	(D)	(D)
Texas .....	2,012.7	141.8	1,884.2	115.6
Virginia .....	(D)	(D)	(D)	(D)
Washington .....	(D)	(D)	(D)	(D)
Other states .....	4,043.0	218.8	4,009.8	<sup>1</sup> 178.5

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 8. Production of New Sulfuric Acid by States: 1998 and 1997**

[Thousands of short tons of 100 percent H<sub>2</sub>SO<sub>4</sub>]

State	1998 <sup>1</sup>	1997 <sup>1</sup>
<b>United States</b> .....	<b>43,660.1</b>	<b>43,154.8</b>
Arizona .....	2,201.4	2,361.5
California .....	1,120.9	1,206.8
Florida .....	21,282.7	20,989.5
Georgia .....	632.2	595.3
Illinois .....	(D)	(D)
Louisiana .....	6,322.1	6,103.5
Missouri .....	(D)	(D)
New Jersey .....	(D)	(D)
New Mexico .....	(D)	(D)
Ohio .....	(D)	(D)
Oklahoma and Texas .....	4,469.2	4,140.9
Virginia .....	(D)	(D)
Washington .....	(D)	(D)
Other states .....	4,763.9	4,796.1

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Includes data for government-owned, privately operated plants.

Table 9a. **Primary Production and Stocks of Specified Inorganic Chemicals by Quarter: 1998 and 1997**

[Short tons]

Product code	Product description	Year	Total	First quarter	Second quarter	Third quarter	Fourth quarter	Stocks on hand December 31
	Hydrochloric acid (100 percent HCl):							
	Total .....	1998 ...	4,658,730	1,151,566	1,114,344	1,213,825	1,178,995	(NA)
		1997 ...	4,569,468	1,118,725	1,104,923	1,175,421	1,170,399	(NA)
3251884021	From salt and acid <sup>1</sup> .....	1998 ...	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 ...	(D)	(D)	(D)	(D)	(D)	(NA)
3251884025	From chlorine and hydrogen .....	1998 ...	368,783	89,042	87,193	100,193	92,355	(NA)
		1997 ...	398,982	100,436	92,284	96,775	109,487	(NA)
3251884031	Byproduct and other .....	1998 ...	4,289,947	1,062,524	1,027,151	1,113,632	1,086,640	(NA)
		1997 ...	4,170,486	1,018,289	1,012,639	1,078,646	1,060,912	(NA)
	Hydrofluoric acid (100 percent HF):							
	Produced and withdrawn from system:							
3251884045, 4051	Anhydrous and technical .....	1998 ...	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 ...	(D)	(D)	(D)	(D)	(D)	(NA)
3251884011	Boric (boracic) (100 percent H <sub>3</sub> BO <sub>3</sub> ) .....	1998 ...	(D)	(D)	(D)	(D)	(D)	(D)
		1997 ...	(D)	(D)	(D)	(D)	(D)	(D)
	Chlorine (100 percent Cl):							
3251811011	Total gas <sup>2</sup> .....	1998 ...	12,841,273	3,250,098	3,191,628	3,197,233	3,202,314	(NA)
		1997 ...	12,922,235	3,191,514	3,152,362	3,298,188	3,280,171	(NA)
3251811021	Total liquid .....	1998 ...	10,541,548	2,684,326	2,657,294	2,595,693	2,604,235	(NA)
		1997 ...	10,427,150	2,561,900	2,454,264	2,708,285	2,702,701	(NA)
3251817011	Potassium hydroxide liquid <sup>3</sup> .....	1998 ...	495,549	133,496	121,468	116,008	124,577	(NA)
		1997 ...	532,754	128,182	135,597	134,440	134,535	(NA)
3251817031	Sodium bicarbonate, finished (100 percent NaHCO <sub>3</sub> ) .....	1998 ...	543,404	124,989	136,415	136,771	145,229	(NA)
		1997 ...	522,028	124,951	130,934	129,453	136,690	(NA)
	Sodium hydroxide (caustic soda) (100 percent NaOH) (all processes):							
3251814011	Liquid <sup>4</sup> .....	1998 ...	11,730,830	2,986,326	2,871,976	2,912,531	2,959,997	489,543
		1997 ...	11,972,801	2,956,366	2,983,407	3,014,135	3,018,893	187,416
3251814041	Dry (all forms) .....	1998 ...	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 ...	(D)	(D)	(D)	(D)	(D)	(NA)
2123913111	Sodium carbonate, natural and synthetic <sup>5</sup> .....	1998 ...	11,133	2,783	2,804	2,770	2,776	301
		1997 ...	11,795	2,794	3,011	2,932	3,058	285
3313110100	Aluminum oxide (alumina) (100 percent Al <sub>2</sub> O <sub>3</sub> ) .....	1998 ...	5,001,000	1,212,782	1,283,188	1,212,604	1,292,426	<sup>a</sup> 132,857
		1997 ...	5,072,140	1,162,780	1,265,285	1,323,753	1,320,322	<sup>a</sup> 116,678
3251887021	Aluminum chloride (anhydrous) (100 percent AlCl <sub>3</sub> ) .....	1998 ...	29,677	7,683	7,596	7,006	7,392	(NA)
		1997 ...	28,111	6,498	7,690	7,147	6,776	(NA)
3251887051	Aluminum sulfate (commercial) (17 percent Al <sub>2</sub> O <sub>3</sub> ) <sup>6</sup> .....	1998 ...	1,165,811	275,616	289,014	321,655	279,526	(NA)
		1997 ...	1,161,136	272,156	291,333	315,905	281,742	(NA)
325188G037	Calcium carbide (commercial) .....	1998 ...	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 ...	(D)	(D)	(D)	(D)	(D)	(NA)
	Calcium phosphate:							
325188G047	Monobasic (21 percent minimum P) (100 percent CaH <sub>4</sub> ) .....	1998 ...	866,676	221,530	200,651	217,750	226,745	33,548
		1997 ...	840,594	227,918	205,743	200,504	206,429	(D)
325188G051	Dibasic (except fertilizer grades) (18.5 minimum P) (100 percent CaHPO <sub>4</sub> ) .....	1998 ...	581,099	141,880	157,921	133,468	147,830	33,144
		1997 ...	645,884	157,522	178,332	160,501	149,529	33,014
3253124241	Tribasic (100 percent Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> ): Animal feed grades (defluorinated phosphate rock) (18.0 percent minimum P) .....	1998 ...	502,166	125,812	119,529	130,839	125,986	26,276
		1997 ...	522,088	135,392	135,180	118,607	132,909	33,910
325188G054	Other grades .....	1998 ...	31,673	7,814	8,158	8,781	6,920	(D)
		1997 ...	(D)	7,104	7,751	8,486	(D)	1,336

See footnotes at end of table.

Table 9a. **Primary Production and Stocks of Specified Inorganic Chemicals by Quarter: 1998 and 1997—Con.**

[Short tons]

Product code	Product description	Year	Total	First quarter	Second quarter	Third quarter	Fourth quarter	Stocks on hand December 31
325998H1E4	Carbon activated, excluding reactivated carbon (dry weight) . . . . .	1998 . . .	165,465	43,584	45,658	39,290	36,933	31,767
		1997 . . .	173,162	41,784	43,195	43,995	44,188	(D)
325998H1E7	Granular carbons . . . . .	1998 . . .	97,630	26,210	27,550	21,772	22,098	20,659
		1997 . . .	99,504	22,988	25,261	24,787	26,468	(D)
3251217121	Pulverized carbons . . . . .	1998 . . .	67,835	17,374	18,108	17,518	14,835	<sup>a</sup> 11,108
		1997 . . .	73,658	18,796	17,934	19,208	17,720	<sup>a</sup> 8,912
3251317131	Chrome colors (C.P.): Chrome yellow and orange . . . . .	1998 . . .	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 . . .	(D)	1,774	(D)	(D)	580	(NA)
325188G081	Molybdate chrome orange . . . . .	1998 . . .	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 . . .	880	258	(D)	(D)	233	(NA)
325188G0E7	Hydrogen peroxide (100 percent by weight) . . . . .	1998 . . .	356,804	82,407	86,902	89,345	98,150	(NA)
		1997 . . .	<sup>b</sup> 337,20	75,321	84,302	89,801	87,782	(NA)
325188G0F1	Phosphorus elemental (technical) . . . . .	1998 . . .	(D)	(D)	(D)	(D)	(D)	(D)
		1997 . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188G0F4	Phosphorus oxychloride (100 percent POCl <sub>3</sub> ) . . . . .	1998 . . .	33,160	8,549	8,276	7,689	8,646	(NA)
		1997 . . .	37,756	10,273	10,387	8,467	8,629	(NA)
325188G0F7	Phosphorus pentasulfide (100 percent P <sub>2</sub> S <sub>5</sub> ) . . . . .	1998 . . .	(D)	16,167	12,223	12,585	(D)	(NA)
		1997 . . .	58,538	14,537	16,888	14,338	12,775	(NA)
325188A117	Phosphorus trichloride (chloride) (100 percent PCl <sub>3</sub> ) . . . . .	1998 . . .	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 . . .	259,886	66,759	70,845	59,845	62,437	(NA)
325188G0G7	Potassium pyrophosphate (tetrapotassium pyrophosphate) (100 percent K <sub>4</sub> P <sub>2</sub> O <sub>7</sub> ) . . . . .	1998 . . .	28,575	7,471	7,407	7,200	6,497	(NA)
		1997 . . .	29,148	6,751	8,267	8,146	5,984	(NA)
325188A141	Silicon tetrachloride (100 percent SiCl <sub>4</sub> ) . . . . .	1998 . . .	44,355	12,816	8,956	12,159	10,424	(NA)
		1997 . . .	48,580	12,280	12,362	13,346	10,592	(NA)
325188A151	Sodium bichromate and chromate (hydrous) . . . . .	1998 . . .	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 . . .	(D)	(D)	(D)	(D)	(D)	(NA)
325188A174	Sodium chlorate (100 percent NaClO <sub>3</sub> ) . . . . .	1998 . . .	779,226	174,029	174,251	174,823	256,123	36,214
		1997 . . .	625,949	164,638	143,848	155,972	161,491	25,869
325188A161	Sodium hydrosulfite (100 percent Na <sub>2</sub> SO <sub>4</sub> ) . . . . .	1998 . . .	111,024	28,741	24,988	27,854	29,441	(NA)
		1997 . . .	(D)	(D)	(D)	(D)	(D)	(NA)
325188A164	Sodium (metal) (100 percent Na) . . . . .	1998 . . .	(D)	(D)	(D)	(D)	(D)	(D)
		1997 . . .	(D)	(D)	(D)	(D)	(D)	(D)
325188A167	Sodium phosphate: Tribasic (100 percent Na <sub>3</sub> PO <sub>4</sub> ) . . . . .	1998 . . .	21,314	4,708	4,461	6,911	5,234	(NA)
		1997 . . .	(D)	(D)	(D)	4,952	3,946	(NA)
325188A174	Tetrabasic (pyro) (100 percent Na <sub>4</sub> P <sub>2</sub> O <sub>7</sub> ) . . . . .	1998 . . .	(D)	(D)	3,323	3,072	2,286	(NA)
		1997 . . .	(D)	3,704	(D)	3,429	2,903	(NA)
325188A174	Meta (100 percent NaPO <sub>3</sub> ) . . . . .	1998 . . .	46,523	10,806	11,719	12,546	11,452	(NA)
		1997 . . .	41,051	8,998	11,887	10,208	9,958	(NA)
325188A174	Tripoly (100 percent Na <sub>5</sub> P <sub>3</sub> O <sub>10</sub> ) . . . . .	1998 . . .	225,957	60,031	56,973	54,555	54,398	(NA)
		1997 . . .	(D)	(D)	(D)	(D)	(D)	(NA)

See footnotes at end of table.

Table 9a. **Primary Production and Stocks of Specified Inorganic Chemicals by Quarter: 1998 and 1997—Con.**

[Short tons]

Product code	Product description	Year	Total	First quarter	Second quarter	Third quarter	Fourth quarter	Stocks on hand December 31
325188A181	Sodium silicate: Soluble silicate glass (water glass, solid and liquid)(anhydrous) <sup>7</sup> .....	1998 ...	<sup>a</sup> 1,208,674	316,287	328,919	277,608	285,860	(NA)
		1997 ...	1,213,753	286,361	321,300	300,670	305,422	(NA)
325188A184	Metasilicate pentahydrate (100 percent Na <sub>2</sub> SiO <sub>3</sub> ·5H <sub>2</sub> O) .....	1998 ...	<sup>a</sup> 41,236	10,857	10,649	10,220	9,510	(NA)
		1997 ...	40,371	10,833	10,117	9,730	9,691	(NA)
325188A187	Metasilicate anhydrous (100 percent Na <sub>2</sub> SiO <sub>3</sub> ) .....	1998 ...	35,691	9,732	9,385	8,290	8,284	(NA)
		1997 ...	42,855	11,388	11,685	11,340	8,442	(NA)
	Sodium sulfate (100 percent Na <sub>2</sub> SO <sub>4</sub> ):							
	Total .....	1998 ...	629,267	153,103	156,354	151,572	168,238	(NA)
		1997 ...	705,969	168,037	185,436	184,411	168,087	(NA)
325188A1A1	High purity (more than 99 percent Na <sub>2</sub> SO <sub>4</sub> ) .....	1998 ...	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 ...	(D)	(D)	(D)	(D)	(D)	(NA)
325188A1A4	Lower purity (99 percent or less Na <sub>2</sub> SO <sub>4</sub> ) and Glauber's salt (100 percent Na <sub>2</sub> SO <sub>4</sub> ·10H <sub>2</sub> O) .....	1998 ...	(D)	(D)	(D)	(D)	(D)	(NA)
		1997 ...	(D)	(D)	(D)	(D)	(D)	(NA)
3251311000	Titanium dioxide (composite and pure) (100 percent TiO <sub>2</sub> ) (commodity weight) <sup>8</sup> .....	1998 ...	1,458,657	370,155	384,249	357,847	346,406	106,832
		1997 ...	1,466,256	344,969	373,794	382,324	365,169	118,454

D Withheld to avoid disclosing data for individual companies. NA Not available. <sup>f</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>"Hydrochloric acid produced from salt and acid" is combined with "Hydrochloric acid byproduct and other" to avoid disclosing data for individual companies.

<sup>2</sup>Total gas production including quantities liquefied for use, storage, or shipments.

<sup>3</sup>Liquid production data represent total production including quantities later evaporated to solid caustic and reported as such.

<sup>4</sup>Includes some liquid shipped as interplant transfers to other establishments for further processing to dry forms.

<sup>5</sup>U.S. Geological Survey; quantity in thousand short tons.

<sup>6</sup>Excludes quantities produced and consumed by municipalities.

<sup>7</sup>Excludes quantities produced and consumed in same establishment in manufacture of meta-, ortho-, and sesquisilicates.

<sup>8</sup>Represents total stocks of producing companies, including amounts held at locations other than producing locations.

Note: Percent of estimation for each item is indicated as follows: <sup>a</sup>20 percent or more is estimated.

**Table 9b. Primary Production of Inorganic Fertilizer Chemicals by Quarter: 1998 and 1997**

[Thousands of short tons]

Product code	Product description	Year	Total	First quarter	Second quarter	Third quarter	Fourth quarter
3253111000	Ammonia, synthetic anhydrous (100 percent NH <sub>3</sub> ): Production .....	1998 .....	18,474.9	4,696.6	4,689.2	4,537.3	4,551.8
		1997 .....	17,890.7	4,405.0	4,466.7	4,403.3	4,615.7
		1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	1,554.5	822.2	1,456.0	2,045.3
3253111120	Fertilizer use: Production .....	1998 .....	15,860.6	4,059.0	3,995.6	3,877.8	3,928.2
		1997 .....	15,348.7	3,852.8	3,850.9	3,736.2	3,908.8
		1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	(D)	(D)	(D)	(D)
3253111131	Other uses: Production .....	1998 .....	2,614.3	637.6	693.6	659.5	623.6
		1997 .....	2,542.1	552.2	615.8	667.2	706.9
		1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	(D)	(D)	(D)	(D)
3253111201	Ammonium nitrate (100 percent NH <sub>4</sub> NO <sub>3</sub> ): Original solution <sup>1</sup> : Production .....	1998 .....	9,078.6	2,234.3	2,361.8	2,162.0	2,320.6
		1997 .....	8,604.4	2,194.5	2,206.5	2,009.7	2,193.7
		1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	284.9	255.6	301.5	218.8
3253111211	Total production: Consumed in the manufacture of other nitrogen solutions (e.g. CAN17, AM20, AAN): Production .....	1998 .....	253.2	62.3	69.7	69.0	52.3
		1997 .....	245.3	63.0	60.9	52.7	68.7
		1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	(D)	(D)	(D)	(D)
3253111216	Liquor consumed in the manufacture of urea- ammonium nitrate solutions: Production .....	1998 .....	4,039.7	913.5	1,033.3	992.3	1,100.6
		1997 .....	3,799.9	997.3	955.5	942.6	904.5
		1998 .....	(NA)	58.1	20.8	40.0	78.3
		1997 .....	(NA)	32.1	31.0	32.1	62.0
3253111221	High density prill and granular: Production .....	1998 .....	2,605.3	705.7	747.5	536.0	616.2
		1997 .....	2,528.2	697.5	675.4	509.5	645.8
		1998 .....	(NA)	26.3	26.4	49.4	38.0
		1997 .....	(NA)	46.2	42.4	(D)	35.6
3253111226	Low density prill and grained: Production .....	1998 .....	1,657.1	418.5	381.9	442.0	414.6
		1997 .....	1,653.3	336.5	418.4	417.3	481.1
		1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	(D)	(D)	(D)	(D)
3253111231	All other (e.g., liquor sales, etc.): Production .....	1998 .....	523.4	134.4	129.4	122.7	136.9
		1997 .....	377.7	100.1	96.3	87.7	93.6
		1998 .....	(NA)	(D)	(D)	10.3	(D)
		1997 .....	(NA)	12.7	(D)	(D)	3.4
3253111240	Ammonium sulfate (100 percent (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> ): Production .....	1998 .....	2,787.4	698.1	719.8	672.1	697.4
		1997 .....	2,701.7	593.8	709.4	696.7	701.8
		1998 .....	(NA)	212.1	119.7	79.8	212.1
		1997 .....	(NA)	138.3	100.2	220.4	266.6
3253111111	Nitric acid (100 percent HNO <sub>3</sub> ): Production .....	1998 .....	9,285.1	2,284.4	2,349.5	2,240.0	2,411.2
		1997 .....	9,432.7	2,426.3	2,421.1	2,185.6	2,399.7
		1998 .....	(NA)	(X)	(X)	(X)	(X)
		1997 .....	(NA)	(X)	(X)	(X)	(X)
3253111250	Nitrogen solutions, including mixtures containing urea (100 percent N): Production .....	1998 .....	3,907.1	880.4	919.6	977.4	1,129.7
		1997 .....	3,627.0	978.6	935.0	844.0	869.3
		1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	461.2	308.0	473.8	425.3

See footnotes at end of table.

Table 9b. **Primary Production of Inorganic Fertilizer Chemicals by Quarter: 1998 and 1997**—Con.

[Thousands of short tons]

Product code	Product description	Year	Total	First quarter	Second quarter	Third quarter	Fourth quarter
3253111250	Nitrogen solutions, including mixtures containing urea (100 percent N)—Con.						
3253111251	Solutions containing ammonium nitrate/urea:						
	Production .....	1998 .....	3,822.8	861.4	896.4	956.2	1,108.7
		1997 .....	3,495.6	946.7	895.0	803.6	850.3
	Stocks on hand, end of quarter.....	1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	455.8	304.3	462.9	420.2
3253111256	All other solutions:						
	Production .....	1998 .....	84.3	19.0	23.2	21.2	21.0
		1997 .....	131.4	31.9	40.1	40.4	19.0
	Stocks on hand, end of quarter.....	1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	5.5	3.7	10.9	5.2
3253121000	Phosphoric acid (100 percent P <sub>2</sub> O <sub>5</sub> ):						
	Production .....	1998 .....	13,864.2	3,637.5	3,451.2	3,384.5	3,390.9
		1997 .....	13,158.8	3,214.1	3,251.2	3,212.5	3,481.0
	Stocks on hand, end of quarter.....	1998 .....	(NA)	203.7	210.7	198.2	224.7
		1997 .....	(NA)	208.1	220.2	216.7	234.9
3253121111	Thermal:						
	Production .....	1998 .....	283.9	78.7	78.7	60.6	65.9
		1997 .....	299.1	130.0	56.4	56.6	56.2
	Stocks on hand, end of quarter.....	1998 .....	(NA)	7.3	9.0	(S)	5.4
		1997 .....	(NA)	12.6	10.3	8.2	8.1
3253121121	Wet:						
	Production .....	1998 .....	13,580.3	3,558.8	3,372.5	3,324.0	3,325.1
		1997 .....	12,859.6	3,084.1	3,194.8	3,155.9	3,424.8
	Stocks on hand, end of quarter.....	1998 .....	(NA)	196.4	201.7	198.2	219.3
		1997 .....	(NA)	195.5	210.0	208.5	226.9
3253121211	By use:						
	Fertilizer:						
	Production .....	1998 .....	12,692.6	3,334.4	3,143.7	3,116.2	3,098.3
		1997 .....	11,979.7	2,876.4	2,966.7	2,930.1	3,206.5
	Stocks on hand, end of quarter.....	1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	(D)	(D)	(D)	(D)
3253121221	Feed and other:						
	Production .....	1998 .....	887.7	224.4	228.8	207.8	226.8
		1997 .....	880.0	207.7	228.1	225.8	218.4
	Stocks on hand, end of quarter.....	1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	(D)	(D)	(D)	(D)
3253121311	By grade:						
	Ortho (less than 65 percent P <sub>2</sub> O <sub>5</sub> ):						
	Production .....	1998 .....	12,028.0	3,178.5	2,987.8	2,928.1	2,933.7
		1997 .....	11,411.1	2,737.6	2,827.7	2,791.3	3,054.5
	Stocks on hand, end of quarter.....	1998 .....	(NA)	172.4	(D)	175.0	197.0
		1997 .....	(NA)	170.9	184.7	182.8	198.9
3253121321	Super (more than 65 percent P <sub>2</sub> O <sub>5</sub> ):						
	Production .....	1998 .....	1,552.3	380.3	384.7	395.9	391.4
		1997 .....	1,448.5	346.4	367.2	364.6	370.4
	Stocks on hand, end of quarter.....	1998 .....	(NA)	23.4	(D)	20.9	22.3
		1997 .....	(NA)	24.7	25.2	24.0	28.0
3253114000	Urea original melt liquor (100 percent urea):						
	Production .....	1998 .....	8,974.6	2,137.0	2,201.4	2,338.2	2,298.1
		1997 .....	8,304.1	2,253.5	2,134.2	1,952.4	1,964.1
	Stocks on hand, end of quarter.....	1998 .....	(NA)	188.2	211.1	278.0	275.4
		1997 .....	(NA)	373.7	296.1	328.2	259.7

See footnotes at end of table.



Table 9b. **Primary Production of Inorganic Fertilizer Chemicals by Quarter: 1998 and 1997—Con.**

[Thousands of short tons]

Product code	Product description	Year	Total	First quarter	Second quarter	Third quarter	Fourth quarter
3253114000	Urea original melt liquor (100 percent urea)—Con.						
3253114011	Total production: Consumed in the manufacture of urea-ammonium nitrate solutions:						
	Production .....	1998 .....	3,142.1	691.5	724.1	812.4	914.0
		1997 .....	2,890.7	755.0	722.5	707.4	705.8
	Stocks on hand, end of quarter .....	1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	(D)	(D)	(D)	(D)
3253114021	Prills:						
	Production .....	1998 .....	2,010.2	501.5	508.4	491.5	508.9
		1997 .....	'2,455.1	'722.9	'665.1	'524.4	'542.7
	Stocks on hand, end of quarter .....	1998 .....	(NA)	57.2	77.0	107.5	116.0
		1997 .....	(NA)	87.2	44.0	47.3	82.9
3253114031	Granular:						
	Production .....	1998 .....	3,544.1	878.5	885.0	972.5	808.1
		1997 .....	2,696.3	697.6	680.4	665.0	653.2
	Stocks on hand, end of quarter .....	1998 .....	(NA)	38.2	84.9	145.5	130.0
		1997 .....	(NA)	139.1	109.5	130.6	72.9
3253114041	All other (solid and solution):						
	Production .....	1998 .....	278.3	65.5	83.9	61.8	67.1
		1997 .....	'262.0	'77.9	'66.2	'55.4	'62.4
	Stocks on hand, end of quarter .....	1998 .....	(NA)	(D)	(D)	(D)	(D)
		1997 .....	(NA)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies. NA Not available. 'Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

<sup>1</sup>Represents total amount of original solution produced, including amounts used for fertilizer, explosives, and other uses and amounts consumed in manufacturing other products such as nitrogen solutions.

Note: The 1998 and 1997 stocks on hand, end of quarter, were originally published in the Current Industrial Report series, MQ325B (formerly MQ28B) "Fertilizer Materials." Detail may not add because of independent rounding.

Table 9c. **Production, Shipments, and Stocks of Superphosphates and Other Phosphatic Fertilizer Materials by Quarter: 1998 and 1997**

[Thousands of short tons]

Product code	Product description	Year	Total	First quarter	Second quarter	Third quarter	Fourth quarter	
3253124000	Superphosphates and other phosphatic fertilizer materials:	Production (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	10,259.6	2,589.9	2,722.9	2,438.4	2,508.4
			1997 . . . . .	10,473.2	2,557.0	2,670.2	2,602.5	2,643.5
		Shipments, including interplant transfers (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	10,292.0	2,612.8	2,709.2	2,357.6	2,612.4
			1997 . . . . .	10,379.9	2,590.6	2,758.8	2,483.6	2,546.9
		Stocks on hand, end of quarter (gross weight) . . . . .	1998 . . . . .	(NA)	709.4	647.3	786.2	627.8
			1997 . . . . .	(NA)	669.3	569.9	513.7	771.3
3253124121	Normal, concentrated, and enriched superphosphates (triple) (over 40 percent P <sub>2</sub> O <sub>5</sub> ): <sup>1</sup>	Production (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	657.4	176.5	194.3	177.7	108.9
			1997 . . . . .	728.0	164.6	195.9	202.0	165.5
		Shipments, including interplant transfers (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	632.3	178.6	171.9	173.0	108.7
			1997 . . . . .	675.9	153.3	193.8	206.1	122.6
		Stocks on hand, end of quarter (gross weight) . . . . .	1998 . . . . .	(NA)	83.8	117.0	99.2	90.5
			1997 . . . . .	(NA)	109.0	80.1	54.1	124.3
3253124131	Ammonium phosphates: Monoammonium phosphates:	Production (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	2,017.5	559.7	519.5	530.5	407.8
			1997 . . . . .	1,852.5	461.3	471.4	465.7	454.1
		Shipments, including interplant transfers (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	2,007.9	531.3	525.6	507.0	444.0
			1997 . . . . .	1,863.1	434.1	498.8	483.4	446.7
		Stocks on hand, end of quarter (gross weight) . . . . .	1998 . . . . .	(NA)	156.2	161.4	207.3	146.6
			1997 . . . . .	(NA)	174.4	134.8	88.8	120.4
3253124211	Diammonium phosphates:	Production (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	7,224.3	1,739.1	1,897.8	1,670.5	1,917.0
			1997 . . . . .	7,631.7	1,871.6	1,915.4	1,887.0	1,957.6
		Shipments, including interplant transfers (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	7,299.1	1,800.0	1,883.2	1,622.3	1,993.6
			1997 . . . . .	7,564.3	1,942.8	1,961.1	1,732.6	1,927.8
		Stocks on hand, end of quarter (gross weight) . . . . .	1998 . . . . .	(NA)	395.3	323.7	429.2	329.2
			1997 . . . . .	(NA)	298.3	287.9	288.2	470.6
3253124221, 4231	Other ammonium phosphates and other phosphatic fertilizer materials: <sup>2</sup>	Production (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	360.4	114.7	111.3	59.7	74.7
			1997 . . . . .	261.1	59.5	87.5	47.8	66.3
		Shipments, including interplant transfers (100 percent P <sub>2</sub> O <sub>5</sub> ) . . . . .	1998 . . . . .	352.7	102.9	128.5	55.2	66.2
			1997 . . . . .	276.6	60.4	105.2	61.4	49.7
		Stocks on hand, end of quarter (gross weight) . . . . .	1998 . . . . .	(NA)	74.1	45.1	50.4	61.6
			1997 . . . . .	(NA)	87.6	67.0	82.5	56.1

NA Not available.

<sup>1</sup>“Normal and enriched superphosphates” (product code 3253124111) is combined with “Concentrated superphosphates” (product code 3253124121) to avoid disclosing data for individual companies.

<sup>2</sup>“Other ammonium phosphates” (product code 3253124221) is combined with “Other phosphatic fertilizer materials” (product code 3253124231) to avoid disclosing data for individual companies.

Note: The 1998 and 1997 stocks on hand, end of quarter, were originally published in the Current Industrial Report series, MQ325B, “Fertilizer Materials.” Detail may not add because of independent rounding.

**Table 10. Production and Stocks of Sulfuric Acid by Process and by Quarter: 1998 and 1997**

[Thousands of short tons of 100 percent H<sub>2</sub>SO<sub>4</sub>]

Quarter and year	Production					Stocks (gross) at producing plants at end of period
	Sulfuric acid, gross, new and fortified			New acid <sup>1</sup>	Sulfuric acid produced through decomposition of alkylation and other spent acid <sup>2</sup>	
	Total	Oleum grades	Other than oleum grades			
<b>1998</b>						
<b>Total</b> .....	<b>48,512.5</b>	<b>1,828.1</b>	<b>46,684.5</b>	<b>43,660.1</b>	<b>4,852.4</b>	<b>(NA)</b>
First quarter .....	12,227.0	463.8	11,763.2	11,042.2	1,184.8	1,143.6
Second quarter .....	12,458.7	462.3	11,996.4	11,129.3	1,329.5	990.1
Third quarter .....	11,750.9	447.7	11,303.2	10,486.8	1,264.1	1,084.3
Fourth quarter .....	12,075.9	454.2	11,621.7	11,001.8	1,074.0	1,093.7
<b>1997</b>						
<b>Total</b> .....	<b>47,929.2</b>	<sup>1</sup> <b>1,763.4</b>	<b>46,166.1</b>	<b>43,154.8</b>	<b>4,774.5</b>	<b>(NA)</b>
First quarter .....	11,611.1	<sup>1</sup> 416.9	11,194.2	10,320.6	1,290.6	777.3
Second quarter .....	11,956.7	<sup>1</sup> 454.4	11,502.2	10,737.9	1,218.7	679.5
Third quarter .....	12,229.5	<sup>1</sup> 464.2	11,765.3	10,944.6	1,285.0	723.9
Fourth quarter .....	12,131.9	<sup>1</sup> 427.6	11,704.3	11,151.7	980.1	893.0

NA Not available. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents gross production of sulfuric acid less acid produced through decomposition and spent acid used in fortification.

<sup>2</sup>Spent acid fortified by addition of sulfur trioxide.

Note: Detail may not add because of independent rounding.

**Table 11. Production, Exports, Imports, and Apparent Consumption of Selected Inorganic Chemicals and Fertilizer Materials: 1998 and 1997**

[Quantity in thousands of metric tons. Value in thousands of dollars]

Product code	Product description	Production (quantity)	Exports of domestic merchandise <sup>1</sup>		Percent exports to production (quantity)	Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup> (quantity)	Percent imports to apparent consumption (quantity)
			Quantity	Value		Quantity	Value <sup>3</sup>		
<b>1998</b>									
3251811011	Chlorine gas	11,649,526	22,456	8,878	0.2	374,228	51,775	12,001,298	3.1
3251814011	Sodium hydroxide, total liquid (all processes)	10,642,139	1,500,548	295,357	14.1	540,900	126,539	9,682,491	5.6
3251817011	Potassium hydroxide, liquid	449,559	67,030	21,267	14.9	10,742	6,744	393,271	2.7
3251817031	Finished sodium bicarbonate	492,973	62,404	21,801	12.7	13,135	12,259	443,704	3.0
3251311000	Titanium dioxide (composite and pure)	1,323,285	398,365	633,080	30.1	199,789	381,125	1,124,709	17.8
3251881000	Sulfuric acid gross	44,010,269	155,488	17,545	0.4	2,043,064	86,821	45,897,845	4.5
3251884011	Boric acid (D)	(D)	105,787	54,630	(D)	23,372	12,528	(D)	(D)
3251884021, 4025, 4031	Hydrochloric acid	4,226,372	51,065	10,635	1.2	72,290	7,884	4,247,597	1.7
3251884045, 4051	Hydrofluoric acid	(D)	3,457	5,752	(D)	184,514	164,293	(D)	(D)
3251884041, 4055, 4065	Other inorganic acids	(NA)	20,093	26,451	(NA)	22,069	20,826	(NA)	(NA)
3313110100	Aluminum oxide	4,536,877	1,237,377	448,772	27.3	3,915,692	898,973	7,215,192	54.3
3251887011, 7021	Aluminum chloride	28,451	16,218	17,408	57.0	1,577	849	13,810	11.4
3251887031	Aluminum hydroxide trihydrate	978,582	71,019	39,187	7.3	198,970	98,537	1,106,533	18.0
3251887041	Aluminum flouride (D)	(D)	11,855	10,951	(D)	22,376	19,337	(D)	(D)
3251887051	Aluminum sulfate (commercial)	1,057,617	7,369	2,151	0.7	31,149	9,053	1,081,397	2.9
3251887071	Aluminates (sodium aluminate, etc.) (D)	(D)	9,431	5,605	(D)	4,548	3,226	(D)	(D)
325188A111	Potassium iodide	879	69	1,240	7.8	301	5,473	1,111	27.1
325188A114	Potassium sulfate (D)	(D)	-	-	(X)	(NA)	(NA)	(NA)	(NA)
325188A124	Potassium phosphates	22,280	1,285	1,688	5.8	13,081	11,802	34,076	38.4
325188A127	Potassium silicates (D)	(D)	2,002	6,389	(D)	98	390	(D)	(D)
325188A134	Sodium metal (D)	(D)	2,728	7,895	(D)	1,004	3,157	(D)	(D)
325188A141	Sodium chlorate	706,909	49,425	17,648	7.0	430,384	147,349	1,087,868	39.6
325188A1A7	Sodium sulfite	113,572	42,082	13,754	37.1	8,897	4,855	80,387	11.1
325188A154, A157	Sodium phosphate mono and dibasic (D)	(D)	3,126	18,929	(D)	11,009	11,867	(D)	(D)
325188A161	Sodium phosphate tribasic	19,336	798	919	4.1	3,824	2,335	22,362	17.1
325188A174	Sodium phosphate tripoly	204,987	32,314	23,704	15.8	71,790	52,834	244,463	29.4
325188A181, A191, A194	Sodium silicates (other than metasilicates)	1,096,502	30,324	16,142	2.8	21,315	7,011	1,087,493	2.0
325188A184, A187	Sodium metasilicates	69,697	9,767	4,408	14.0	1,923	1,210	61,853	3.1
325188A1A1, A1A4	Sodium sulfate	570,867	40,132	15,437	7.0	110,886	12,045	641,621	17.3
325188A1B1	Sodium thiosulfate (hypo) (D)	(D)	3,825	1,430	(D)	808	353	(D)	(D)
325188G021	Barium sulfate (D)	(D)	700	900	(D)	13,338	13,633	(D)	(D)
325188G017	Barium carbonate (D)	(D)	2,291	2,205	(D)	23,510	14,237	(D)	(D)
325188G031	Bromine (D)	(D)	1,490	3,442	(D)	1,195	1,166	(D)	(D)
325188G037	Calcium carbide (D)	(D)	32,054	16,617	(D)	671	2,095	(D)	(D)
325188G041	Calcium carbonate (precipitated)	1,580,671	46,931	26,109	3.0	79,306	15,656	1,613,046	4.9
325188G044	Calcium chloride	916,273	62,369	17,474	6.8	197,751	20,641	1,051,655	18.8
325188G047, G051, G054, 3253124241	Calcium phosphates	1,797,708	155,803	80,824	8.7	38,584	24,132	1,680,489	2.3
325998H1E4, H1E7	Carbon activated (granular and pulverized) <sup>5</sup>	150,109	41,284	83,329	27.5	41,853	64,987	150,678	27.8
325188G067	Cuprous oxide (D)	(D)	(NA)	(NA)	(X)	177	215	(D)	(D)
325188G081	Hydrogen peroxide	323,690	45,584	28,063	14.1	89,830	38,297	367,936	24.4
325188G084	Iodine	3,029,643	2,719	24,914	0.1	5,659	93,100	3,032,583	0.2
325188G091	Iron oxides and hydroxides	41,500	27,514	47,432	66.3	35,946	20,017	49,932	72.0

See footnotes at end of table.

**Table 11. Production, Exports, Imports, and Apparent Consumption of Selected Inorganic Chemicals and Fertilizer Materials: 1998 and 1997—Con.**

[Quantity in thousands of metric tons. Value in thousands of dollars]

Product code	Product description	Production (quantity)	Exports of domestic merchandise <sup>1</sup>		Percent exports to production (quantity)	Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup> (quantity)	Percent imports to apparent consumption (quantity)
			Quantity	Value		Quantity	Value <sup>3</sup>		
<b>1998—Con.</b>									
325188G0A1	Magnesium chloride .....	577,097	4,130	3,693	0.7	11,968	4,525	584,935	2.0
325188G0A4	Magnesium sulfate .....	(D)	5,905	2,194	(D)	21,888	1,777	(D)	(D)
325188G0B1	Manganese dioxide .....	57,825	4,261	4,915	7.4	33,095	52,020	86,659	38.2
325188G0B7	Mercury .....	(D)	63	401	(D)	128	584	(D)	(D)
325188G0C7	Molybdates .....	(D)	1,594	11,391	(D)	797	10,138	(D)	(D)
325188G0D4	Nickel oxides and hydroxides .....	(D)	266	2,749	(D)	2,149	20,299	(D)	(D)
325188G0D7	Nickel chloride .....	(D)	34	169	(D)	612	1,229	(D)	(D)
325188G0E1	Nickel sulfate .....	1,961	2,176	3,656	111.0	2,310	4,578	2,095	110.3
325188G0E7	Phosphorous, elemental .....	(D)	8,023	15,741	(D)	1,790	4,159	(D)	(D)
325188G0F1, G0F7	Phosphorous, oxychloride and trichloride .....	(D)	1,099	3,254	(D)	42	2,627	(D)	(D)
325188G0J1	Strontium carbonate .....	(D)	686	655	(D)	41,119	25,175	(D)	(D)
325188G0J7	Sulfur, recovered elemental .....	(NA)	888,680	35,441	(NA)	3,684,950	293,135	(NA)	(NA)
325188G0K1	Sulfur dioxide .....	185,353	561	286	0.3	64,598	12,315	249,390	25.9
325188G0L4	Tungstates .....	(D)	318	2,260	(D)	737	15,993	(D)	(D)
325188G0M1	Zinc sulfate .....	54,390	4,378	2,778	8.0	10,366	6,229	60,378	17.2
325188G0M4	Zinc oxide and peroxide .....	(D)	6,206	11,299	(D)	58,665	60,425	(D)	(D)
325188G0M7	Zinc chloride .....	(D)	1,944	1,290	(D)	1,571	1,707	(D)	(D)
3251317111, 7121, 7131, 7141, 7151	Chrome colors .....	(D)	2,312	8,167	(D)	9,506	30,944	(D)	(D)
3256121150, 1170, 325188G0N7, G0P1	Bleaches (sodium and calcium hypochlorite, etc.) .....	661,593	41,062	53,034	6.2	63,071	30,256	683,602	9.2
3253111120	Ammonia, synthetic anhydrous .....	16,760.3	(D)	(NA)	(D)	(D)	(NA)	(D)	(D)
3253111201	Ammonium nitrate, original solution .....	8,236.1	54.8	(NA)	0.7	759.2	(NA)	8,940.5	8.5
3253111250	Nitrogen solutions, ammonium nitrate/urea solutions .....	3,527.3	52.6	(NA)	1.5	633.5	(NA)	4,108.2	15.4
3253111240	Ammonium sulfate .....	2,528.7	1,050.3	(NA)	41.5	318.5	(NA)	1,796.9	17.7
3253114000	Urea .....	8,042.3	840.6	(NA)	10.5	3,323.9	(NA)	10,525.7	31.6
3253121000	Phosphoric acid .....	12,602.0	(D)	(NA)	(D)	84.5	(NA)	(D)	(D)
3253144111, 44121	Normal, concentrated, and enriched superphosphates .....	1,333.2	622.5	(NA)	46.7	-	(NA)	710.7	-
3253144211	Diammonium phosphates .....	12,510.8	9,869.7	(NA)	78.9	43.9	(NA)	2,684.9	1.6
3251881000	Sulfuric acid, gross .....	44,010.3	155.5	(NA)	0.4	2,043.1	(NA)	45,897.9	4.5
<b>1997</b>									
3251811011	Chlorine gas .....	11,722,975	24,179	8,622	0.2	410,731	66,062	12,109,527	3.4
3251814011	Sodium hydroxide, total liquid (all processes) .....	10,861,654	1,348,441	277,311	12.4	498,624	107,862	10,011,837	5.0
3251817011	Potassium hydroxide, liquid .....	483,311	81,619	28,699	16.9	33,848	11,049	435,540	7.8
3251817031	Finished sodium bicarbonate .....	473,581	66,451	23,509	14.0	14,223	10,458	421,353	3.4
3251311000	Titanium dioxide (composite and pure) .....	1,330,179	404,839	576,383	30.4	194,261	348,548	1,119,601	17.4
3251881000	Sulfuric acid, gross .....	43,481,105	117,812	12,659	0.3	2,014,587	84,036	45,377,880	4.4
3251884011	Boric acid .....	(D)	92,273	60,501	(D)	20,204	11,756	(D)	(D)
3251884021, 4025, 4031	Hydrochloric acid .....	4,145,394	54,858	12,860	1.3	77,744	7,352	4,168,280	1.9
3251884045, 4051	Hydrofluoric acid .....	(D)	6,373	8,989	(D)	158,101	152,679	(D)	(D)
3251884041, 4055, 4065	Other inorganic acids .....	(NA)	20,328	26,926	(NA)	21,072	18,219	(NA)	(NA)

See footnotes at end of table.

**Table 11. Production, Exports, Imports, and Apparent Consumption of Selected Inorganic Chemicals and Fertilizer Materials: 1998 and 1997—Con.**

[Quantity in thousands of metric tons. Value in thousands of dollars]

Product code	Product description	Production (quantity)	Exports of domestic merchandise <sup>1</sup>		Percent exports to production (quantity)	Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup> (quantity)	Percent imports to apparent consumption (quantity)
			Quantity	Value		Quantity	Value <sup>3</sup>		
<b>1997—Con.</b>									
3313110100	Aluminum oxide .....	4,601,415	1,217,353	481,159	26.5	3,704,109	964,733	7,088,171	52.3
3251887011, 7021	Aluminum chloride .....	30,508	12,439	13,196	40.8	565	702	18,634	3.0
3251887031	Aluminum hydroxide trihydrate ....	936,628	81,840	42,231	8.7	188,065	106,928	1,042,853	18.0
3251887041	Aluminum flouride .....	(D)	11,356	9,700	(D)	12,779	11,989	(D)	(D)
3251887051	Aluminum sulfate (commercial) ....	1,053,376	4,378	1,197	0.4	34,395	8,725	1,083,393	3.2
3251887071	Aluminates (sodium aluminate, etc.) .....	291,326	9,850	6,371	3.4	3,120	3,253	284,596	1.1
325188A111	Potassium iodide .....	958	136	2,499	14.2	352	5,687	1,174	30.0
325188A114	Potassium sulfate .....	(D)	-	-	(X)	56,294	12,931	(D)	(D)
325188A124	Potassium phosphates .....	21,245	2,011	2,434	9.5	10,373	8,463	29,607	35.0
325188A127	Potassium silicates .....	(D)	2,504	2,446	(D)	164	604	(D)	(D)
325188A134	Sodium metal .....	(D)	3,729	13,252	(D)	1,232	3,642	(D)	(D)
325188A141	Sodium chlorate .....	567,857	65,680	23,258	11.6	411,637	140,147	913,814	45.0
325188A1A7	Sodium sulfite .....	111,707	83,601	19,039	74.8	8,715	4,054	36,821	23.7
325188A154, A157	Sodium phosphate mono and dibasic .....	(D)	3,685	5,872	(D)	10,589	12,219	(D)	(D)
325188A161	Sodium phosphate tribasic .....	(D)	1,020	1,271	(D)	3,606	2,402	(D)	(D)
325188A174	Sodium phosphate tripoly .....	(D)	34,582	24,087	(D)	65,639	45,998	(D)	(D)
325188A181, A191, A194	Sodium silicates (other than metasilicates) .....	1,101,109	25,320	16,424	2.3	24,415	7,493	1,100,204	2.2
325188A184, A187	Sodium metasilicates .....	75,502	11,098	5,590	14.7	2,174	1,198	66,578	3.3
325188A1A1, A1A4	Sodium sulfate .....	640,451	42,738	16,461	6.7	154,418	16,944	752,131	20.5
325188A1B1	Sodium thiosulfate (hypo) .....	(D)	6,425	2,389	(D)	898	433	(D)	(D)
325188G021	Barium sulfate .....	(D)	1,201	2,383	(D)	12,389	13,425	(D)	(D)
325188G017	Barium carbonate .....	(D)	2,243	2,050	(D)	25,916	15,948	(D)	(D)
325188G031	Bromine .....	(D)	2,331	3,591	(D)	1,648	1,202	(D)	(D)
325188G037	Calcium carbide .....	(D)	35,363	19,252	(D)	503	384	(D)	(D)
325188G041	Calcium carbonate (precipitated) ..	1,567,485	31,720	16,206	2.0	73,991	13,749	1,609,756	4.6
325188G044	Calcium chloride .....	954,236	72,645	18,244	7.6	257,850	26,575	1,139,441	22.6
325188G047, G051, G054, 3253124241	Calcium phosphates .....	(D)	218,814	208,744	(D)	21,755	21,086	(D)	(D)
325998H1E4, H1E7	Carbon activated (granular and pulverized) <sup>5</sup> .....	157,092	41,054	79,228	26.1	45,480	71,542	161,518	28.2
325188G067	Cuprous oxide .....	(D)	(NA)	(NA)	(X)	104	260	(D)	(D)
325188G081	Hydrogen peroxide .....	305,911	53,667	33,590	17.5	78,942	42,561	331,186	23.8
325188G084	Iodine .....	2,755,156	2,759	23,352	0.1	6,031	88,422	2,758,428	0.2
325188G091	Iron oxides and hydroxides .....	41,856	26,291	46,372	62.8	22,823	30,083	38,388	59.5
325188G0A1	Magnesium chloride .....	713,745	5,322	3,302	0.7	12,791	4,819	721,214	1.8
325188G0A4	Magnesium sulfate .....	(D)	6,757	2,534	(D)	20,412	5,408	(D)	(D)
325188G0B1	Manganese dioxide .....	65,437	4,108	4,657	6.3	28,843	43,889	90,172	32.0
325188G0B7	Mercury .....	(D)	134	562	(D)	164	727	(D)	(D)
325188G0C7	Molybdates .....	(D)	2,027	9,682	(D)	612	7,897	(D)	(D)
325188G0D4	Nickel oxides and hydroxides .....	(D)	161	2,729	(D)	1,493	14,665	(D)	(D)
325188G0D7	Nickel chloride .....	(D)	105	334	(D)	613	1,514	(D)	(D)
325188G0E1	Nickel sulfate .....	(D)	3,880	7,883	(D)	3,517	7,445	(D)	(D)
325188G0E7	Phosphorous, elemental .....	(D)	8,797	17,977	(D)	1,558	4,413	(D)	(D)
325188G0F1, G0F7	Phosphorous, oxychloride and trichloride .....	270,019	981	3,403	0.4	42	2,819	269,080	-
325188G0J1	Strontium carbonate .....	(D)	398	382	(D)	43,690	28,047	(D)	(D)
325188G0J7	Sulfur, recovered elemental .....	(NA)	776,525	39,688	(NA)	3,583,432	351,383	(NA)	(NA)

See footnotes at end of table.

Table 11. **Production, Exports, Imports, and Apparent Consumption of Selected Inorganic Chemicals and Fertilizer Materials: 1998 and 1997—Con.**

[Quantity in thousands of metric tons. Value in thousands of dollars]

Product code	Product description	Production (quantity)	Exports of domestic merchandise <sup>1</sup>		Percent exports to production (quantity)	Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup> (quantity)	Percent imports to apparent consumption (quantity)
			Quantity	Value		Quantity	Value <sup>3</sup>		
<b>1997—Con.</b>									
325188G0K1	Sulfur dioxide .....	187,268	1,748	684	0.9	84,506	15,575	270,026	31.3
325188G0L4	Tungstates .....	(D)	127	1,298	(D)	2,530	16,786	(D)	(D)
325188G0M1	Zinc sulfate .....	43,363	5,795	3,356	13.4	7,093	4,119	44,661	15.9
325188G0M4	Zinc oxide and peroxide .....	(D)	6,699	11,562	(D)	62,217	73,469	(D)	(D)
325188G0M7	Zinc chloride .....	(D)	2,781	1,882	(D)	2,110	1,746	(D)	(D)
3251317111, 7121, 7131, 7141, 7151	Chrome colors .....	(D)	3,787	13,113	(D)	9,672	31,055	(D)	(D)
3256121150, 1170, 325188G0N7, G0P1	Bleaches (sodium and calcium hypochlorite, etc.) .....	614,072	41,741	57,332	6.8	46,789	23,033	619,120	7.6
3253111120	Ammonia, synthetic anhydrous ....	16,230.3	(D)	(NA)	(D)	(D)	(NA)	(D)	(D)
3253111201	Ammonium nitrate, original solution .....	7,805.9	47.5	(NA)	0.6	708.1	(NA)	8,466.6	8.4
3253111250	Nitrogen solutions, ammonium nitrate/urea solutions .....	3,290.4	57.5	(NA)	1.7	780.4	(NA)	4,013.3	19.4
3253111240	Ammonium sulfate .....	2,459.2	868.3	(NA)	35.3	478.4	(NA)	2,069.4	23.1
3253114000	Urea .....	7,429.8	932.7	(NA)	12.6	2,533.1	(NA)	9,030.2	28.1
3253121000	Phosphoric acid .....	11,937.5	(D)	(NA)	(D)	24.6	(NA)	(D)	(D)
3253124111, 4121	Normal, concentrated, and enriched superphosphates .....	1,469.3	592.2	(NA)	40.3	-	(NA)	877.1	-
3253124211	Diammonium phosphates .....	14,097.0	9,439.2	(NA)	67.0	56.6	(NA)	4,714.4	1.2
3251881000	Sulfuric acid, gross .....	43,481.1	117.8	(NA)	0.3	2,014.6	(NA)	45,377.9	4.4

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. X Not applicable.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 146, *U.S. Imports for Consumption*.

<sup>3</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus calculated import duty.

<sup>4</sup>Apparent consumption is derived by subtracting exports from manufacturers' production plus imports. Apparent consumption does not include any adjustments for changes in inventories.

<sup>5</sup>Includes reactivated carbon.

Note: For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

## HISTORICAL NOTE

Data on inorganic chemicals and fertilizer materials have been collected by the Census Bureau since 1941. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical

data are also available on microfiche; contact Customer Services, 301-457-4100.

## CONTACT FOR DATA USERS

For additional information about these data, contact Timothy Althouse (Inorganic Chemicals), 301-457-4830 or Walter R. Hunter Jr. (Fertilizer Materials), 301-457-4798.

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## INDUSTRIAL GASES—MA325C (FORMERLY MA28C)

### INTRODUCTION

The data in this subsection are from surveys MQ325C and MA325C, Industrial Gases. The data shown are production, quantity, and value of shipments. Gases that are vented or used for fuel by the manufacturer are excluded.

### SUMMARY OF FINDINGS

In 1998, total manufacturers' shipments of industrial gases amounted to \$4,187.9 million, an increase of 10.7 percent from the 1997 shipments of \$3,780.7 million.

Total shipments of carbon dioxide increased 19.9 percent to \$460.4 million in 1998, from \$383.9 million in 1997. Carbon dioxide gas shipments increased 9.3 percent to \$56.1 million in 1998, from \$51.3 million in 1997. Carbon dioxide liquid shipments increased 26.3 percent of \$372.1 million in 1998, from \$294.5 million in 1997; however, solid carbon dioxide (dry ice) shipments decreased 15.4 percent in 1998, with a value of \$32.2 million, from a 1997 value of \$38.1 million.

Total production of nitrogen increased 7.7 percent in 1998 to 870.9 billion cubic feet, from 808.2 billion in 1997.

Shipments of nitrogen increased 14.3 percent to \$1,255.4 million in 1998, from \$1,098.4 million in 1997. Production of nitrogen gas increased 7.8 percent in 1998 to 565.4 billion cubic feet, from 524.4 billion in 1997, and shipments of nitrogen gas increased 10.1 percent to \$434.9 million, from \$394.8 million in 1997. Production of liquid nitrogen for merchant shipments increased 4.5 percent in 1998 to 250.1 billion cubic feet, from 239.2 billion in 1997.

Total production of oxygen decreased 9.0 percent to 676.3 billion cubic feet in 1998, from 743.0 billion in 1997; however, shipments of oxygen increased 3.1 percent to \$1,026.9 million in 1998, from \$995.6 million in 1997. Production of oxygen gas decreased 12.0 percent in 1998 to 515.5 billion cubic feet, from 586.3 billion in 1997; shipments of oxygen gas increased 3.3 percent to

\$575.7 million in 1998, from \$557.3 in 1997. Production of liquid oxygen for merchant shipments increased 3.0 percent in 1998 to 113.6 billion cubic feet, from 110.3 billion in 1997; however, shipments decreased 5.8 percent to \$363.1 million in 1998, from \$385.4 million in 1997.

Total production of hydrogen increased 5.0 percent to 551.9 billion cubic feet in 1998, from 525.8 billion in 1997.

### EXPLANATION OF TERMS

**Carbon dioxide.** Includes all gas produced that is not vented, regardless of whether it will be used as a gas or to make liquid or solid. Also includes natural carbon dioxide produced from well operations. Excludes amounts produced and consumed in the manufacture of urea or soda ash.

**Hydrogen.** Excludes amounts produced and consumed in the manufacture of synthetic ammonia, synthetic methanol, petroleum products (hydrocracking and hydrotreating), and amounts produced by the ammonia dissociation process (cracking of ammonia).

**Nitrogen/oxygen.** Excludes amounts produced and consumed in the manufacture of synthetic ammonia and ammonia derivatives.

**Production.** Data shown for production represent total quantity of each chemical produced, including quantity consumed in plants, and for sale or transfer to other plants or warehouses of the same company. The statistics presented in the tables provide an up-to-date measure of activity in the inorganic field, but do not necessarily indicate amounts entering the market. In some cases, figures are included for material produced "in process" as an intermediate to the end of products.

**Unit of measure.** All figures included in this report are shown in million cubic feet, 70 degrees Fahrenheit, at 1 atmosphere pressure, unless otherwise specified.



**Table 12. Production and Shipments of Selected Industrial Gases: 1995 to 1998**

[Value in millions of dollars]

Product code	Product description	Year	Unit of measure	Production	Shipments	
					Quantity	Value
3251201	Acetylene .....	1998 .....	Bil cu ft. ....	4.6	2.9	151.1
		1997 .....	.....do.....	4.9	2.7	143.5
		1996 .....	.....do.....	5.5	3.3	158.7
		1995 .....	.....do.....	5.9	3.4	155.0
3251204	Carbon dioxide: Gas.....	1998 .....	1,000 s tons ..	5,649.3	4,870.6	56.1
		1997 .....	.....do.....	5,527.4	4,462.7	51.3
		1996 .....	.....do.....	4,899.7	4,462.9	51.3
		1995 .....	.....do.....	5,633.2	5,282.4	59.9
	Liquid .....	1998 .....	.....do.....	8,147.6	8,412.4	372.1
		1997 .....	.....do.....	6,585.8	6,419.1	294.5
		1996 .....	.....do.....	6,661.6	6,528.6	313.9
		1995 .....	.....do.....	6,409.6	6,057.2	369.0
	Solid (dry ice).....	1998 .....	.....do.....	283.7	287.3	32.2
		1997 .....	.....do.....	385.6	386.4	38.1
		1996 .....	.....do.....	320.0	300.2	33.4
		1995 .....	.....do.....	300.4	297.9	35.1
3251207	Nitrogen.....	1998 .....	Bil cu ft. ....	870.9	850.2	1,255.4
		1997 .....	.....do.....	808.2	790.3	1,098.4
		1996 .....	.....do.....	823.5	792.9	1,123.9
		1995 .....	.....do.....	808.9	806.1	1,139.4
325120A	Oxygen .....	1998 .....	.....do.....	676.3	653.4	1,026.9
		1997 .....	.....do.....	743.0	689.6	995.6
		1996 .....	.....do.....	682.2	649.1	947.9
		1995 .....	.....do.....	629.8	597.7	968.5
325120D pt.	Hydrogen.....	1998 .....	.....do.....	551.9	283.1	512.7
		1997 .....	.....do.....	525.8	249.8	465.5
		1996 .....	.....do.....	385.7	165.9	365.3
		1995 .....	.....do.....	351.7	138.4	310.8

pt. Part.      Revised by 5 percent or more from previously published data.

**Table 13. Quantity of Primary Production of Specified Industrial Gases: 1998 and 1997**

[Production and quantity of shipments in million cubic feet, unless otherwise noted. Value in thousands of dollars]

Product code	Product description	Unit of measure	1998			1997		
			Production	Shipments		Production	Shipments	
				Quantity	Value		Quantity	Value
325120	Industrial gases	(X)	(X)	(X)	4,187,996	(X)	(X)	3,780,655
3251201011	Acetylene	Mil cu ft.	4,649	2,922	151,052	'4,948	'2,725	143,477
3251201021	Produced for compression, including cylinder and pipeline	.do	666	628	75,319	'674	'648	68,189
3251204011	Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant	.do	3,983	2,294	75,733	4,274	'2,077	75,288
3251204011	Carbon dioxide <sup>2</sup>	Short tons	14,080,559	13,570,266	460,410	12,498,705	11,268,219	383,896
3251204021	Gas, including amounts produced and liquefied	.do	5,649,290	4,870,550	56,102	'5,527,377	4,462,728	51,293
3251204031	Liquid, including amounts produced and used to make dry ice	.do	8,147,567	8,412,440	372,062	6,585,772	6,419,080	294,533
3251204031	Solid (dry ice)	.do	283,702	287,276	32,246	385,556	386,411	38,070
3251207011	Nitrogen <sup>3</sup>	Mil cu ft.	870,906	850,154	1,255,401	808,183	790,302	1,098,411
3251207011	Gas produced by:							
3251207021	Cryogenic onsite and pipeline <sup>4</sup>	.do	(D)	(D)	(D)	(D)	(D)	(D)
3251207031	Noncryogenic processes (psa, vpsa, membranes, etc.) <sup>4</sup>	.do	565,144	570,811	434,984	524,399	526,440	394,801
3251207041	Captive uses for consumption in same plant:							
3251207041	Cryogenic processes <sup>5</sup>	.do	(D)	(X)	(X)	(D)	(X)	(X)
3251207051	Noncryogenic processes (psa, vpsa, membranes, etc.) <sup>5</sup>	.do	(D)	(X)	(X)	(D)	(X)	(X)
3251207061	Liquid produced for:							
3251207061	Merchant shipment	.do	250,062	243,637	732,411	239,154	243,915	639,064
3251207071	Consumption in same plant <sup>5</sup>	.do	19,819	(X)	(X)	'22,518	(X)	(X)
3251207071	Supplemental shipments or uses	.do	35,881	35,706	88,006	22,112	19,947	64,546
325120A011	Oxygen	.do	676,332	653,415	1,026,928	743,023	689,590	995,585
325120A021	Gas produced by:							
325120A021	Cryogenic onsite and pipeline <sup>6</sup>	.do	(D)	(D)	(D)	(D)	(D)	(D)
325120A031	Noncryogenic processes (psa, vpsa, membranes, etc.) <sup>6</sup>	.do	515,508	516,603	575,761	586,298	562,759	557,328
325120A041	Captive uses for consumption in same plant:							
325120A041	Cryogenic processes <sup>7</sup>	.do	(D)	(X)	(X)	(D)	(X)	(X)
325120A051	Noncryogenic processes (psa, vpsa, membranes, etc.) <sup>7</sup>	.do	(D)	(D)	(D)	(D)	(D)	(D)
325120A061	Liquid produced for:							
325120A061	Merchant shipment	.do	113,626	113,245	363,121	110,260	110,736	385,446
325120A071	Consumption in same plant <sup>7</sup>	.do	23,232	(X)	(X)	29,747	(X)	(X)
325120D011	Supplemental shipments or uses	.do	23,966	23,567	88,046	16,718	16,095	52,811
325120D011	Elemental gases and other industrial gases, n.e.c.	Mil cu ft.	(X)	(X)	1,067,127	(X)	(X)	971,294
325120D021	Argon	.do	(D)	(D)	(D)	(D)	(D)	(D)
325120D021	Argon, crude	.do	(D)	(D)	(D)	(D)	(D)	(D)
325120D000	Argon, high purity, produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant	.do	19,442	18,749	327,361	17,243	16,817	317,759
325120D000	Helium <sup>8</sup>	.do	(X)	4,023	(X)	(X)	'3,414	(X)
325120D000	Hydrogen <sup>9</sup>	.do	551,914	283,089	512,688	'525,833	'249,800	'465,543

See footnotes at end of table.

Table 13. **Quantity of Primary Production of Specified Industrial Gases: 1998 and 1997—Con.**

[Production and quantity of shipments in million cubic feet, unless otherwise noted. Value in thousands of dollars]

Product code	Product description	Unit of measure	1998			1997		
			Production	Shipments		Production	Shipments	
				Quantity	Value		Quantity	Value
325120	Industrial gases—Con. Elemental gases and other industrial gases, n.e.c.—Con. Gas produced for:							
325120D031	Merchant shipment <sup>10</sup> . . . . .do . . . .		(D)	(D)	(D)	(D)	(D)	(D)
325120D041	Pipeline and on-site use <sup>10</sup> . . . . .do . . . .		(D)	(D)	(D)	(D)	(D)	(D)
325120D051	Consumption in same plant. . . . .do . . . .		260,611	(X)	(X)	250,150	(X)	(X)
	Liquid produced for:							
325120D061	Merchant shipment <sup>10</sup> . . . . .do . . . .		(D)	(D)	(D)	(D)	(D)	(D)
325120D071	Supplemental shipments or uses <sup>10</sup> . . . . .do . . . .		291,303	283,089	512,688	'275,683	'249,800	'465,543
325120D091	Other elemental gases . . . . .(X) . . . .		(X)	(X)	(D)	(X)	(X)	(D)
325120D081	Nitrous oxide <sup>11</sup> . . . . .do . . . .		(D)	(D)	(D)	(D)	(D)	(D)
325120D095	Other compressed and liquefied gases <sup>11 12</sup> . . . . .(X) . . . .		(X)	(X)	174,247	(X)	(X)	'140,089
325120W	Industrial gases, n.s.k. . . . .(X) . . . .		(X)	(X)	52,831	(X)	(X)	47,903

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. n.s.k. Not specified by kind.  
 †Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Excludes information from railroad ships, shipyards, welding shops, and small establishments using portable generators.  
<sup>2</sup>Excludes quantities produced and consumed in plants manufacturing soda ash or urea. "Carbon dioxide gas" data should be used with caution since it includes data for gas produced in the production of petroleum, whose data is difficult to measure.  
<sup>3</sup>Excludes amounts produced and consumed in manufacturing of synthetic ammonia or ammonia derivatives.  
<sup>4</sup>Product code 3251207011 has been combined with product code 3251207021 to avoid disclosing data for individual companies.  
<sup>5</sup>Product codes 3251207031 and 3251207041 are combined with product code 3251207061 to avoid disclosing data for individual companies.  
<sup>6</sup>Product code 325120A011 has been combined with product code 325120A021 to avoid disclosing data for individual companies.  
<sup>7</sup>Product codes 325120A031 and 325120A041 are combined with product code 325120A061 to avoid disclosing data for individual companies.  
<sup>8</sup>Source: U.S. Geological Surveys.  
<sup>9</sup>Excludes amounts vented, used as fuel, etc., and amounts produced and consumed in the manufacturing of synthetic ammonia and methanol, but includes an unspecified amount produced for sale or interplant transfer to plants consuming this gas in production of ammonia. Also excludes amount produced by ammonia dissociation process (cracking of ammonia). Also excludes amounts produced in petroleum refineries for captive use.  
<sup>10</sup>Product codes 325120D031, 325120D041, 325120D061, and 325120D071 are combined to avoid disclosing data for individual companies.  
<sup>11</sup>Product codes 325120D081 and 325120D095 are combined to avoid disclosing data for individual companies.  
<sup>12</sup>Excludes hydrocarbon gases such as propane, butane, and propylene, or halogenated hydrocarbons and cyclopropane. Also excludes sulfur dioxide and chlorine data, which are shown in Current Industrial Reports Series, MA325A(98)-1, *Inorganic Chemicals*.

Note: N.s.k. represents value of shipments for establishments that did not provide detailed information by type of product. N.s.k. value has been estimated based on rate of change for reporting establishments applied to previous year's data.

**Table 14. Production and Shipments of Acetylene by Geographic Area: 1998 and 1997**

[Production and quantity in million cubic feet. Value in thousands of dollars]

Geographic area	1998			1997		
	Production	Shipments		Production	Shipments	
		Quantity	Value		Quantity	Value
<b>Total</b> .....	<b>4,649</b>	<b>2,922</b>	<b>151,052</b>	<b>4,948</b>	<b>2,725</b>	<b>143,477</b>
Northeast Region.....	84	79	8,420	102	101	9,614
North Central Region .....	201	180	17,658	193	184	18,064
East North Central.....	124	117	12,468	129	122	12,913
West North Central.....	77	63	5,190	64	62	5,151
South Region .....	4,251	2,549	111,464	4,527	2,315	101,934
South Atlantic and East South Central .....	664	648	44,999	742	723	47,056
West South Central.....	3,587	1,901	66,465	3,785	1,592	54,878
West Region.....	113	114	13,510	126	125	13,865
Mountain.....	15	15	1,739	26	25	2,957
Pacific .....	98	99	11,771	100	100	10,908

<sup>1</sup>Revised by 5 percent or more from previously published data.

See note at end of Table 17.

**Table 15. Production and Shipments of Carbon Dioxide by Geographic Area: 1998 and 1997**

[Production and quantity in short tons. Value in thousands of dollars]

Geographic area	Liquid			Solid		
	Production	Shipments		Production	Shipments	
		Quantity	Value		Quantity	Value
<b>1998</b>						
<b>Total</b> .....	<b>8,147,567</b>	<b>8,412,440</b>	<b>372,062</b>	<b>283,702</b>	<b>287,276</b>	<b>32,246</b>
Northeast Region <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)
North Central Region .....	1,558,190	1,555,817	83,276	121,981	121,247	11,792
East North Central <sup>1</sup> .....	966,690	976,193	54,427	40,485	40,977	4,317
West North Central.....	591,500	579,624	28,849	81,496	80,270	7,475
South Region .....	5,317,920	5,601,926	219,018	108,623	109,551	12,936
South Atlantic and East South Central .....	1,860,388	2,005,845	104,106	59,123	59,019	6,729
West South Central.....	3,457,532	3,596,081	114,912	49,500	50,532	6,207
West Region.....	1,271,457	1,254,697	69,768	53,098	56,478	7,518
Mountain.....	368,527	343,753	21,680	20,339	21,417	1,552
Pacific .....	902,930	910,944	48,088	32,759	35,061	5,966
<b>1997</b>						
<b>Total</b> .....	<b>6,585,772</b>	<b>6,419,080</b>	<b>294,533</b>	<b>385,556</b>	<b>386,411</b>	<b>38,070</b>
Northeast Region <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)
North Central Region .....	1,708,506	1,635,526	70,918	180,132	179,951	15,979
East North Central <sup>1</sup> .....	1,073,900	1,053,076	50,407	74,718	75,912	6,616
West North Central.....	634,606	582,450	20,511	105,414	104,039	9,363
South Region .....	3,761,161	3,692,111	172,219	106,975	106,469	12,397
South Atlantic and East South Central .....	2,135,561	2,168,129	90,910	53,727	53,241	5,696
West South Central.....	1,625,600	1,523,982	81,309	53,248	53,228	6,701
West Region.....	1,116,105	1,091,443	51,396	98,449	99,991	9,694
Mountain.....	(D)	(D)	(D)	20,631	21,222	1,602
Pacific .....	(D)	(D)	(D)	77,818	78,769	8,092

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Totals for Northeast Region are combined with East North Central to avoid disclosing data for individual companies.

See note at end of Table 17.

**Table 16. Production and Shipments of Argon and Hydrogen by Geographic Area: 1998 and 1997**

[Production and quantity in million cubic feet. Value in thousands of dollars]

Geographic area	Argon						Hydrogen					
	1998			1997			1998			1997		
	Production	Shipments		Production	Shipments		Production	Shipments		Production	Shipments	
Quantity		Value	Quantity		Value	Quantity		Value	Quantity		Value	
<b>Total</b> .....	<b>(D)</b>	<b>(D)</b>	<b>(D)</b>	<b>(D)</b>	<b>(D)</b>	<b>(D)</b>	<b>551,914</b>	<b>283,089</b>	<b>512,688</b>	<b>525,833</b>	<b>249,800</b>	<b>465,543</b>
Northeast Region.....	1,959	1,960	37,272	1,726	1,759	31,769	9,824	9,686	36,473	10,299	10,384	36,114
North Central Region.....	(D)	(D)	(D)	(D)	(D)	(D)	54,641	6,290	24,474	53,666	4,608	16,767
East North Central.....	6,816	6,845	111,322	6,434	6,429	113,304	(D)	(D)	(D)	(D)	(D)	(D)
West North Central.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
South Region.....	9,945	9,250	165,450	9,338	8,899	153,020	370,387	(D)	(D)	347,295	(D)	(D)
South Atlantic.....	1,971	1,962	40,684	1,695	1,701	33,594	8,783	1,394	5,536	9,471	2,192	6,623
East South Central.....	1,999	1,844	35,530	1,324	1,325	26,926	8,317	(D)	(D)	8,699	(D)	(D)
West South Central.....	5,975	5,444	89,236	6,319	5,873	92,500	353,287	196,736	331,635	329,125	166,141	297,675
West Region.....	1,865	1,849	36,776	1,696	1,719	32,340	117,062	(D)	(D)	114,573	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

<sup>†</sup>Revised by 5 percent or more from previously published data.

See note at end of Table 17.

**Table 17. Production and Shipments of Liquid Nitrogen and Oxygen Produced for Merchant Shipment by Geographic Area: 1998 and 1997**

[Production and quantity in million cubic feet. Value in thousands of dollars]

Geographic area	Nitrogen						Oxygen					
	1998			1997			1998			1997		
	Production	Shipments		Production	Shipments		Production	Shipments		Production	Shipments	
Quantity		Value	Quantity		Value	Quantity		Value	Quantity		Value	
<b>Total</b> .....	<b>250,062</b>	<b>243,637</b>	<b>732,411</b>	<b>239,154</b>	<b>243,915</b>	<b>639,064</b>	<b>113,626</b>	<b>113,245</b>	<b>363,121</b>	<b>110,260</b>	<b>110,736</b>	<b>385,446</b>
Northeast Region.....	48,946	48,797	125,468	49,211	48,846	124,767	27,651	27,648	73,196	21,043	21,062	63,158
North Central Region.....	80,622	80,668	165,568	78,700	78,749	154,942	36,041	35,929	84,163	34,072	34,334	83,930
East North Central.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
West North Central.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
South Region.....	83,082	76,680	314,098	75,388	80,466	211,222	35,681	35,433	106,083	42,945	42,992	130,033
South Atlantic.....	36,736	30,998	98,880	34,198	39,442	90,766	16,260	16,394	48,466	17,649	17,759	52,325
East South Central.....	19,278	17,299	44,252	12,539	12,525	31,781	8,306	7,825	23,796	6,515	6,512	19,000
West South Central.....	27,068	28,383	170,966	28,651	28,499	88,675	11,115	11,214	33,821	18,781	18,721	58,708
West Region.....	37,412	37,492	127,277	35,855	35,854	148,133	14,253	14,235	99,679	12,200	12,348	108,325

D Withheld to avoid disclosing data for individual companies.

Note: Northeast Region: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania. North Central Region: East North Central Division: Ohio, Indiana, Illinois, Michigan, and Wisconsin. West North Central Division: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas. South Region: South Atlantic Division: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida. East South Central Division: Kentucky, Tennessee, Alabama, and Mississippi. West South Central Division: Arkansas, Louisiana, Oklahoma, and Texas. West Region: Mountain: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada. Pacific: Washington, Oregon, California, Alaska, and Hawaii.

**Table 18. Quantity of Primary Production of Specified Industrial Gases: 1998 and 1997**

[Production in million cubic feet, except where otherwise noted]

Product code	Product description	1998					1997				
		Total	First quarter	Second quarter	Third quarter	Fourth quarter	Total	First quarter	Second quarter	Third quarter	Fourth quarter
3251201011	Acetylene <sup>1</sup> . . . . . Produced for compression, including cylinder and pipeline . . . . .	4,649	1,189	1,152	1,106	1,202	'4,948	'1,246	'1,149	'1,165	'1,388
3251201021	Produced for pipeline shipment, excluding that shipped to be compressed, and for consumption in same plant . . . . .	666	144	131	185	206	'674	'169	'163	'161	'180
		3,983	1,045	1,021	921	996	4,274	1,077	985	'1,004	'1,208
3251204011	Carbon dioxide: <sup>2</sup> Gas, including amounts produced and liquefied (short tons) . . . . .	5,649,290	(S)	(S)	(S)	(S)	5,268,818	(S)	(S)	(S)	(S)
3251204021	Liquid, including amounts produced and used to make dry ice (short tons) . . . . .	8,147,567	2,130,009	1,994,325	2,072,086	1,951,146	6,585,772	'1,489,067	'1,659,174	'1,595,880	'1,841,651
3251204031	Solid (dry ice) (short tons) . . . . .	283,702	63,396	76,561	72,610	71,135	385,556	'69,425	'75,590	'119,864	'120,677
325120D021	Argon, high purity: Produced for cylinder and bulk delivery and pipeline shipments, and for consumption in same plant . . . . .	19,442	4,841	4,833	4,850	4,919	17,243	4,397	4,628	'4,042	'4,175
	Hydrogen <sup>3</sup> . . . . .	551,914	126,544	136,841	141,551	146,978	'525,833	101,707	109,135	'154,996	'159,995
325120D031	Gas produced for: Merchant shipment <sup>4</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325120D041	Pipeline and onsite use <sup>4</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325120D051	Consumption in same plant . . . . .	260,611	64,684	65,967	64,371	65,588	250,150	'43,602	'52,563	'78,551	'75,434
325120D061	Liquid produced for: Merchant shipment <sup>4</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325120D071	Other shipments or uses <sup>4</sup> . . . . .	291,303	61,859	70,874	77,180	81,390	'275,683	'58,105	'56,572	'76,445	'84,561
	Nitrogen <sup>5</sup> . . . . .	870,906	263,532	201,418	202,501	203,455	808,183	'229,089	'227,003	'175,106	'176,985
3251207011	Gas produced by: Cryogenic onsite and pipeline <sup>6</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3251207021	Noncryogenic processes (psa, vpsa, membranes, etc.) by industrial gas-producing companies <sup>6</sup> . . . . .	565,144	185,473	126,768	126,155	126,748	524,399	'159,096	'155,803	'103,606	'105,894
3251207031	Captive uses for consumption in same plant (user-owned): Cryogenic processes <sup>7</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3251207041	Noncryogenic processes (psa, vpsa, membranes, etc.) <sup>7</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3251207051	Liquid produced for: Merchant shipment . . . . .	250,062	64,246	60,671	62,738	62,407	239,154	59,648	61,176	59,844	58,486
3251207061	Consumption in same plant <sup>7</sup> . . . . .	19,819	5,053	5,123	5,008	4,635	'22,518	'6,029	'6,077	'5,295	'5,117
3251207071	Other shipments or uses . . . . .	35,881	8,760	8,855	8,600	9,666	22,112	'4,316	'3,947	'6,360	'7,488
	Oxygen . . . . .	676,332	171,026	170,605	168,519	166,183	743,023	180,578	182,722	190,082	189,641
325120A011	Gas produced by: Cryogenic onsite and pipeline <sup>8</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325120A021	Noncryogenic processes (psa, vpsa, membranes, etc.) by industrial gas-producing companies <sup>8</sup> . . . . .	515,508	132,138	128,885	127,758	126,826	586,298	144,088	146,691	147,857	147,662

See footnotes at end of table.

Table 18. **Quantity of Primary Production of Specified Industrial Gases: 1998 and 1997—Con.**

[Production in million cubic feet, except where otherwise noted]

Product code	Product description	1998					1997				
		Total	First quarter	Second quarter	Third quarter	Fourth quarter	Total	First quarter	Second quarter	Third quarter	Fourth quarter
325120A031	Oxygen—Con. Captive uses for consumption in same plant (user-owned): Cryogenic processes <sup>9</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325120A041	Noncryogenic processes (psa, vpsa, membranes, etc.) <sup>9</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325120A051	Liquid produced for: Merchant shipment . . .	113,626	28,681	29,650	28,657	26,638	110,260	26,174	26,372	28,689	29,025
325120A061	Consumption in same plant <sup>9</sup> . . . . .	23,232	4,374	5,899	5,813	7,146	29,747	'6,106	'5,769	'9,134	'8,739
325120A071	Other shipments or uses . . . . .	23,966	5,833	6,171	6,491	5,471	16,718	4,210	3,890	'4,402	'4,216

D Withheld to avoid disclosing data for individual companies. 'Revised by 5 percent or more from previously published data.  
S Does not meet publication standards.

<sup>1</sup>Excludes information from railroad ships, shipyards, welding shops, and small establishments using portable generators.  
<sup>2</sup>Excludes quantities produced and consumed in plants manufacturing soda ash and urea.  
<sup>3</sup>Excludes amounts vented, used as fuel, etc., and unspecified amount produced for sale or interplant transfer to plants consuming this gas in production of ammonia.  
 Also excludes amounts produced in petroleum refineries for captive use.  
<sup>4</sup>Product codes 325120D031, 325120D041, 325120D061, and 325120D071 have been combined to avoid disclosing data for individual companies.  
<sup>5</sup>Excludes amounts produced and consumed in manufacturing of synthetic ammonia derivatives.  
<sup>6</sup>Product codes 3251207011 and 3251207021 have been combined with to avoid disclosing data for individual companies.  
<sup>7</sup>Product codes 3251207031, 3251207041, and 3251207061 have been combined to avoid disclosing data for individual companies.  
<sup>8</sup>Product codes 325120A011 and 325120A021 have been combined to avoid disclosing data for individual companies.  
<sup>9</sup>Product codes 325120A031, 325120A041, and 325120A061 have been combined to avoid disclosing data for individual companies.

Table 19. **Production, Exports, Imports, and Apparent Consumption of Industrial Gases: 1998 and 1997**

[Quantity in million cubic meters, unless otherwise noted]

Product code	Product description	Manufacturers' production	Exports of domestic merchandise <sup>1</sup>	Percent exports to manufacturers' production	Imports for consumption <sup>2</sup>	Apparent consumption <sup>3</sup>	Percent imports to apparent consumption
<b>1998</b>							
3251204	Carbon dioxide (gas, liquid, and solid) (metric tons) .....	12,782,331	85,803	0.7	19,542	12,716,070	0.2
325120D021	Argon (high purity) .....	550	240	43.6	27	337	8.0
325120D031, 041, 051, 061, 071	Hydrogen .....	15,619	272	1.7	144	15,491	0.9
3251207	Nitrogen .....	24,647	94	0.4	151	24,704	0.6
325120A	Oxygen .....	19,140	142	0.7	23	19,021	0.1
<b>1997</b>							
3251204	Carbon dioxide (gas, liquid, and solid) ....	11,346,324	100,224	0.9	22,119	11,268,219	0.2
325120D021	Argon (high purity) .....	488	263	53.9	28	253	11.1
325120D031, 041, 051, 061, 071	Hydrogen .....	14,881	298	2.0	141	14,724	1.0
3251207	Nitrogen .....	22,872	80	0.3	171	22,963	0.7
325120A	Oxygen .....	21,028	154	0.7	55	20,929	0.3

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Apparent consumption is derived by subtracting exports from total of production plus imports.

Note: For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

## HISTORICAL NOTE

Data on industrial gases have been collected by the Census Bureau since 1941. Prior to 1991, data were collected both monthly and annually. Beginning in 1991, as a result of budget reductions, the monthly series was canceled and replaced with a similar quarterly series. Historical data may be obtained from Current Industrial Reports

(called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

## CONTACT FOR DATA USERS

For additional information about these data, contact Nat Shelton, 301-457-6614.



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## PAINT, VARNISH, AND LACQUER—MA325F (FORMERLY MA28F)

### INTRODUCTION

The data in this subsection were collected in the Current Industrial Report surveys MQ325F and MA325F, Paint and Allied Products. The data consist of quarterly and annual statistics on manufacturers' shipments of paint and allied products for 1998 and 1997. The annual statistics are based on reported data from approximately 500 companies having 20 or more employees and represent approximately 95 percent of the paint industry (NAICS 325510). Estimates are used for companies with less than 20 employees, as well as for those companies whose reports were not received in time for publication.

### SUMMARY OF FINDINGS

In 1998, total manufacturers' shipments of paint and allied products amounted to \$17,249.2 million, an increase of 4.2 percent from the 1997 shipments of \$16,559.5 million.

Shipments of architectural coatings decreased 1.7 percent to \$6,159.8 million in 1998 from \$6,264.9 million in 1997.

Shipments of original equipment manufactures (OEM) coatings increased 5.2 percent to \$6,050.7 million in 1998 from \$5,750.7 million in 1997.

Shipments of powder coatings increased 13.4 percent to \$669.7 million in 1998 from \$590.5 million in 1997.

Shipments of special-purpose coatings increased 16.2 percent to \$3,365.4 million in 1998 from \$2,896.0 million in 1997.

Shipments of miscellaneous allied paint products increased 1.5 percent to \$1,673.3 million in 1998 from \$1,647.9 million in 1997.

### EXPLANATION OF TERMS

**Architectural coatings.** Coatings for onsite application to interior or exterior surfaces of residential, commercial, institutional, or industrial buildings. These are protective and decorative finishes applied at ambient temperatures for ordinary use and exposure.

*Clear finishes and spar varnishes.* Transparent protective and/or decorative films, including urethane coatings, natural varnishes, and shellac varnishes.

*Eggshell finish.* Low sheen (semimatte) surfaces that exhibit surface reflectance (gloss) similar to that of an eggshell, lying between flat and semigloss.

*Enamels.* Topcoats with the ability to form a smooth surface; usually associated with a high gloss, but also used with lesser gloss, i.e., flat enamels.

*Primer.* First complete coat of a painting system applied to a surface. Designed to provide adequate adhesion to new surfaces and to meet special requirements such as absorption and/or corrosion control.

*Stains.* Transparent and semitransparent solutions or suspensions of coloring matter in a vehicle, designed to color a surface by penetration without hiding it, or to color a material into which it is incorporated.

*Solvent.* Nonaqueous liquid, usually volatile, used to dissolve or disperse the coating constituents. This liquid evaporates during drying and does not become part of the dried coating.

*Lacquers.* Coating composition based on synthetic thermoplastic materials dissolved in organic solvent, which dries primarily by solvent evaporation. Typical lacquers include those based on nitrocellulose and other cellulose derivations, vinyl resins, and acrylic resins.

*Undercoat.* A coat of paint applied on new wood, over a primer, or over a previous coat of paint, to improve the seal and to serve as a base for the top coat.

*Exterior coatings.* Architectural coatings that are expected to possess reasonable durability when exposed to natural weathering.

**Miscellaneous paint products.** Includes thinners for dopes, lacquers, and oleoresinous thinners, including mixtures and proprietary thinners (sold as such); aerosol paints made from purchased paint, both exterior and interior; organosols and plastisols, other than coatings; paint and varnish driers; and miscellaneous related paint products, e.g., pigment dispersions, ink vehicles, and bleached shellac (not varnish).

*Putty and allied products.* Includes wood and textile preservatives (nonpressure type) such as wood fillers and sealers, putty and glazing compounds, paint and varnish removers, and other allied paint products, including brush cleaners.

(Source: *Paint/Coatings Dictionary, Federation of Societies for Coatings Technology, 1978*)

**OEM coatings.** Coatings formulated specifically for OEM to meet conditions of application and product requirements, and applied to such products during the manufacturing process.

*Powder coatings.* One hundred-percent solid coatings applied as dry powders and subsequently formed into a film with heat.

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*Electrical insulating coatings.* Coatings (varnishes), often used in combination with materials such as mica, fabrics, and paper, to provide insulation for electrical equipment. These coatings are formulated to have high resistance to electrical conduction.

**Quantity and value of shipments.** Shipments are collected in thousands of gallons and thousands of dollars. The only exception to this is powder coatings that are collected in pounds and converted to gallons by using a conversion factor of 3 (3 lb = 1 gallon).

**Special-purpose coatings, including coatings for transportation after market.** These may also be stock type or shelf goods, but differ from general architectural coatings by the fact that they are formulated for special applications and/or special environmental conditions such as extreme temperatures, chemicals, and fumes.

*Industrial new construction and maintenance paints.* High performance coatings formulated to withstand extremes of use such as heavy abrasion, water immersion, chemicals, corrosion, extreme temperatures, and electrical or

solvent exposure. Also includes maintenance coatings used to maintain nonresidential structures; building and nonbuilding requirements in such areas as public utilities, railroads, roads, and highways; and other industrial plant coatings, the primary purpose of which is protection. Industrial new construction and maintenance paints can be used on either interior or exterior applications.

*Marine paints, including ship and offshore.* Paints and coatings specifically formulated to withstand water immersion and exposure to marine atmosphere. Excludes spar varnish. Includes marine refinish paints.

*Traffic marking paints.* Paints specifically formulated to withstand wear of vehicular traffic and to be highly visible at night; used to mark center lines on roadways, traffic lanes, crosswalks, etc. Includes paints manufactured with reflective beads.

*Refinish paints.* Coatings formulated specifically to meet particular product and application requirements, and sold to the refinishing trade or through retail outlets for after-market application.

**Table 20. Summary of Estimated U.S. Total Quantity and Value of Shipments of Paint and Allied Products: 1993 to 1998**

[Quantity in millions of gallons. Value in millions of dollars]

Year	Total		Architectural coatings		Product coatings OEM		Special-purpose coatings		Miscellaneous allied paint products	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1998	1,491.5	17,249.2	636.3	6,159.8	458.5	6,050.7	188.6	3,365.4	208.1	1,673.3
1997	1,472.8	16,559.5	655.6	6,264.9	425.4	5,750.7	181.8	2,896.0	210.0	1,647.9
1996	1,468.2	16,554.7	640.3	6,246.3	398.7	5,474.1	208.9	3,263.8	220.3	1,570.5
1995	1,408.3	15,951.6	621.1	6,041.3	376.2	5,263.6	195.1	3,103.0	215.9	1,543.7
1994	1,431.1	15,645.2	644.8	5,888.3	372.9	5,069.9	193.8	3,197.3	219.6	1,489.7
1993	1,336.5	14,630.1	608.1	5,615.3	356.6	4,788.3	179.0	2,937.7	192.8	1,288.8

Note: Data for 1993 through 1998 are estimates of total U.S. value of shipments of paint, varnish, and lacquer. These estimates were developed by increasing product class totals shown in Table 21 by adjustment factors. For 1993 through 1998, these factors are: 1.008 for "Architectural coatings," .989 for "Product coatings OEM," 1.011 for "Special-purpose coatings," and 1.026 for "Miscellaneous paint products." For example: quantity and value of OEM coatings for 1998 shown in Table 21 amounted to \$463,590 and \$6,118,014, respectively. Adjusting these data by factor of .989 (multiplying \$463,590 and \$6,118,014 by .989) equals adjusted and rounded quantity and value of 458.5 and \$6,050.7 shown above in Table 20. These factors are used because the annual survey panel was selected to measure approximately 95 percent of total shipments in the paint industry (NAICS 325510, formerly SIC 2851). Adjustment factors (based on 1992 census relationships) bring each product code value up to 100 percent. Quarterly data for 1998 and 1997 reflect adjusted totals in Table 20 and are shown in Table 22 along with the quarterly data originally published in Current Industrial Reports, quarterly series MQ325F (MQ28F), *Paint, Varnish, and Lacquer*.

**Table 21. Quantity and Value of Shipments of Paint and Allied Products: 1998 and 1997**

[Quantity in thousands of gallons. Value in thousands of dollars]

Product code	Product description	1998		1997	
		Quantity	Value	Quantity	Value
325510	Paint and allied products <sup>1</sup>	1,484,296	17,188,517	1,464,968	16,500,422
3255101	Architectural coatings	631,293	6,110,867	650,418	6,215,159
	Exterior solvent type	77,096	840,573	65,986	744,871
3255101111	Solvent thinned paints and tinting bases, including barn and roof paints	18,584	178,225	13,197	137,997
3255101115	Solvent thinned enamels and tinting bases, including exterior-interior floor enamels	15,469	239,641	14,942	219,647
3255101119	Solvent thinned undercoaters and primers	9,890	112,146	7,723	93,374
3255101121	Solvent thinned clear finishes and sealers	10,943	85,395	10,622	92,576
3255101125	Solvent thinned stains, including shingle and shake	11,362	133,167	12,807	133,751
3255101129	Other exterior solvent thinned coatings, including bituminous paints	10,848	91,999	6,695	67,526
	Exterior water-type	181,355	1,786,873	187,988	1,824,612
3255101131	Water thinned paints and tinting bases, including barn and roof paints	128,091	1,279,369	139,049	1,356,581
3255101135	Water thinned exterior-interior deck and floor enamels	2,279	22,199	1,852	19,978
3255101139	Water thinned undercoaters and primers	11,323	127,618	9,007	104,340
3255101141	Water thinned stains and sealers	17,269	153,361	18,654	155,808
3255101145	Other exterior water thinned coatings	22,393	204,326	19,426	187,905
	Interior solvent type	49,514	540,774	52,432	653,895
3255101211	Flat solvent thinned wall paints and tinting bases, including mill white paints	3,512	36,731	3,727	44,467
3255101215	Gloss and quick drying enamels and other gloss-solvent thinned paints and enamels	3,679	48,726	6,067	79,453
3255101219	Semigloss, eggshell, satin solvent thinned paints, and tinting bases	11,548	150,248	11,803	159,690
3255101221	Solvent thinned undercoaters and primers	11,197	109,473	9,798	100,591
3255101225	Solvent thinned clear finishes and sealers	7,599	100,418	8,313	115,436
3255101229	Solvent thinned stains	2,209	26,464	4,793	59,473
3255101231	Other interior solvent thinned coatings	9,770	68,714	7,931	94,785

See footnotes at end of table.

Table 21. **Quantity and Value of Shipments of Paint and Allied Products: 1998 and 1997—Con.**

[Quantity in thousands of gallons. Value in thousands of dollars]

Product code	Product description	1998		1997	
		Quantity	Value	Quantity	Value
325510	Paint and allied products—Con.				
3255101	Architectural coatings—Con.				
	Interior water-type .....	315,636	2,864,206	335,035	2,905,966
3255101235	Flat water thinned paints and tinting bases .....	137,781	1,126,626	149,115	1,237,007
3255101239	Semigloss, eggshell, satin, and other water thinned paints and tinting bases .....	114,602	1,158,944	120,635	1,166,533
3255101241	Water thinned undercoaters and primers .....	29,148	223,159	26,131	195,939
3255101245	Other interior water thinned coatings, stains, and sealers .....	34,105	355,477	39,154	306,487
3255101249	Architectural lacquers .....	5,587	50,072	5,575	49,656
3255101YV	Architectural coatings, n.s.k. ....	2,105	28,369	3,402	36,159
3255104	Product finishes for original equipment manufactures (OEM), excluding marine coatings .....	463,590	6,118,014	430,115	5,814,627
3255104111	Automobile, light truck, van, and sport utility vehicle finishes .....	47,648	1,112,987	42,771	1,127,650
3255104121	Automobile parts finishes .....	2,160	66,908	3,238	77,524
3255104131	Heavy duty truck, bus, and recreational vehicle finishes ..	16,106	339,590	15,561	369,193
3255104141	Other transportation equipment finishes, including aircraft and railroad .....	14,316	186,770	10,853	165,674
3255104211	Appliance, heating equipment, and air-conditioner finishes .....	6,797	87,766	5,750	84,522
3255104215	Wood furniture, cabinet, and fixture finishes .....	59,898	610,249	49,938	511,615
3255104219	Wood and composition board flat stock finishes .....	17,757	179,696	16,731	171,277
3255104221	Metal building product finishes, including coatings for aluminum extrusions and siding .....	42,168	676,397	39,379	663,070
3255104225	Container and closure finishes .....	49,220	504,215	48,940	495,346
3255104229	Machinery and equipment finishes, including road building equipment and farm implements .....	16,039	328,202	14,721	242,920
3255104231	Nonwood furniture and fixture finishes, including business equipment finishes .....	31,469	419,834	26,048	384,557
3255104235	Paper, paper board, film, and foil finishes, excluding pigment binders .....	18,267	139,448	17,794	142,960
3255104239	Electrical insulating coatings .....	2,925	112,521	4,169	112,627
3255104241	Appliance powder coatings <sup>2</sup> .....	13,156	110,329	10,006	91,841
3255104245	Automotive powder coatings <sup>2</sup> .....	15,952	127,670	13,023	110,754
3255104249	Architectural powder coatings (such as aluminum extrusions) <sup>2</sup> .....	3,141	25,229	2,763	18,463
3255104251	Lawn and garden powder coatings <sup>2</sup> .....	4,389	48,386	3,663	44,437
3255104255	General metal finishing powder coatings <sup>2</sup> .....	38,842	333,510	35,283	308,999
3255104259	Thermoset functional powder coatings (for pipe, rebar, electrical insulation, etc.) <sup>2</sup> .....	(D)	(D)	(D)	(D)
3255104261	Thermoplastic powder coatings (all) <sup>2</sup> .....	(D)	(D)	(D)	(D)
3255104265	Other industrial product finishes .....	47,127	535,942	48,834	536,131
3255104YV	Product finishes for original equipment manufactures (OEM), excluding marine coatings, n.s.k. ....	5,503	140,364	9,481	132,430
3255107	Special-purpose coatings, including all marine coatings ....	186,547	3,328,740	179,783	2,864,498
	Industrial new construction and maintenance paints (especially formulated coatings for special conditions of industrial plants and/or facilities requiring protection against extreme temperatures, fungi, chemicals, fumes, etc.):				
3255107011	Interior .....	17,354	180,184	9,334	139,617
3255107015	Exterior .....	51,033	758,764	48,072	608,875
3255107021	Traffic marking paints (all types, shelf goods, and highway department) .....	32,952	221,559	37,130	244,640
3255107031	Automotive, other transportation and machinery refinish paints and enamels, including primers .....	53,541	1,609,278	42,874	1,303,471
3255107041	Marine paints, ship and off-shore facilities and shelf goods for both new construction and marine refinish and maintenance, excluding spar varnish .....	(D)	(D)	13,102	248,895
3255107051	Marine paints for yacht and pleasure craft, new construction, refinish, and maintenance .....	(D)	(D)	104	1,533
3255107061	Aerosol-paint concentrates produced for packaging in aerosol containers .....	14,980	167,888	24,952	234,893
3255107YV	Special-purpose coatings, n.s.k. ....	4,318	95,709	4,215	82,574

See footnotes at end of table.

**Table 21. Quantity and Value of Shipments of Paint and Allied Products: 1998 and 1997—Con.**

[Quantity in thousands of gallons. Value in thousands of dollars]

Product code	Product description	1998		1997	
		Quantity	Value	Quantity	Value
325510	Paint and allied products—Con.				
325510A	Miscellaneous allied paint products . . . . .	202,866	1,630,896	204,652	1,606,138
325510A011	Paint and varnish removers . . . . .	7,470	69,225	7,355	67,268
325510A021	Thinners for lacquers and other solvent based paint products . . . . .	36,098	172,748	33,476	157,970
325510A031	Pigment dispersions . . . . .	29,582	481,262	27,095	455,767
325510A041	Other miscellaneous allied paint products, including brush cleaners, ink vehicles, putty and glazing compounds . . . . .	125,732	843,560	133,355	861,449
325510AYWV	Miscellaneous allied paint products, n.s.k. . . . .	3,984	64,101	3,371	63,684

D Withheld to avoid disclosing data for individual companies. n.s.k. Not specified by kind. Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents total shipments for those establishments producing paint and allied products that have 20 or more employees. These establishments represent approximately 95 percent of total value of shipments for NAICS Industry 325510, Paint, varnishes, lacquers, enamels, and allied products, based on relationships observed in the 1997 Economic Census, Manufacturing sector final report.

<sup>2</sup>Data for powder coatings are collected in pounds and converted to gallons by using the 1998 conversion factor of 3 (3 lbs. = 1 gallon). Based on industry sources, a conversion factor of 5 (5 lbs. = 1 gallon) is now considered more appropriate. Data collected in pounds amounted to 258,572 thousand pounds in 1998 and 227,718 thousand pounds in 1997.

**Table 22. Quantity and Value of Shipments of Paint, Varnish, and Lacquer by Quarter: 1998 and 1997**

[Quantity in thousands of gallons. Value in thousands of dollars]

Quarter and year	As published							
	Total		Architectural coatings		Product coatings OEM		Special-purpose coatings	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>								
<b>Total</b> . . . . .	<b>1,315,687</b>	<b>15,372,176</b>	<b>673,174</b>	<b>6,406,499</b>	<b>467,584</b>	<b>6,051,001</b>	<b>174,929</b>	<b>2,914,676</b>
Fourth quarter . . . . .	289,072	3,705,905	138,251	1,383,774	110,235	1,538,921	40,586	783,210
Third quarter . . . . .	354,807	3,993,786	185,572	1,771,798	123,582	1,494,098	45,653	727,890
Second quarter . . . . .	371,104	4,152,809	202,811	1,903,113	121,756	1,526,147	46,537	723,549
First quarter . . . . .	300,704	3,519,676	146,540	1,347,814	112,011	1,491,835	42,153	680,027
<b>1997</b>								
<b>Total</b> . . . . .	<b>1,253,512</b>	<b>14,785,761</b>	<b>646,571</b>	<b>6,148,095</b>	<b>425,229</b>	<b>5,739,447</b>	<b>181,712</b>	<b>2,898,219</b>
Fourth quarter . . . . .	273,762	3,323,020	127,470	1,236,997	106,988	1,441,749	39,304	644,274
Third quarter . . . . .	328,073	3,924,072	175,836	1,737,452	103,883	1,409,608	48,354	777,012
Second quarter . . . . .	350,061	4,023,438	191,289	1,772,496	108,093	1,469,872	50,679	781,070
First quarter . . . . .	301,616	3,515,231	151,976	1,401,150	106,265	1,418,218	43,375	695,863
	As revised							
<b>1998</b>								
<b>Total</b> . . . . .	<b>1,283,503</b>	<b>15,575,928</b>	<b>636,320</b>	<b>6,159,803</b>	<b>458,545</b>	<b>6,050,716</b>	<b>188,638</b>	<b>3,365,409</b>
Fourth quarter . . . . .	282,541	3,773,334	130,653	1,330,317	108,114	1,538,698	43,774	904,319
Third quarter . . . . .	345,834	4,037,889	175,428	1,703,389	121,181	1,494,123	49,225	840,377
Second quarter . . . . .	361,296	4,191,197	191,717	1,830,076	119,393	1,525,792	50,186	835,329
First quarter . . . . .	293,832	3,573,508	138,522	1,296,021	109,857	1,492,103	45,453	785,384
<b>1997</b>								
<b>Total</b> . . . . .	<b>1,262,832</b>	<b>14,911,640</b>	<b>655,621</b>	<b>6,264,901</b>	<b>425,399</b>	<b>5,750,707</b>	<b>181,812</b>	<b>2,896,032</b>
Fourth quarter . . . . .	275,669	3,349,883	129,284	1,260,498	107,031	1,444,556	39,354	644,829
Third quarter . . . . .	330,622	3,955,620	178,323	1,770,461	103,925	1,412,372	48,374	772,787
Second quarter . . . . .	352,717	4,060,717	193,882	1,806,171	108,136	1,472,854	50,699	781,692
First quarter . . . . .	303,824	3,545,420	154,132	1,427,771	106,307	1,420,925	43,385	696,724

See note at end of Table 20.

Table 23. **Shipments, Exports, Imports, and Apparent Consumption of Selected Paints: 1998 and 1997**

[Quantity in millions of gallons. Value in millions of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Percent exports to manufacturers' production		Imports for consumption <sup>2</sup>		Apparent consumption <sup>4</sup>		
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value <sup>3</sup>	Quantity	Value	
3255101000, 4000, 7000	Paint, varnish, and lacquer . . . . .	1998 . . . . .	1,283.4	15,575.9	(NA)	887.8	(NA)	5.7	(NA)	307.4	(NA)	14,995.5
		1997 . . . . .	1,262.8	14,911.6	(NA)	859.0	(NA)	5.8	(NA)	297.3	(NA)	14,349.9
325510A011, 21	Paint and varnish remover, including thinners . . . . .	1998 . . . . .	44.7	248.3	(NA)	68.5	(NA)	27.6	(NA)	17.3	(NA)	197.1
		1997 . . . . .	41.9	231.1	(NA)	60.9	(NA)	26.4	(NA)	16.3	(NA)	186.5
325510A041	Other miscellaneous allied paint products . . . . .	1998 . . . . .	129.0	865.5	(NA)	144.8	(NA)	16.7	(NA)	76.5	(NA)	797.2
		1997 . . . . .	136.8	883.8	(NA)	145.0	(NA)	16.4	(NA)	66.5	(NA)	805.3

NA Not available.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>4</sup>Apparent consumption is equal to domestic shipments, plus imports, minus exports.

Note: For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

**HISTORICAL NOTE**

Data on paint, varnish, and lacquer have been collected by the Census Bureau since 1928. Prior to 1981, a monthly sample survey, benchmarked to the census of manufactures, was used to collect these data. Beginning with data year 1981, an annual survey on paint and related products was added. The monthly survey was still conducted through 1990. Beginning in 1991, due to budget reductions, the monthly series was canceled and replaced with a similar quarterly series.

Historical data may be obtained from the Current Industrial Reports (called Facts for Industry before 1959), available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Thanos Theodoropoulos, 301-457-1606.

## PHARMACEUTICAL PREPARATIONS, EXCEPT BIOLOGICALS—MA325G (FORMERLY MA28G)

### INTRODUCTION

The data in this subsection are from the survey MA325G, Pharmaceutical Preparations, which covers manufacturers of pharmaceutical preparations, except biologicals. The data include all preparations that can be dispensed in measured portions, to produce the therapeutic effect for which the preparation is most commonly employed (liquids, tablets, pills, capsules, lozenges, powders, ointments, jellies, salves, inhaler tubes, etc.). The survey excludes all uncompounded medicinal chemicals and botanicals.

### EXPLANATION OF TERMS

**Bulk domestic shipments.** Represents the value of dosage forms shipped in bulk to other plants of the same company or other companies in large drums or other bulk-type containers requiring only repackaging. Shipments to

hospitals or similar users are excluded from this item description and are reported in the product areas described in the Prescription and Nonprescription definition.

**Nonprescription.** A drug product that is sold over the counter, whether advertised or otherwise promoted to the professions, or advertised or otherwise promoted to the general public. (Note: Prior to 1984, separate figures were collected for drugs promoted to the professions, "OTC Professional," and drugs promoted to the general public, "Proprietary".)

**Prescription legend.** A drug product that by Federal law is available only by prescription by a licensed physician.

Table 24. **Value of Product Class Shipments of Pharmaceutical Preparations, Except Biologicals: 1994 to 1998**

[In millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994
3254121000	Pharmaceutical preparations . . . . .	67,275,114	57,418,629	51,844,384	48,864,310	48,209,370
3254124000	Pharmaceutical preparations affecting neoplasms, endocrine system, and metabolic diseases, for human use . . . . .	6,916,329	5,465,948	4,788,026	4,075,943	4,119,777
3254127000	Pharmaceutical preparations acting on the central nervous system and sense organs, for human use . . . . .	14,661,463	11,708,007	10,123,104	9,228,199	8,989,931
325412A000	Pharmaceutical preparations acting on the cardiovascular system, for human use . . . . .	8,909,370	8,799,338	6,911,905	5,987,883	5,673,893
325412D000	Pharmaceutical preparations acting on the respiratory system, for human use . . . . .	7,442,622	5,641,256	4,993,919	5,196,084	5,566,412
325412G000	Pharmaceutical preparations acting on the digestive or genito-urinary system, for human use . . . . .	9,956,822	9,482,082	8,494,387	8,593,410	8,479,204
325412L000	Pharmaceutical preparations acting on the skin, for human use . . . . .	2,128,254	1,867,102	2,184,783	2,170,966	2,089,734
325412P000	Vitamin, nutrient, and hematinic preparations, for human use . . . . .	5,706,882	5,088,302	5,280,805	4,811,596	4,402,072
325412T000	Pharmaceutical preparations affecting parasitic and infective diseases, for human use . . . . .	9,745,145	7,794,882	7,304,121	7,195,493	7,257,365
	Pharmaceutical preparations for veterinary use . . . . .	1,808,227	1,571,712	1,763,334	1,604,736	1,630,982

**Table 25. Value of Shipments of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997**

[In thousands of dollars]

Product code	Product description	1998				1997			
		Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>	Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>
325412	Pharmaceutical preparations (except biologicals) . . . . .	67,275,114	53,789,881	12,305,656	1,179,577	57,418,629	45,037,046	11,184,330	1,197,253
3254121000	Pharmaceutical preparations affecting neoplasms, endocrine system, and metabolic diseases, for human use . . . . .	6,916,329	6,733,919	15,753	166,657	5,465,948	5,340,896	14,532	110,520
	Hormones and synthetic substitutes:								
	Corticoids:								
3254121011	Systemic . . . . .	153,226	(D)	(D)	(D)	143,463	(D)	(D)	(D)
3254121016	Local and topical including anti-infective combinations . . . . .	482,248	479,248	3,000	-	382,862	381,303	1,559	-
3254121021	Androgens . . . . .	(D)	(D)	-	(D)	(D)	(D)	-	(D)
3254121026	Estrogens . . . . .	193,216	193,216	-	(D)	158,332	158,332	-	(D)
3254121031	Insulin and antidiabetic agents . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3254121036	ACTH (corticotropin) . . . . .	(D)	(D)	-	-	(D)	(D)	-	-
3254121041	Oral contraceptive preparations . . . . .	(D)	(D)	-	-	(D)	(D)	-	-
3254121046	Progestogens, excluding premenstrual tension preps (see product code 325412D093) . . . . .	20,819	20,819	-	(D)	(D)	(D)	-	(D)
3254121051	Sex hormone combinations (except progestogen combinations) . . . . .	(D)	(D)	-	-	(D)	(D)	-	-
3254121056	Thyroid and antithyroid preparations, including iodides . . . . .	(D)	(D)	(D)	-	60,051	(D)	(D)	(D)
3254121061	Anabolic agents . . . . .	(D)	(D)	(D)	-	(D)	(D)	(D)	-
3254121066	Other hormone preparations . . . . .	291,008	(D)	(D)	(D)	248,095	(D)	(D)	(D)
	Antineoplastic agents:								
3254121071	Radioactive isotopes for internal use . . . . .	51,012	51,012	-	-	35,605	35,605	-	-
3254121076	Specific antineoplastic agents . . . . .	1,356,006	1,356,006	-	(D)	1,210,832	1,210,832	-	(D)
3254121081	Other pharmaceutical preparations affecting neoplasms, the endocrine system, and metabolic diseases, for human use . . . . .	2,562,503	(D)	(D)	(D)	1,814,058	(D)	(D)	(D)
3254124000	Pharmaceutical preparations acting on the central nervous system and the sense organs, for human use . . . . .	14,661,463	12,171,678	2,307,983	181,802	11,708,007	9,401,424	2,161,877	144,706
3254124011	Parasympathomimetic cholinergic drugs . . . . .	24,156	24,156	-	(D)	22,598	22,598	-	(D)
3254124014	Skeletal muscle relaxants . . . . .	310,849	310,849	-	(D)	325,291	325,291	-	-
	Internal analgesics and antipyretics:								
	Narcotic:								
3254124017	Opium and derivatives . . . . .	416,772	416,772	-	(D)	<sup>a</sup> 390,334	<sup>a</sup> 390,334	-	(D)
3254124021	Synthetic narcotics . . . . .	319,139	319,139	-	(D)	279,261	279,261	-	-
	Nonnarcotic:								
	Salicylates:								
3254124024	Aspirin (acetylsalicylic acid) . . . . .	259,972	-	259,972	(D)	262,729	(D)	(D)	(D)
3254124027	Other salicylates, such as sodium salicylate <sup>2</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3254124031	Aspirin combinations . . . . .	158,588	(D)	(D)	(D)	192,356	(D)	(D)	(D)
3254124034	Acetaminophen and combinations . . . . .	561,330	90,147	471,183	30,713	442,052	77,696	364,356	25,975
3254124037	Antiarthritic (nonhormonal) . . . . .	718,875	579,161	<sup>a</sup> 139,714	<sup>a</sup> 35,410	725,929	555,214	170,715	37,471

See footnotes at end of table.



Table 25. **Value of Shipments of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997—Con.**

[In thousands of dollars]

Product code	Product description	1998				1997			
		Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>	Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>
325412	Pharmaceutical preparations (except biologicals)—Con.								
3254121000	Pharmaceutical preparations acting on the central nervous system and the sense organs, for human use—Con.								
3254124041	Internal analgesics and antipyretics—Con.								
	Other internal analgesics and antipyretics, including effervescent types and suppositories <sup>2</sup> .....	208,288	131,402	76,886	9,877	187,054	126,381	60,673	6,119
3254124044	Anticonvulsants (except phenobarbital).....	315,853	315,853	-	10,380	<sup>†</sup> 347,693	(D)	(D)	(D)
	Psychotherapeutic agents:								
3254124047	Antidepressants.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Tranquilizers:								
3254124051	Phenothiazine derivatives.....	306,923	306,923	-	(D)	345,494	345,494	-	(D)
3254124054	Other tranquilizers.....	56,423	56,423	-	-	61,397	61,397	-	-
3254124057	Other psychotherapeutic agents.....	1,182,264	(D)	(D)	(D)	906,342	(D)	(D)	(D)
	Central nervous system stimulants (respiratory and cerebral stimulants, including sympathomimetic agents employed mainly as CNS stimulants); excluding nondrug dietaries for weight control:								
3254124061	Amphetamines.....	(D)	(D)	-	-	(D)	(D)	-	-
3254124064	Anorexiant (except amphetamines).....	39,389	38,038	(D)	(D)	<sup>†</sup> 174,295	(D)	(D)	(D)
3254124067	Other CNS stimulants.....	117,247	(D)	(D)	(D)	(D)	(D)	2,420	409
	Sedatives and hypnotics:								
	Prescription:								
3254124071	Barbiturates.....	40,459	40,459	(X)	(D)	39,557	39,557	(X)	-
3254124074	Nonbarbiturates.....	(D)	(D)	(X)	(D)	(D)	(D)	(X)	(D)
	Nonprescription:								
3254124077	Sleep inducers.....	63,801	(X)	63,801	(D)	50,395	(X)	50,395	(D)
3254124081	Calming agents.....	(D)	(X)	(D)	-	(D)	(X)	(D)	-
	Anesthetics (except urinary tract anesthetics) and skin preparations used as antipruritics:								
3254124084	Local and topical.....	303,858	294,838	9,020	-	289,294	283,063	6,231	-
3254124087	General.....	36,939	(D)	(D)	(D)	42,294	(D)	(D)	(D)
	Eye and ear preparations, excluding anti-infectives, corticoids, and antibacterials and antiseptics:								
3254124091	Mydriatics and miotics.....	(D)	(D)	-	-	(D)	(D)	-	-
3254124093	Contact lens solutions.....	656,623	(D)	(D)	-	643,513	(D)	(D)	(D)
3254124095	Other eye and ear preparations.....	722,468	312,343	410,125	(D)	673,310	306,619	366,691	(D)
3254124097	Other pharmaceutical preparations acting on the central nervous system and the sense organs, for human use.....	3,349,795	3,298,687	51,108	(D)	<sup>†</sup> 1,826,893	<sup>†</sup> 1,753,433	73,460	(D)
3254127000	Pharmaceutical preparations acting on the cardiovascular system, for human use.....	8,909,370	8,781,226	4,091	124,053	<sup>†</sup> 8,799,338	<sup>†</sup> 8,696,378	5,262	<sup>†</sup> 97,698
3254127011	Anticoagulants.....	878,692	(D)	(D)	(D)	<sup>†</sup> 888,340	(D)	(D)	(D)
3254127016	Hemostatics.....	(D)	(D)	(D)	-	<sup>†</sup> 17,671	(D)	(D)	-
3254127021	Digitalis preparations.....	(D)	(D)	-	(D)	225,786	225,786	-	(D)

See footnotes at end of table.

Table 25. **Value of Shipments of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997—Con.**

[In thousands of dollars]

Product code	Product description	1998				1997			
		Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>	Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>
32542	Pharmaceutical preparations (except biologicals)—Con.								
3254121000	Pharmaceutical preparations acting on the cardiovascular system, for human use—Con.								
	Hypotensives:								
3254127026	Rauwolfia-alkaloid preparations . . . . .	13,540	13,540	-	(D)	17,301	17,301	-	-
3254127031	Beta receptor blocking agents . . . . .	347,911	347,911	-	-	'210,243	'210,243	-	-
3254127036	Other hypotensives . . . . .	212,671	212,671	-	(D)	220,360	220,360	-	(D)
	Vasodilators:								
3254127041	Coronary . . . . .	622,940	622,940	-	(D)	628,475	628,475	-	(D)
3254127046	Peripheral . . . . .	98,481	98,481	-	-	72,723	72,723	-	-
3254127051	Antiarrhythmics such as propanolol and quinidine . . . . .	<sup>a</sup> 297,033	<sup>a</sup> 297,033	-	(D)	'235,179	'235,179	-	(D)
3254127056	Calcium channel blockers such as isoptin, calan, procardia, cardizem, and adalat . . . . .	665,597	665,597	-	(D)	'559,234	'559,234	-	(D)
3254127061	Ace inhibitors such as vasotec, capoten, prinivil, and zestril . . . . .	(D)	(D)	-	-	'2,314,525	'2,314,525	-	(D)
3254127066	Other pharmaceutical preparations acting on the cardiovascular system, including vasopressors, and antiheparin agents, for human use . . . . .	2,734,857	(D)	(D)	35,810	'3,311,803	(D)	(D)	'34,076
325412A000	Pharmaceutical preparations acting on the respiratory system, for human use . . . . .	7,442,622	5,552,839	1,817,718	72,065	5,641,256	3,752,569	1,816,675	72,012
325412A011	Antihistamines (except cold preparations and antiemetics) . . . . .	1,478,000	(D)	(D)	(D)	1,076,293	849,008	227,285	(D)
325412A016	Bronchial dilators, including antiasthmatics . . . . .	909,765	882,855	26,910	(D)	'544,080	'511,221	32,859	(D)
	Cough and cold preparations (prescription):								
	Cough preparations and expectorants (containing antitussive or other ingredients intended primarily to treat cough only):								
325412A021	Narcotic . . . . .	70,291	70,291	(X)	-	56,027	56,027	(X)	-
325412A026	Nonnarcotic . . . . .	<sup>a</sup> 85,168	<sup>a</sup> 85,168	(X)	(D)	'91,466	<sup>a</sup> '91,466	(X)	(D)
	Cold preparations containing combinations of the following ingredients (but not antitussive): nasal decongestant, antihistamine, analgesic, bioflavonoid, or antibiotic:								
325412A031	Nasal decongestants . . . . .	4,586	4,586	(X)	(D)	4,555	4,555	(X)	(D)
325412A036	Antihistamine cold preparations . . . . .	4,868	4,868	(X)	(D)	4,153	4,153	(X)	(D)
325412A041	Other prescription cold preparations . . . . .	29,602	29,602	(X)	(D)	38,271	38,271	(X)	(D)
325412A046	Cough and cold combinations (prescription) . . . . .	93,663	93,663	(X)	(D)	90,790	90,790	(X)	<sup>a</sup> 480

See footnotes at end of table.

Table 25. **Value of Shipments of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997—Con.**

[In thousands of dollars]

Product code	Product description	1998				1997			
		Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>	Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>
325412	Pharmaceutical preparations (except biologicals)—Con.								
325412A000	Pharmaceutical preparations acting on the respiratory system, for human use—Con.								
	Cough and cold preparations (nonprescription):								
	Decongestants:								
325412A051	Nasal sprays.....	185,681	(X)	185,681	-	205,749	(X)	205,749	-
325412A056	Nose drops.....	(D)	(X)	(D)	(D)	(D)	(X)	(D)	-
325412A061	Other decongestants.....	195,935	(X)	195,935	(D)	<sup>†</sup> 213,866	(X)	<sup>†</sup> 213,866	(D)
325412A066	Cough syrups.....	568,441	(X)	568,441	-	467,283	(X)	467,283	-
325412A071	Capsules and tablets.....	480,105	(X)	480,105	41,539	502,859	(X)	502,859	38,858
325412A076	Lozenges.....	33,091	(X)	33,091	(D)	49,994	(X)	49,994	(D)
325412A081	Topical preparations.....	(D)	(X)	(D)	-	(D)	(X)	(D)	-
325412A086	Cough drops.....	(D)	(X)	(D)	-	(D)	(X)	(D)	-
325412A091	Other nonprescription cough and cold preparations.....	61,691	(X)	61,691	(D)	71,790	(X)	71,790	(D)
325412A094	Beta agonists such as proventil and ventolin.....	1,455,133	1,455,133	-	(D)	1,131,534	1,131,534	-	(D)
325412A097	Other pharmaceutical preparations acting on the respiratory system, for human use.....	1,703,570	1,696,189	7,381	(D)	<sup>†</sup> 1,003,953	<sup>†</sup> 975,544	28,409	(D)
325412D000	Pharmaceutical preparations acting on the digestive or the genito-urinary systems, for human use.....	9,956,822	8,601,217	1,289,451	66,154	<sup>†</sup> 9,482,082	<sup>†</sup> 8,147,111	<sup>†</sup> 1,282,135	52,836
	Digestive system preparations:								
325412D011	Enzymes.....	77,316	59,914	<sup>a</sup> 17,402	(D)	78,249	59,223	<sup>a</sup> 19,026	(D)
325412D014	Antacids, including acid neutralizing products with coating functions, but excluding effervescent salicylate products classified as analgesics.....	390,186	12,231	377,955	(D)	<sup>†</sup> 419,331	7,266	<sup>†</sup> 412,065	(D)
325412D017	Antidiarrheals.....	313,066	(D)	(D)	(D)	262,903	26,860	236,043	(D)
	Laxatives:								
325412D021	Irritants.....	99,084	32,817	66,267	(D)	90,549	(D)	(D)	(D)
325412D024	Bulk producing.....	(D)	(D)	(D)	(D)	202,800	(D)	(D)	(D)
325412D027	Fecal softeners.....	33,848	(D)	(D)	(D)	41,619	(D)	(D)	19,309
325412D031	Emollients.....	(D)	(D)	(D)	-	(D)	(D)	(D)	-
325412D034	Saline.....	15,359	(D)	(D)	-	<sup>†</sup> 13,756	(D)	(D)	-
325412D037	Enema specialties.....	36,608	-	36,608	(D)	<sup>†</sup> 36,085	-	<sup>†</sup> 36,085	(D)
325412D041	Digestants.....	(D)	-	(D)	(D)	(D)	(D)	(D)	(D)
325412D044	Bile therapy preparations, including bile products, cholagogues, and cholagogues.....	(D)	(D)	(D)	-	(D)	(D)	(D)	-
325412D047	Antinauseants and motion sickness remedies (antiemetics), including antihistaminic antiemetic preparations.....	(D)	(D)	15,525	(D)	(D)	(D)	13,840	(D)
325412D051	Lipotropics and cholesterol reducers.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325412D054	Diet aids containing local anesthetics such as benzocaine.....	(D)	(D)	(D)	(D)	(D)	-	(D)	(D)

See footnotes at end of table.

Table 25. **Value of Shipments of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997—Con.**

[In thousands of dollars]

Product code	Product description	1998				1997			
		Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>	Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>
325412	Pharmaceutical preparations (except biologicals)—Con.								
325412D000	Pharmaceutical preparations acting on the digestive or the genito-urinary system, for human use—Con.								
	Antispasmodics and anticholinergics:								
325412D057	Synthetics . . . . .	21,189	21,189	-	-	21,566	21,566	-	-
325412D061	Ataractic combinations . . . . .	-	-	-	-	(D)	(D)	-	-
325412D064	Belladonna and derivatives . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325412D067	H <sub>2</sub> blocking agents such as zantac, tagamet, carafate, and pepcid . . . . .	3,282,422	(D)	(D)	-	3,687,820	(D)	(D)	-
325412D071	Other antispasmodics and anticholinergics . . . . .	20,236	20,236	-	-	7,282	7,282	-	-
325412D074	Other digestive system preparations, including emetics . . . . .	99,141	97,500	<sup>a</sup> 1,641	(D)	68,996	66,946	2,050	(D)
325412D077	Genito-urinary preparations: Urinary antibacterials and antiseptics . . . . .	153,220	(D)	(D)	(D)	108,017	(D)	(D)	(D)
	Diuretics, excluding aminophylline, xanthine, and rauwolfia-diuretic combinations (see cardiovascular preparations):								
325412D081	Thiazides and related agents . . . . .	58,225	58,225	-	-	28,245	28,245	-	-
325412D084	Other diuretics . . . . .	119,493	(D)	(D)	-	88,446	(D)	(D)	-
325412D087	Oxytocics . . . . .	(D)	(D)	-	-	(D)	(D)	-	-
325412D091	Contraceptive agents (except oral contraceptives; i.e., aerosols, jels, sponges, and creams) . . . . .	(D)	(D)	(D)	-	35,524	(D)	(D)	-
325412D093	Premenstrual tension preparations . . . . .	(D)	-	(D)	(D)	(D)	-	(D)	(D)
325412D095	Vaginal cleaners . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	-
325412D097	Other pharmaceutical preparations acting on the genito-urinary system, including urinary tract anesthetics, for human use . . . . .	1,107,841	960,572	147,269	4,053	892,041	812,410	<sup>a</sup> 79,631	1,675
325412G000	Pharmaceutical preparations acting on the skin, for human use . . . . .	2,128,254	827,773	1,278,795	21,686	1,867,102	703,867	1,120,106	43,129
	Dermatological preparations:								
325412G011	Emollients and protectives, including burn remedies and ointment bases . . . . .	580,436	(D)	(D)	-	422,673	(D)	(D)	(D)
325412G016	Antipruritics and local anesthetic skin preparations . . . . .	79,600	<sup>a</sup> 5,648	73,952	(D)	78,146	<sup>a</sup> 8,614	69,532	(D)
325412G021	Coal tar, sulfur and resorcinol preparations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325412G026	Antiacne preparations . . . . .	663,605	(D)	(D)	(D)	517,864	(D)	(D)	(D)
325412G031	Antidandruff and antiseborrheic preparations (except dandruff shampoos) . . . . .	12,555	(D)	(D)	-	12,225	(D)	(D)	-
325412G036	Other dermatological preparations . . . . .	194,908	95,257	99,651	(D)	177,113	82,476	94,637	(D)

See footnotes at end of table.

Table 25. **Value of Shipments of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997—Con.**

[In thousands of dollars]

Product code	Product description	1998				1997			
		Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>	Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>
325412	Pharmaceutical preparations (except biologicals)—Con.								
325412G000	Pharmaceutical preparations acting on the skin, for human use—Con.								
325412G041	Hemorrhoidal preparations . . . .	110,710	2,489	108,221	-	116,789	1,684	115,105	-
325412G046	External analgesics and counterirritants: Ointments, jellies, pastes, creams, cerates, and salves . . . . .	240,860	(D)	(D)	(D)	<sup>r</sup> 256,024	(D)	(D)	(D)
325412G051	Liquid, excluding rubbing alcohol, but including liniments . . . . .	<sup>a</sup> 23,243	-	<sup>a</sup> 23,243	(D)	<sup>r</sup> 32,610	-	<sup>r</sup> 32,610	(D)
325412G056	Rubbing alcohol . . . . .	15,062	-	15,062	-	15,949	-	15,949	-
325412G061	Other external analgesics and counterirritants . . . . .	(D)	(D)	(D)	(D)	<sup>r</sup> 37,965	(D)	(D)	(D)
325412G066	Other pharmaceutical preparations acting on the skin, for human use . . . . .	131,930	73,864	<sup>a</sup> 58,066	(D)	<sup>r</sup> 134,430	<sup>r</sup> 78,202	<sup>a</sup> <sup>r</sup> 56,228	(D)
325412L000	Vitamin, nutrient, and hematinic preparations, for human use . . . .	5,706,882	1,372,934	3,947,260	386,688	<sup>r</sup> 5,088,302	<sup>r</sup> 1,296,148	<sup>r</sup> 3,328,062	<sup>r</sup> 464,092
325412L011	Vitamins: Multivitamins, plain and with minerals, (except B complex vitamins and fish liver oils) . . . . .	1,674,668	16,722	1,657,946	60,203	<sup>r</sup> 1,309,554	<sup>r</sup> 20,988	<sup>r</sup> 1,288,566	(D)
325412L016	Pediatric vitamin preparations (drops, suspensions, and chewable tablets) . . . . .	99,301	6,872	92,429	1,091	95,695	(D)	(D)	2,279
325412L021	Prenatal vitamin preparations . . . . .	35,240	19,423	15,817	916	32,190	10,320	21,870	877
325412L026	B complex preparations . . . . .	161,980	8,244	153,736	8,996	<sup>r</sup> 135,842	9,986	<sup>r</sup> 125,856	7,265
325412L031	Fluoride preparations . . . . .	1,849	(D)	(D)	-	1,514	(D)	(D)	-
325412L036	All other vitamin preparations . . . . .	948,648	<sup>a</sup> 9,371	939,277	194,665	<sup>a</sup> <sup>r</sup> 800,563	<sup>a</sup> <sup>r</sup> 7,651	<sup>a</sup> <sup>r</sup> 792,912	<sup>r</sup> 120,753
325412L041	Fish liver oils (cod, etc.) . . . . .	33,118	(D)	(D)	(D)	<sup>r</sup> 29,431	(D)	(D)	(D)
325412L046	Nutrients, excluding therapeutic dietary foods and infant formulas . . . . .	427,134	27,109	400,025	<sup>a</sup> 40,254	<sup>r</sup> 386,389	40,247	<sup>r</sup> 346,142	<sup>a</sup> 31,586
325412L051	Tonics and alteratives . . . . .	13,287	-	13,287	(D)	14,017	-	14,017	(D)
325412L056	Hematinics: With B <sub>12</sub> : Oral . . . . .	19,227	17,261	1,966	217	15,780	13,572	2,208	164
325412L061	Parenteral . . . . .	2,632	2,632	-	-	(D)	(D)	-	-
325412L066	Other hematinics: Oral . . . . .	19,028	(D)	(D)	539	15,071	(D)	(D)	302
325412L071	Parenteral . . . . .	(D)	(D)	-	-	(D)	(D)	-	-
325412L076	Hospital solutions, including dextran, etc., but excluding biologicals such as blood plasma . . . . .	(D)	(D)	(D)	-	<sup>r</sup> 986,767	(D)	(D)	-
325412L081	Other vitamin, nutrient, and hematinic preparations, for human use . . . . .	857,617	325,424	532,193	76,085	<sup>r</sup> 710,993	203,115	<sup>r</sup> 507,878	66,412

See footnotes at end of table.

Table 25. **Value of Shipments of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997—Con.**

[In thousands of dollars]

Product code	Product description	1998				1997			
		Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>	Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>
325412	Pharmaceutical preparations (except biologicals)—Con.								
325412P000	Pharmaceutical preparations affecting parasitic and infective diseases, for human use . . . . .	9,745,145	8,965,801	713,081	66,263	7,794,882	6,944,792	726,996	123,094
	Anti-infective agents, excluding corticoid anti-infective combinations (see product code 3254121015):								
325412P011	Amebicides and trichomonocides . . . . .	(D)	(D)	(D)	-	(D)	(D)	(D)	(D)
325412P014	Anthelmintics . . . . .	17,290	(D)	(D)	-	21,587	(D)	(D)	(D)
	Systemic antibiotic preparations:								
	Broad and medium spectrum (single or in combinations with other antibiotics):								
325412P017	Tetracyclines, including chlortetracycline and congeners . . . . .	109,124	109,124	-	-	112,568	112,568	-	-
325412P021	Cephalosporins such as cefamandole . . . . .								
	nafate and cephalixin . . . . .	2,163,434	2,163,434	-	(D)	1,606,718	1,606,718	-	(D)
325412P024	Erythromycins such as erythromycin ethylsuccinate and erythromycin stearate . . . . .	79,251	79,251	-	-	90,029	90,029	-	-
	Penicillins (single):								
	Semisynthetic penicillins such as ampicillin and ampicillin:								
325412P027	Injectable . . . . .	34,727	34,727	-	(D)	45,482	45,482	-	(D)
325412P031	Other forms . . . . .	1,987,222	1,987,222	-	-	1,919,835	1,919,835	-	-
	Other penicillins (except semisynthetic) such as penicillin V and penicillin G:								
325412P034	Injectable . . . . .	(D)	(D)	-	-	(D)	(D)	-	-
325412P037	Other forms . . . . .	13,504	13,504	-	-	15,349	15,349	-	(D)
325412P041	Other broad and medium spectrum antibiotics (except sulfa-antibiotic combinations) . . . . .	496,830	(D)	(D)	-	472,090	(D)	(D)	(D)
325412P044	Antibiotics in combination with sulfonamides . . . . .	28,048	28,048	-	-	30,668	30,668	-	-
325412P047	Other systemic antibiotic preparations, including narrow-spectrum antibiotics and streptomycins . . . . .	95,406	95,406	-	(D)	97,291	97,291	-	(D)
325412P051	Topical antibiotic preparations . . . . .	79,434	(D)	(D)	-	89,805	(D)	(D)	-
325412P054	Tuberculostatic agents: Isoniazid (isonicotinic acid hydrazide) preparations . . . . .	4,628	4,628	-	(D)	3,921	3,921	-	(D)
325412P057	Other antituberculars . . . . .	49,790	49,790	-	-	27,861	27,861	-	-
325412P061	Antimalarials (plasmodicides) . . . . .	85,801	85,801	-	-	81,739	81,739	-	-

See footnotes at end of table.

**Table 25. Value of Shipments of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997—Con.**

[In thousands of dollars]

Product code	Product description	1998				1997			
		Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>	Total	Prescription legend	Non-prescription	Bulk shipments <sup>1</sup>
325412	Pharmaceutical preparations (except biologicals)—Con.								
325412P000	Pharmaceutical preparations affecting parasitic and infective diseases, for human use—Con.								
	Anti-infective agents, excluding corticoid anti-infective combinations (see product code 3254121015)—Con.								
325412P064	Sulfonamides (except antibiotic)—sulfonamide combinations . . . . .	68,476	(D)	(D)	-	55,118	(D)	(D)	-
325412P067	Antifungal preparations . . . . .	672,525	(D)	(D)	-	630,962	(D)	(D)	-
325412P071	Antivirals, systemic such as zovirax, and retrovir . . . . .	2,800,580	2,800,580	-	(D)	1,533,527	1,533,527	-	(D)
325412P074	Other anti-infective agents . . . . .	71,402	(D)	(D)	-	47,529	(D)	(D)	-
	Antibacterials and antiseptics:								
325412P077	General . . . . .	89,048	(D)	(D)	(D)	99,047	36,440	62,607	(D)
325412P081	Mouth and throat preparations . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325412P084	Other pharmaceutical preparations affecting parasitic and infective diseases, for human use . . . . .	221,893	174,868	47,025	(D)	178,550	134,656	43,894	(D)
325412T000	Pharmaceutical preparations for veterinary use . . . . .	1,808,227	782,494	931,524	94,209	1,571,712	753,861	728,685	89,166
325412T011	Anesthetics . . . . .	(D)	(D)	(D)	-	(D)	(D)	(D)	-
325412T016	Anthelmintics . . . . .	149,072	104,408	44,664	(D)	164,200	116,149	48,051	(D)
	Antibiotics:								
325412T021	Tetracyclines . . . . .	40,165	(D)	(D)	(D)	39,383	(D)	(D)	(D)
325412T026	Penicilins . . . . .	61,664	22,332	39,332	(D)	57,178	19,739	37,439	(D)
325412T031	Other antibiotics . . . . .	214,097	117,750	96,347	(D)	156,548	109,204	47,344	(D)
325412T036	Antiseptics, wound dressings, and fungicides . . . . .	37,317	(D)	(D)	(D)	24,343	2,590	21,753	(D)
325412T041	Hematinics <sup>3</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325412T046	Hemostatics <sup>3</sup> . . . . .	5,663	1,332	4,331	-	6,105	4,848	1,257	-
	Hormones:								
325412T051	Insulin preparations . . . . .	-	-	-	-	-	-	-	-
325412T056	ACTH (corticotropin) preparations . . . . .	(D)	(D)	(D)	-	(D)	(D)	(D)	-
325412T061	Other hormone preparations . . . . .	64,455	17,302	47,153	(D)	63,935	16,231	47,704	(D)
325412T066	Intravenous solutions and electrolytes . . . . .	11,780	(D)	(D)	-	8,619	5,252	3,367	-
325412T071	Nitrofurans . . . . .	682	(D)	(D)	(D)	1,104	-	1,104	(D)
325412T076	Nutrients and tonics . . . . .	12,990	-	12,990	(D)	13,681	-	13,681	(D)
325412T081	Parasiticides, external . . . . .	232,389	(D)	(D)	(D)	171,735	(D)	(D)	(D)
325412T086	Sulfonamides . . . . .	10,518	(D)	(D)	(D)	12,009	(D)	(D)	(D)
325412T091	Tranquilizers and ataractics . . . . .	11,371	11,371	-	(D)	9,622	9,622	-	(D)
325412T094	Vitamins and minerals . . . . .	139,599	(D)	(D)	(D)	143,491	20,421	123,070	(D)
325412T097	Other pharmaceutical preparations for veterinary use . . . . .	685,162	(D)	(D)	(D)	577,371	(D)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Data for "Bulk shipments" are excluded from all horizontal ten-digit product detail totals; however, these data are included in all seven-digit product code and six-digit industry level totals. Since bulk shipments are typically reported by a small number of producers, and often must be suppressed, inclusion of bulk shipments in all horizontal totals would require suppression of additional detail.

<sup>2</sup>Product code 3254124027 is combined with product code 3254124041 to avoid disclosing data for individual companies.

<sup>3</sup>Product code 325412T041 is combined with product code 325412T046 to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>20 percent or more of this item is estimated.

Table 26. **Domestic Value of Shipments, Exports, Imports, and Apparent Consumption of Pharmaceutical Preparations, Except Biologicals: 1998 and 1997**

[In thousands of dollars]

Product code	Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise <sup>1</sup>	Percent exports to manufacturers' shipments	Imports for consumption <sup>2</sup> (value)	Apparent consumption <sup>3</sup> (value)	Percent imports to apparent consumption
<b>1998</b>							
	Pharmaceutical preparations . . . . .	67,275,114	3,353,760	5.0	4,431,699	68,353,053	6.5
3254121000	Pharmaceutical preparations affecting neoplasms, endocrine system, and metabolic diseases, for human use . . . . .	6,916,329	736,391	10.6	1,411,350	7,591,288	18.6
3254124000	Pharmaceutical preparations acting on the central nervous system and sense organs, for human use . . . . .	14,661,463	409,753	2.8	405,768	14,657,478	2.8
3254127000	Pharmaceutical preparations acting on the cardiovascular system, for human use . . . . .	8,909,370	303,620	3.4	445,129	9,050,879	4.9
325412A000	Pharmaceutical preparations acting on the respiratory system, for human use . . . . .	7,442,622	181,020	2.4	105,591	7,367,193	1.4
325412D000	Pharmaceutical preparations acting on the digestive or genito-urinary system, for human use . . . . .	9,956,822	214,741	2.2	553,717	10,295,798	5.4
325412G000	Pharmaceutical preparations acting on the skin, for human use . . . . .	2,128,254	44,908	2.1	152,302	2,235,648	6.8
325412L000	Vitamin, nutrient, and hematinic preparations, for human use . . . . .	5,706,882	177,027	3.1	72,692	5,602,547	1.3
325412P000	Pharmaceutical preparations affecting parasitic and infective diseases, for human use . . . . .	9,745,145	1,074,439	11.0	1,016,240	9,686,946	10.5
325412T000	Pharmaceutical preparations for veterinary use . . . . .	1,808,227	211,861	11.7	268,910	1,865,276	14.4
<b>1997</b>							
	Pharmaceutical preparations . . . . .	57,418,629	2,654,572	4.6	3,734,125	58,498,182	6.4
3254121000	Pharmaceutical preparations affecting neoplasms, endocrine system, and metabolic diseases, for human use . . . . .	5,465,948	483,361	8.8	999,221	5,981,808	16.7
3254124000	Pharmaceutical preparations acting on the central nervous system and sense organs, for human use . . . . .	11,708,007	232,725	2.0	446,795	11,922,077	3.7
3254127000	Pharmaceutical preparations acting on the cardiovascular system, for human use . . . . .	8,799,338	191,136	2.2	239,515	8,847,717	2.7
325412A000	Pharmaceutical preparations acting on the respiratory system, for human use . . . . .	5,641,256	223,807	4.0	153,707	5,571,156	2.8
325412D000	Pharmaceutical preparations acting on the digestive or genito-urinary system, for human use . . . . .	9,482,082	107,838	1.1	417,223	9,791,467	4.3
325412G000	Pharmaceutical preparations acting on the skin, for human use . . . . .	1,867,102	41,474	2.2	116,403	1,942,031	6.0
325412L000	Vitamin, nutrient, and hematinic preparations, for human use . . . . .	5,088,302	192,090	3.8	64,577	4,960,789	1.3
325412P000	Pharmaceutical preparations affecting parasitic and infective diseases, for human use . . . . .	7,794,882	1,001,314	12.8	1,074,538	7,868,106	13.7
325412T000	Pharmaceutical preparations for veterinary use . . . . .	1,571,712	180,827	11.5	222,146	1,613,031	13.8

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Apparent consumption represents new domestic supply and is derived by subtracting exports from total of manufacturers' shipments plus imports.

Note: For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

**HISTORICAL NOTE**

Data on pharmaceutical preparations, except biologicals, have been collected by the Census Bureau since 1962. Historical data may be obtained from Current Industrial Reports available at your local Federal

Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Walter R. Hunter Jr., 301-457-4798.



# Chapter 5.

## Glass Products

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### FLAT GLASS—MA327A (FORMERLY MA32A)

#### INTRODUCTION

The data in this section are from a survey of all companies engaged in the manufacturing of flat or float glass, except laminated or otherwise fabricated flat glass products, as collected on the annual report MA327A, Flat Glass. The survey panel includes all known manufacturers of flat glass, approximately 6 companies. Prior to 1975, the panel included approximately 10 companies.

The categories of flat glass in this survey were revised for 1997. The revision reflects a change from emphasis on thickness and color to categories of end use: automotive and nonautomotive.

#### SUMMARY OF FINDINGS

Production and shipments of flat glass in the United States both amounted to 6.3 billion square feet in 1998. The reported value of shipments was \$1.90 billion. Automotive glass accounted for 28 percent of both total production and total shipments (in square footage) of flat glass for the year.

In 1998, outside customer sales of 4.6 billion square feet accounted for 72.4 percent of the total quantity of shipments and 70.6 percent of the total value of shipments. Exports reported by flat glass manufacturers amounted to 455 million square feet, 7 percent of their total shipments.

#### EXPLANATION OF TERMS

**Unit of measure.** Quantities of glass are reported in short tons and thousands of square feet. Total value of shipments, exports, and outside customer sales are reported in thousands of dollars.

**Production.** Includes flat glass packed direct from the production line for shipments to customers, finished glass transferred to other establishments of the producing company or added to finished inventory, and consumption within the same plant. Glass blanks are included in production when they are cut and packed for shipments or put into finished inventory. Blanks transferred to another raw glass producing plant of the same company are reported by the receiving plant when cut and packed for shipment or added to finished inventory.

**Quantities produced and consumed.** Includes quantities of each type of glass produced by each company for internal consumption within each company (i.e., the quantity of interplant transfer and the quantity produced and consumed within that same producing plant).

**Stocks.** Includes total quantity of ending finished stock inventory, excluding glass blanks.

**Sheet glass.** Flat glass made by continuous drawing.

**Plate glass.** Flat glass formed by a rolling process, ground and polished on both sides, with surfaces essentially plane and parallel.

**Float glass.** Flat glass, identical in appearance to plate glass, but formed by a process in which thickness is controlled by floating the glass on a molten bed of tin.

**Sales to outside customers.** Sales outside the reporting company to nonraw glass producing companies.

**Table 1. Summary of Flat Glass Shipments and Sales: 1998**

Description	Total shipments				Quantity produced and consumed within each company (1,000 sq ft)	Inventory (end of year) (1,000 sq ft)	Producer Price Index (1982=100.0)
	Quantity (includes produced and consumed) (short tons)	Quantity (includes produced and consumed) (1,000 sq ft)	Value in current dollars (\$1,000)	Value in constant dollars <sup>1</sup> (\$1,000)			
<b>Total</b> .....	<b>5,081,667</b>	<b>6,306,725</b>	<b>1,904,735</b>	<b>1,977,918</b>	<b>1,735,448</b>	<b>775,673</b>	<b>96.3</b>
Exports <sup>2</sup> .....	391,755	454,969	172,376	178,999	(X)	(X)	96.3
Outside customer sales <sup>3</sup> ..	3,777,982	4,567,578	1,344,432	1,396,087	(X)	(X)	96.3

X Not applicable.

<sup>1</sup>Adjustments for price changes were made to data using producer price index for flat glass as published by the Bureau of Labor Statistics (BLS).

<sup>2</sup>Exports reported by flat glass manufacturers only.

<sup>3</sup>Shipments and sales to nonraw glass producing companies.

**Table 2. Summary of Production, Shipments, and Inventories of Flat Glass: 1998**

Product code	Product description	Number of companies	Production		Shipments (includes quantity produced and consumed within each company)		Quantity produced and consumed within each company (1,000 sq ft)	Inventory (end of year) (1,000 sq ft)
			Total (short tons)	Total (1,000 sq ft)	Total (short tons)	Total (1,000 sq ft)		
3272111-	<b>Flat glass</b> .....	<b>6</b>	<b>5,183,920</b>	<b>6,293,045</b>	<b>5,081,667</b>	<b>6,306,725</b>	<b>1,735,448</b>	<b>775,673</b>
	Automotive:							
	Standard greens/blue greens:							
3272111001	Less than 2.9 mm thick .....	5	404,374	736,669	411,533	752,520	(D)	61,251
3272111006	2.9 mm or thicker .....	5	269,145	270,181	254,437	257,450	(D)	41,584
	High performance greens/blue greens/blues:							
3272111011	Less than 2.9 mm thick .....	3	174,289	301,451	164,112	287,056	(D)	43,626
3272111016	2.9 mm or thicker .....	3	184,791	185,428	170,330	173,876	(D)	51,501
	Privacy (high performance uncoated dark gray) and other automotive <sup>1</sup> ...	(X)	251,626	256,529	268,803	281,722	145,570	46,961
3272111021	Privacy (high performance uncoated dark gray) <sup>1</sup> .....	4	(D)	(D)	(D)	(D)	(D)	(D)
3272111026	Other automotive <sup>1</sup> .....	2	(D)	(D)	(D)	(D)	(D)	(D)
	Nonautomotive:							
	Pyrolytically coated:							
3272111031	Greens/blue greens/blues .....	3	(D)	(D)	29,824	21,697	(D)	(D)
3272111036	All other nonautomotive pyrolytically coated .....	4	(D)	(D)	162,882	169,020	(D)	(D)
	Nonautomotive other than pyrolytically coated:							
	Clear:							
3272111041	Less than 5.0 mm thick .....	5	2,329,390	3,339,579	2,253,618	3,362,642	707,099	298,950
3272111046	5.0 mm or thicker .....	5	1,080,132	743,215	1,071,089	743,980	50,783	81,078
	Greens/blue greens/blues:							
3272111051	Less than 5.0 mm thick .....	5	(D)	(D)	16,515	21,537	(D)	(D)
3272111056	5.0 mm or thicker .....	5	75,622	58,354	70,854	49,696	(D)	19,153
	All bronze:							
3272111061	Less than 5.0 mm thick .....	4	25,703	28,566	23,714	29,197	(D)	9,028
3272111066	5.0 mm or thicker .....	4	64,227	46,140	60,002	43,874	(D)	20,210
	All gray and other <sup>2</sup> .....	(X)	102,034	91,440	123,954	112,458	(D)	30,879
3272111071	Less than 5.0 mm thick <sup>2</sup> .....	4	(D)	(D)	(D)	(D)	(D)	(D)
3272111076	5.0 mm or thicker <sup>2</sup> .....	4	(D)	(D)	(D)	(D)	(D)	(D)
3272111081	Other, less than 5.0 mm thick <sup>2</sup> ..	3	(D)	(D)	(D)	(D)	(D)	(D)
3272111086	Other, 5.0 mm or thicker <sup>2</sup> .....	3	(D)	(D)	(D)	(D)	(D)	(D)
3272111097	Heat-treated flat glass for nonautomotive uses, treated in primary glass manufacturing plants <sup>3</sup> .....	3	291,030	340,811	292,870	341,509	(D)	(D)

D Withheld to avoid disclosing data for individual companies. X Not applicable.

<sup>1</sup>Data for "Automotive, privacy (high performance uncoated dark gray)" and "Automotive, other automotive" are combined with "Automotive, privacy (high performance uncoated dark gray) and other automotive" to avoid disclosing data for individual companies.

<sup>2</sup>Data for "Nonautomotive other than pyrolytically coated: All gray, less than 5.0 mm thick," "All gray, 5.0 mm or thicker," "Other, less than 5.0 mm thick," and "Other, 5.0 mm or thicker" are combined with "All gray and other" to avoid disclosing data for individual companies.

<sup>3</sup>Glass reported in this category is included in nonautomotive categories above; these data should not be added to arrive at a total for nonautomotive or total flat glass.

Note: Data are limited to inventories at manufacturing establishments.

**Table 3. Value of Shipments, Exports, and Imports of Flat Glass: 1998**

[Thousands of dollars]

Product description	Manufacturers' shipments (f.o.b. plant) <sup>1</sup>	Exports of domestic merchandise <sup>2</sup> (value at port)	Percent exports to manufacturers' shipments	Imports for consumption <sup>4</sup> (value at port)	Apparent consumption <sup>5</sup>	Percent imports to apparent consumption
Total flat glass .....	1,904,735	429,251	22.5	199,510	1,674,994	11.9

<sup>1</sup>Value of "Manufacturers' shipments" is in current dollars.

<sup>2</sup>For a comparison of North American Industry Classification System (NAICS)-based product codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>3</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>4</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>5</sup>Apparent consumption is derived by subtracting exports from the total of manufacturers' shipments plus imports, including duty.

**HISTORICAL NOTE**

Data on flat glass have been collected by the Census Bureau since 1957. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Paul Marck, 301-457-4825.

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## CONSUMER, SCIENTIFIC, TECHNICAL, AND INDUSTRIAL GLASSWARE—MA327E (FORMERLY MA32E)

### INTRODUCTION

The data in this section are from a survey of manufacturers of consumer, scientific, technical, and industrial glassware in the United States. Establishments manufacturing glassware from glass produced in their own establishment, and establishments manufacturing glassware from glass purchased or transferred from other establishments are included. Data are collected by value of shipments in three major categories: table, kitchen, art, and novelty glassware; lighting and electronic glassware; and all other glassware. Related import and export data are also shown.

### SUMMARY OF FINDINGS

In 1998, total factory shipments of consumer, scientific, technical, and industrial glassware amounted to \$5,347.9 million, a decrease of 2 percent from the \$5,479.4 million reported in 1997. Establishments manufacturing glassware from glass produced in their own establishment accounted for approximately 69 percent of the total glassware shipments.

Consumer (table, kitchen, art, and novelty) glassware accounted for approximately 31 percent of the total glassware shipments and showed a 3-percent decrease for the 1998 shipments of \$1,661.1 million, from the 1997 level of \$1,716.4 million.

### EXPLANATION OF TERMS

**Tumblers.** Nonstemmed drinking glasses. Excludes packers' tumblers.

**Stemware.** Vessels with long and short stem and footed-ware used generally for drinking; however, may be used as dessert dishes.

**Tableware.** Items from which food and beverages are served or consumed, but not prepared. Excludes stemware and tumblers.

**Cookware, ovenware, and kitchenware.** Items of ceramic glass and heat-resistant glass used to cook over direct heat or in the oven, and items used in the preparation and storage of foods (e.g., cookie jars, mixing bowls, refrigerator dishes, and measuring cups).

**Microwave specialty pieces.** Cookware and ovenware designed especially for microwave usage.

**Ornamental, decorative, novelty glassware, and smokers' accessories.** Includes floralware, ash trays, humidors, apothecary, bathroom dishes, candy dishes, beverage coasters, fish bowls, and piggy banks.

**Automotive lighting glassware.** Includes sealed beam lenses, and other outside lenses, and interior automotive glassware.

**Searchlight and other lenses.** Includes railroad, marine, air, and traffic lighting glassware.

**Electric light bulb blanks.** Includes incandescent, photo flash and mercury vapor, and high temperature lamps.

**Tubing and cane for electric light bulbs and fluorescent and neon lighting.** Includes exhaust tubes and flares for incandescent and fluorescent lamps.

**Electronic tube blanks.** Includes radio, X-ray, radar, special tubes, cathode ray, power tubes, microwave, and storage tubes. Excludes television picture tube blanks and parts.

**Television tube blanks and parts.** Includes cylinders, rod-support insulators, diodebeads and bodies, multiform parts, and moisture getters.

**Bowls and enclosing globes, etc.** Includes lantern globes, chimneys, enclosing globes, shades, prismatic and diffusing globes, luminaire globes, decorative lighting glass parts, and shields and plates for fluorescent and incandescent lighting fixtures.

**Other lighting and electronic glassware.** Includes dials, insulators, custom-made lighting, and electronic glassware.

**Scientific and laboratory glassware.** Includes beads, beakers, bottles, burrets, centrifuge tubes, condensers, connecting tubes, crucibles, cylinders, desiccators, fritted discs, flasks, funnels, ground joints, jars, microscope slides, cover glasses, Petri culture dishes, pipets, special laboratory apparatus, stopcocks, test and culture tubes, thermometer and hydrometer blanks, and custom-made laboratory apparatus.

**Tubing, rods, and canes, all types (except electrical and electronic).** Items used for volumetric ware, advertising purposes, heat absorbing uses, and precision base applications.

**Industrial and technical glassware.** Includes battery jars, industrial beads, blender jars, caps and bodies, coffee urn liners, explosion capsules, flow meter blanks, gauge glasses, lubrication glasses, copy machine cylinders, sight glasses, vacuum bottle parts, godet wheels, heat exchangers, milking machine accessories, glass pipe for chemical and food process and drainlines, rashing rings, ground glass, glass knobs, and insulators.

**Ophthalmic lens blanks and optical instrument lens blanks.** Includes ophthalmic and optical lens blanks, color filters, photographic window blanks, prism blanks, telescope mirror blanks, infrared and ultraviolet transmitting glasses, and fiber optic glass parts. Excludes finished or semifinished lenses.

**Other glassware.** Includes such products as glass blocks, nursery bottles, balls, radomes, nose cones, vials, and towel bars.

**Table 4. Value of Shipments of Consumer, Scientific, Technical, and Industrial Glassware: 1994 to 1998**

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994
3272123, 29, 51, 55	Table, kitchen, art, and novelty glassware <sup>1</sup> . . . . .	1,661.1	1,716.4	1,805.4	1,837.8	1,747.0
3272125, 29, 53, 55	Lighting and electronic glassware <sup>1</sup> . . . . .	1,650.6	1,727.8	1,620.3	1,589.1	1,523.2
3272127, 29, 53, 55	All other glassware <sup>1</sup> . . . . .	2,025.3	<sup>†</sup> 2,024.1	1,743.5	1,589.7	1,410.7

<sup>†</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Values associated with product categories represent a compilation of data reported for establishments in industry 327212 (establishments producing glassware from glass made in same establishment) and industry 327215 (establishments producing glassware from glass purchased or transferred from other establishments). Product categories presented, however, are not directly comparable to corresponding product codes because of distribution of handmade pressed and blown glassware (product classes 3272129 and 3272155) and distribution of all other machine-made pressed and blown glassware (product class 3272153).

**Table 5. Value of Shipments of Consumer, Scientific, Technical, and Industrial Glassware by Industry: 1998 and 1997**

[Millions of dollars]

Product code	Product description	1998			1997		
		Total (all industries)	NAICS 327212	All other industries	Total (all industries)	NAICS 327212	All other industries
3272123, 25, 27, 29, 51, 53, 55	Consumer, scientific, technical, and industrial glassware . . . . .	5,347.9	3,702.6	1,645.3	<sup>†</sup> 5,479.4	3,803.1	1,676.3
3272123, 29, 51, 55	Table, kitchen, art, and novelty glassware . . . . .	1,661.1	1,103.0	558.1	1,716.4	1,135.5	580.9
3272125, 29, 53, 55	Lighting and electronic glassware . . . . .	1,650.6	1,599.8	50.8	1,727.8	1,683.1	<sup>†</sup> 44.7
3272127, 29, 53, 55	All other glassware . . . . .	2,025.3	991.6	1,033.7	<sup>†</sup> 2,024.1	<sup>†</sup> 976.1	<sup>†</sup> 1,048.0
3272120, 50	Consumer, scientific, technical, and industrial glassware, n.s.k. . . . .	10.9	8.2	2.7	11.1	8.4	2.7

n.s.k. Not specified by kind. <sup>†</sup>Revised by 5 percent or more from previously published data.

Note: Detail may not add to the total because of independent rounding.

**Table 6. Shipments of Consumer Glassware: 1998 and 1997**

[Value in thousands of dollars]

Product code	Product description <sup>1</sup>	Unit of measure	Number of companies	Total (all industries)		Machine-made <sup>2</sup> (SIC 3229)		Handmade <sup>2</sup> (SIC 3229)	
				Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>									
327212X100, 5X100	Table, kitchen, art, and novelty glassware .....	.....(X).....	(X)	(X)	1,661,139	(X)	961,467	(X)	141,579
327212X101, 5X101	Tumblers (one piece, excluding packers' tumblers) .....	Mil dozens ..	21	40,203	282,787	38,874	269,949	(D)	(D)
327212X106, 5X106	Stemware .....	.....do.....	26	14,948	183,036	(D)	(D)	339	7,009
327212X111, 5X111	Tableware .....	Mil pieces ...	26	185,237	246,227	87,467	91,590	1,831	19,119
327212X116, 2X121, 5X116, 5X121	Cookware, ovenware and kitchenware, including microwave specialty pieces ...	.....do.....	8	92,902	223,925	25,087	55,877	-	-
327212X126, 5X126	Ornamental, decorative and novelty glassware, and smokers' accessories ...	.....(X).....	73	(X)	333,085	(X)	144,072	(X)	96,000
327212X131, 5X131	Other table, kitchen, art, and novelty glassware .....	.....(X).....	27	(X)	(D)	(X)	54,977	(X)	17,767
327212X136, 5X136	Interplant transfers of shipments of partially made glassware to other glassware establishments <sup>3</sup> .....	.....(X).....	(X)	(X)	(D)	(X)	(D)	(X)	(D)
<b>1997</b>									
327212X100, 5X100	Table, kitchen, art, and novelty glassware .....	.....(X).....	(X)	(X)	1,716,402	(X)	1,000,608	(X)	134,895
327212X101, 5X101	Tumblers (one piece, excluding packers' tumblers) .....	Mil dozens ..	21	41,509	289,792	40,297	278,833	(D)	(D)
327212X106, 5X106	Stemware .....	.....do.....	26	15,010	185,298	(D)	(D)	322	6,701
327212X111, 5X111	Tableware .....	Mil pieces ...	26	185,101	249,339	<sup>r</sup> 100,450	99,123	1,594	14,914
327212X116, 2X121, 5X116, 5X121	Cookware, ovenware, and kitchenware, including microwave specialty pieces ...	.....do.....	8	96,182	231,944	26,889	58,722	-	-
327212X126, 5X126	Ornamental, decorative and novelty glassware, and smokers' accessories ...	.....(X).....	71	(X)	330,299	(X)	143,291	(X)	90,566
327212X131, 5X131	Other table, kitchen, art, and novelty glassware .....	.....(X).....	27	(X)	(D)	(X)	53,658	(X)	21,010
327212X136, 5X136	Interplant transfers of shipments of partially made glassware to other glassware establishments <sup>3</sup> .....	.....(X).....	(X)	(X)	(D)	(X)	(D)	(X)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. <sup>r</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>See text for specific definitions of individual products.

<sup>2</sup>Shipments by establishments manufacturing glassware primarily from glass produced in same establishment.

<sup>3</sup>Processing establishments report finished product on the appropriate lines, in order to avoid duplicate reporting of same product by separate establishments.

**Table 7. Value of Shipments of Scientific, Technical, and Industrial Glassware: 1998 and 1997**

[Value in thousands of dollars]

Product code	Product description <sup>1</sup>	Number of companies	1998		1997	
			Total (all industries)	Machine-made <sup>2</sup> (NAICS 327212)	Total (all industries)	Machine-made <sup>2</sup> (NAICS 327212)
327212Y100, 5Y100	Lighting, automotive, and electronic glassware . . .	(X)	1,650,557	1,599,821	1,727,817	1,683,127
327212Y101, 5Y101	Automotive lighting glassware . . . . .	6	(D)	(D)	(D)	(D)
327212Y106, 5Y106	Searchlight and other lenses . . . . .	5	(D)	(D)	(D)	(D)
327212Y111, 5Y111	Electric light bulb blanks . . . . .	5	172,313	165,336	164,021	<sup>†</sup> 157,562
327212Y116, 5Y116	Tubing and cane for electric light bulbs and fluorescent and neon lighting . . . . .	5	(D)	(D)	(D)	(D)
327212Y121, 5Y121	Electric tube blanks (except television) . . . . .	6	6,217	(D)	<sup>†</sup> 7,203	(D)
327212Y126, 5Y126	Television tube blanks and parts; tubing, cane, and glass parts for electronic tubes and devices . . . . .	17	1,028,058	1,021,466	1,095,702	<sup>†</sup> 1,088,177
	Bowls and enclosing globes, lamp chimneys, lamp parts, shades, reflectors, and torchieres:					
327212Y131, 5Y131	Interior . . . . .	25	50,855	49,758	52,191	50,868
327212Y136, 5Y136	Exterior . . . . .	11	25,199	21,837	<sup>†</sup> 17,321	14,114
324212Y141, 5Y141	Other lighting and electronic glassware . . . . .	14	22,999	12,651	19,895	<sup>†</sup> 16,502
327212Y146, 5Y146	Interplant transfers and shipments of partially made glassware to other glassware establishments <sup>3</sup> . . . . .	(X)	109,444	103,521	115,204	108,996
327212Z100, 5Z100	Scientific, technical, and industrial glassware . . .	(X)	2,025,290	991,550	<sup>†</sup> 2,024,083	<sup>†</sup> 976,122
327212Z101, 5Z101	Tubing, rods, canes, all types (except electrical and electronic) . . . . .	23	141,984	111,105	<sup>†</sup> 119,318	90,737
	Scientific and laboratory glassware . . . . .	(X)	639,431	305,301	653,561	310,527
327212Z106, 5Z106	Reusable . . . . .	58	339,792	217,353	<sup>†</sup> 347,525	<sup>†</sup> 216,458
327212Z111, 5Z111	Disposable . . . . .	22	299,629	87,948	306,036	<sup>†</sup> 94,069
327212Z116, 5Z116	Technical and industrial glassware . . . . .	61	661,419	257,311	<sup>†</sup> 675,516	<sup>†</sup> 269,641
327212Z121, 5Z121	Ophthalmic lens blanks and optical instruments' lens blanks . . . . .	26	171,579	(D)	<sup>†</sup> 162,753	(D)
327212Z126, 5Z126	Other glassware (e.g., radomes, nose cones, nursery bottles, and vials) . . . . .	29	304,708	209,376	300,816	<sup>†</sup> 209,694
327212Z131, 5Z131	Interplant transfers and shipments of partially made glassware to other glassware establishments <sup>3</sup> . . . . .	(X)	106,169	(D)	112,119	(D)
3272120000, 50000	Consumer, scientific, technical, and industrial glassware, n.s.k. <sup>4</sup> . . . . .	(X)	10,870	8,153	11,149	8,353

D Withheld to avoid disclosing data for individual companies. n.s.k. Not specified by kind. <sup>†</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>See text for specific definitions of individual products.

<sup>2</sup>Shipments by establishments manufacturing glassware primarily from glass produced in same establishment.

<sup>3</sup>Processing establishments report the finished product on the appropriate lines, in order to avoid duplicate reporting of same product by separate establishments.

<sup>4</sup>Not specified by kind (n.s.k.) represents value of shipments for establishments that did not provide detailed information by type of product. These establishments, typically with less than five employees, are not included in the MA327E mailing panel. Value of shipments has been estimated for series MA327E based on year-to-year rate of change for reporting establishments applied to previous year's n.s.k. value.

**Table 8. Value of Shipments, Exports, Imports, and Apparent Consumption of Consumer, Scientific, Technical, and Industrial Glassware: 1998 and 1997**

[Thousands of dollars]

Product description	Manu- facturers' shipments	Exports of domestic merchandise <sup>1 2</sup>	Percent exports to manufac- turers' shipments	Imports for consumption <sup>1 3</sup>	Apparent consumption <sup>4</sup>	Percent imports to apparent consumption
<b>1998</b>						
Table, kitchen, art, and novelty glassware . . . . .	1,661,139	181,424	10.9	1,053,235	2,532,950	41.6
Searchlight and other lenses . . . . .	(D)	25,569	(D)	5,035	(D)	(D)
Lighting glassware . . . . .	172,313	47,765	27.7	17,681	142,229	12.4
Electronic tube blanks, including television tube blanks and parts . . . . .	1,028,058	43,311	4.2	232,218	1,216,965	19.1
Lamp chimneys, bowls, shades, globes, parts, and other glassware, interior and exterior . . . . .	76,054	12,937	17.0	86,477	149,594	57.8
Glass tubing, rods, and canes, all types (except electrical and electronic) . . . . .	141,984	138,097	97.3	133,094	136,981	97.2
Scientific and laboratory glassware, reusable and disposable . . . . .	639,431	141,977	22.2	33,082	530,536	6.2
Ophthalmic lens blanks and optical lens blanks . . .	171,579	60,763	35.4	25,709	136,525	18.8
<b>1997</b>						
Table, kitchen, art, and novelty glassware . . . . .	1,716,402	251,715	14.7	979,075	2,443,762	40.1
Searchlight and other lenses . . . . .	(D)	18,417	(D)	3,365	(D)	(D)
Lighting glassware . . . . .	164,021	49,063	29.9	19,334	134,292	14.4
Electronic tube blanks, including television blanks and parts . . . . .	1,095,702	56,015	5.1	280,046	1,319,733	21.2
Lamp chimneys, bowls, shades, globes, parts, and other glassware, interior and exterior . . . . .	69,512	14,447	20.8	91,077	146,142	62.3
Glass tubing, rods, and canes, all types (except electrical and electronic) . . . . .	119,318	186,984	156.7	132,191	64,525	204.9
Scientific and laboratory glassware, reusable and disposable . . . . .	653,561	155,321	23.8	31,529	529,769	6.0
Ophthalmic lens blanks and optical lens blanks . . .	162,753	70,758	43.5	32,624	124,619	26.2

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report, EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report, IM 146, *U.S. Imports for Consumption and General Imports*.

<sup>4</sup>Apparent consumption is derived by subtracting exports from total of shipments, plus imports, including duty.

**HISTORICAL NOTE**

Data on glassware have been collected by the Census Bureau since 1942. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact the Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Joyce Pomeroy, 301-457-4840.



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## GLASS CONTAINERS—M327G (FORMERLY M32G)

### INTRODUCTION

This survey covers all manufacturers of machine-made glass bottles, jars, vials, and tumblers for commercial packing or home canning of any product, whether for sale or for use by the producing company.

### SUMMARY OF FINDINGS

In 1998, production of glass containers in the United States amounted to 256.4 million gross, while shipments were 253.7 million gross. In 1997, production was 247.4 million gross, and shipments totaled 254.5 million gross. In 1998, shipments of narrow neck containers amounted to 200.9 million gross, and shipments of wide mouth containers were 52.8 million gross. Stocks on hand of glass containers at the end of 1998 totaled 35.9 million gross.

### EXPLANATION OF TERMS

**Food, narrow neck.** Nonjuice containers with the outside diameter of the mouth being less than 38 millimeters sold for commercial food packing: catsup; concentrated beverage syrup; dairy products; edible oils; flavoring extracts; infant formula; liquid salad dressing; meat sauces; syrups; and vinegars.

**Food, wide mouth.** Nonjuice containers with the outside diameter of the mouth being equal to or greater than 38 millimeters sold for commercial food packing or for home canning: baby foods; candies; coffee; dairy products; edible oils; fruits and vegetables; mayonnaise and salad dressings; meat and fish products; mustard; peanut butter; pickles and relishes; preserves, jams, and jellies; and syrups.

**Beverage, carbonated.** Containers designed for bottling carbonated soft drinks, including carbonated water.

**Beverage, noncarbonated.** Containers designed for bottling noncarbonated fruit and vegetable juices, blends, and ades (including milk style bottles); teas (plain and fruit flavored); still waters; and other noncarbonated beverages, such as chocolate flavored drinks.

**Beer.** Containers designed for bottling alcoholic cereal beverages for multiple-trip and single-trip use, including beer, ale, porter, and malt coolers.

**Liquor.** Containers designed for bottling alcoholic beverages, except wines and malt beverages, including such products as brandies, cordials, gins, rum, and distilled spirits. Include containers designed for bottling multi-service and single-service premixed cocktails and liquor coolers.

**Wine.** Containers designed for bottling wines, whether sparkling or still, and champagnes and vermouths, including wine coolers.

**Other.** Containers for chemical, cosmetic, health, household, industrial, medicinal, and toiletry products.

*Health and medicinal.* Containers for products which are primarily intended to improve or maintain the health of human beings or animals: caplets; capsules; chemicals; citrate of magnesia; essential oils; extracts for medicinal purposes; liniments; nursing bottles; oral antiseptic; pharmaceuticals; prescription bottles; prescription ware; proprietary medicines; serums and parenterals; tablets; and veterinary supplies.

*Chemical, household, and industrial.* Containers for products not used in connection with human or animal bodies: ammonia; bleaches; bluing; cements; cleaning fluids; disinfectants; dyes; embalming fluids; glues; industrial chemicals; inks; insecticides; lubricating oils; oil stove reservoirs; pastes; protective coatings; polishes and waxes; refrigerator water bottles; snuff; and tobacco jars.

*Cosmetic and toiletry.* Containers for products intended primarily to improve personal appearance or to impart a pleasing odor: bath salts and oils; care products; face and hand creams (except medicated protective creams); hair shampoos and conditioners; hair tonics; hand and body lotions and creams; liquid soaps; perfumes and colognes; personal deodorants; pomades; powders; talcum; and toilet waters.

**Table 9. Summary of Shipments, Production, and Stocks of Glass Containers by Type of Container: 1998 and 1997**

[Thousands of gross]

Month and year	Shipments			Production			Stocks, end of month		
	Total	Narrow neck containers	Wide mouth containers	Total	Narrow neck containers	Wide mouth containers	Total <sup>1</sup>	Narrow neck containers <sup>1</sup>	Wide mouth containers <sup>1</sup>
<b>1998</b>									
<b>Total .....</b>	<b>253,698</b>	<b>200,889</b>	<b>52,809</b>	<b>256,419</b>	<b>199,472</b>	<b>56,947</b>	<b>(X)</b>	<b>(X)</b>	<b>(X)</b>
December .....	18,434	14,308	4,126	17,447	13,501	3,946	35,920	24,767	11,153
November .....	18,977	14,903	4,074	21,680	16,477	5,203	37,078	25,705	11,373
October .....	21,046	16,278	4,768	22,681	17,382	5,299	34,602	24,169	10,433
September .....	21,330	16,645	4,685	21,186	16,278	4,908	33,110	22,995	10,115
August .....	22,404	17,660	4,744	22,718	17,427	5,291	33,476	23,269	10,207
July .....	23,292	18,605	4,687	22,493	17,438	5,055	33,245	23,270	9,975
June .....	24,018	19,415	4,603	21,640	17,192	4,448	33,984	24,198	9,786
May .....	22,226	18,126	4,100	21,969	17,373	4,596	36,373	26,298	10,075
April .....	21,212	16,948	4,264	21,677	17,187	4,490	36,752	26,979	9,773
March .....	21,643	17,283	4,360	22,370	17,636	4,734	36,507	26,715	9,792
February .....	19,409	15,336	4,073	20,143	15,687	4,456	35,848	26,034	9,814
January .....	19,707	<sup>r</sup> 15,382	<sup>r</sup> 4,325	20,415	<sup>r</sup> 15,894	<sup>r</sup> 4,521	34,958	25,293	<sup>r</sup> 9,665
<b>1997</b>									
<b>Total .....</b>	<b>254,455</b>	<b>200,498</b>	<b>53,957</b>	<b>247,363</b>	<b>194,308</b>	<b>53,055</b>	<b>(X)</b>	<b>(X)</b>	<b>(X)</b>
December .....	18,438	14,255	4,183	18,037	13,987	4,050	34,265	24,817	9,448
November .....	18,467	14,448	4,019	20,582	15,948	4,634	34,589	24,960	9,629
October .....	21,086	16,003	5,083	21,403	16,367	5,036	32,483	23,356	9,127
September .....	21,731	16,780	4,951	20,665	15,942	4,723	32,032	22,699	9,333
August .....	22,547	17,733	4,814	21,775	17,057	4,718	33,170	23,414	9,756
July .....	22,889	18,528	4,361	21,551	17,014	4,537	33,809	23,758	10,051
June .....	22,957	(D)	(D)	21,210	(D)	(D)	35,394	(D)	(D)
May .....	23,280	(D)	(D)	20,889	(D)	(D)	37,211	(D)	(D)
April .....	22,374	17,806	4,568	20,610	16,262	4,348	39,201	28,055	11,146
March .....	21,225	16,846	4,379	20,709	16,174	4,535	39,623	28,435	11,188
February .....	19,265	15,055	4,210	19,835	15,744	4,091	39,385	28,282	11,103
January .....	20,196	15,445	4,751	20,097	15,665	4,432	38,993	27,745	11,248

D Withheld to avoid disclosing data for individual companies. <sup>r</sup>Revised by 5 percent or more from previously published data.  
X Not applicable.

<sup>1</sup>Data are limited to stocks at manufacturing establishments. Prior month end-of-month stocks plus current month production minus current month shipments may not equal current month end-of-month stocks due to breakage, stock adjustments, and resales. Total stocks for the end of a year are shown in December of that year.

Note: One thousand gross = 144,000.

**Table 10. Shipments and Production of Glass Containers by Type of Container and End Use: 1994 to 1998**

[Thousands of gross]

Product code	Product description	1998	1997	1996	1995	1994
	<b>SHIPMENTS</b>					
	Total <sup>1</sup> .....	253,698	254,455	257,358	269,281	284,667
	By type:					
	Narrow neck containers <sup>2 3</sup> .....	200,889	200,498	179,790	184,254	196,466
	Wide mouth containers <sup>2 3</sup> .....	52,809	53,957	77,568	85,035	88,201
	By end use:					
	Food:					
32210 11	Narrow neck <sup>3</sup> .....	9,629	10,362	13,764	19,959	23,566
32210 12	Wide mouth <sup>3</sup> .....	52,809	53,957	77,568	85,035	88,201
	Beverages: <sup>3</sup>					
32210 18	Carbonated <sup>3</sup> .....	5,699	6,620	(NA)	(NA)	(NA)
32210 21	Noncarbonated <sup>3</sup> .....	(D)	(D)	(NA)	(NA)	(NA)
32210 25	Beer .....	122,640	120,248	115,895	111,030	104,372
32210 27	Liquor .....	8,985	9,259	9,636	10,148	10,547
32210 29	Wine .....	14,922	14,703	14,231	14,000	13,567
32210 35	Other <sup>4</sup> .....	(D)	(D)	(D)	12,707	13,701
	<b>PRODUCTION</b>					
	Total <sup>1</sup> .....	256,419	247,363	253,869	270,620	288,570
	By type:					
	Narrow neck containers <sup>2 3</sup> .....	199,472	194,308	178,622	184,939	199,541
	Wide mouth containers <sup>2 3</sup> .....	56,947	53,055	75,247	85,681	89,029
	By end use:					
	Food:					
32210 11	Narrow neck <sup>3</sup> .....	9,419	9,680	13,551	19,993	23,774
32210 12	Wide mouth <sup>3</sup> .....	56,947	53,055	75,247	85,681	89,029
	Beverages: <sup>3</sup>					
32210 18	Carbonated <sup>3</sup> .....	5,380	6,292	(NA)	(NA)	(NA)
32210 21	Noncarbonated <sup>3</sup> .....	(D)	(D)	(NA)	(NA)	(NA)
32210 25	Beer .....	123,460	116,599	116,252	113,295	106,290
32210 27	Liquor .....	8,696	9,338	9,789	10,217	10,976
32210 29	Wine .....	16,150	14,078	14,548	14,217	13,665
32210 35	Other <sup>4</sup> .....	(D)	(D)	(D)	13,035	13,237

D Withheld to avoid disclosing data for individual companies. NA Not available.

<sup>1</sup>Includes exports.

<sup>2</sup>Some narrow neck and wide mouth combined categories are included with "narrow neck containers."

<sup>3</sup>For 1997, data may not be comparable with prior years due to reclassification in the food and beverage categories.

<sup>4</sup>Includes containers for chemical, cosmetic, health, household, industrial, medicinal, and toiletry products.

Note: One thousand gross = 144,000.





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**HISTORICAL NOTE**

Data on glass containers have been collected by the Census Bureau since 1945. Historical data may be obtained from the Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**FUNDING**

For several years, these data have been collected under the sponsorship of the Glass Packaging Institute.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Jim Jamski, 301-457-1603.

# Chapter 6.

## Primary Metals

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### IRON AND STEEL CASTINGS—MA331A (FORMERLY MA33A)

#### INTRODUCTION

These data cover producers of ferrous castings, whether for commercial sale or for use by the producing company. The statistics originate from the annual data for 1998 collected on Census Bureau form MA331A, Iron and Steel Foundries. The annual survey panel consists of approximately 532 weighted sample establishments, taken from a list of over 960 known producers from the 1997 Census of Manufactures universe.

The panel for this survey was selected using a cutoff sampling methodology from a frame that was constructed from the 1997 Economic Census, Manufacturing sector. The sampling frame consisted of all establishments in the census that satisfied at least one of the following criteria:

1. Shipments of castings were reported, or
2. Consumption of materials commonly used in the manufacture of castings was reported, or
3. Foundry activity was indicated by the completion of a special census inquiry.

For sampling purposes, a number of item codes, roughly equivalent to the items collected on the annual survey form, were created from the census product class and materials consumed codes defined by the above criteria. In some cases, the relationship between the item code and a corresponding census code was one to one. In other cases, the item code consisted of a combination of census codes. In either of these cases, a value was assigned to the item code at the establishment level to the corresponding summed values (quantities) of the census codes comprising it. Potentially, a given establishment might have had a multiple number of item codes assigned.

Each individual item code was sampled independently by cutoff methods, by first arraying the establishments with the item in descending order of value and by selecting the largest establishments, which in the cumulative accounted for 85 percent of the total item value. Because

of the potential for establishments to be coded to more than one item code, the effective coverage of all item codes exceeded 85 percent. Plants selected because of their size in one code contributed to the coverage in other codes for which they had a small amount of data.

The select cases constitute the mailing panel for the annual survey. For a given survey year, final estimates are formed for a given item by summing the data obtained for the mail panel and adjusting it by the coverage rate for the item, so that a complete coverage estimate is obtained. This methodology presumes that the nonmail cases exhibit the same growth characteristics as the mail cases.

#### SUMMARY OF FINDINGS

In 1998, quantity of iron and steel castings shipped were estimated at 12,101 thousand short tons, which compares to the 11,753 thousand short tons shipped in 1997. Ductile iron and gray iron castings quantity shipped were estimated at 4,484 and 6,021 thousand short tons respectively, from the 4,325 and 5,938 shipped in 1997. Manufacturers of malleable iron castings shipped 271 thousand short tons in 1998, which was virtually unchanged from the 272 thousand short tons shipped in 1997. The quantity of steel castings shipped in 1998 is 1,324 thousand short tons, from the 1,218 thousand short tons shipped 1997.

#### EXPLANATION OF TERMS

**Shipments for sale.** Represents commercial sales only (castings shipped to the trade). Intracompany sales are not included in this category.

**Shipments for own use.** Represents castings shipped for use by the reporting company or by a subsidiary, parent, or other affiliated company. Castings produced and consumed at the same location in the production of finished products are also included.

**All other gray iron castings.** Includes abrasives, rolls, chilled iron railroad car wheels, grinding balls, white iron castings, semisteel castings, and pressure and soil pipe fittings that require machining, threading, or assembling.

**Cast iron pressure pipe and fittings.** Includes only those fittings that do not require any machining, threading, or assembling.

**Pearlitic malleable.** This classification is reported pursuant to ASTM (American Society for Testing Materials) Designation A220-76.

**Alloy steel.** Steel that contains alloying elements in excess of the maximum standard ranges of the American Iron and Steel Institute as follows:

Manganese ..... in excess of 1.65%  
 Silicon..... in excess of .60%  
 Copper..... in excess of .40%  
 Chromium..... in excess of .30%

Aluminum, cobalt, Any amount specified  
 niobium, molybdenum, nickel, or known to have  
 titanium, tungsten, vanadium, been added to  
 zirconium, or any other obtain a desired  
 alloying element. alloying effect.

**High alloy steel castings.** Heat and/or corrosion resistant steel castings containing 8 percent or more of chromium or nickel or both, with or without molybdenum or other elements.

**Table 1. Quantity of Shipments of Iron and Steel Castings: 1998 and 1997**

[Thousands of short tons]

Year	Ductile iron castings			Gray iron castings			Malleable iron castings			Steel castings		
	Total	For sale	For own use	Total	For sale	For own use	Total	For sale	For own use	Total	For sale	For own use
1998.....	4,484	4,050	434	6,021	4,617	1,404	271	134	137	1,324	1,249	75
1997.....	4,325	3,915	410	5,938	4,448	1,490	272	121	151	1,218	1,174	44

**Table 2. Value of Shipments of Iron and Steel Castings: 1998 and 1997**

[Millions of dollars]

Product description	Value of shipments		Standard error of estimate (percent) for column—	
	1998	1997	A	B
	A	B	A	B
Ductile iron castings.....	4,326.4	4,148.9	1.0	1.0
Gray iron castings.....	4,639.2	4,719.5	1.6	2.0
Malleable iron castings.....	258.3	272.4	1.1	1.1
Steel castings.....	2,488.3	2,343.5	1.0	1.0
Steel investment castings.....	6,260.8	5,151.9	10.3	12.2

<sup>1</sup>Revised by 5 percent or more from previously published data.

Note: Dollar value represents value of castings for sale.



**Table 3. Shipments of Iron and Steel Castings by Type of Castings: 1998 and 1997**

[Quantity in short tons]

Product code	Product description	1998		1997	
		Quantity	Standard error (percent)	Quantity	Standard error (percent)
	Iron and steel castings (except investment castings) . . . .	12,100,736	(NA)	11,752,544	(NA)
	For sale . . . . .	10,050,783	(NA)	9,657,774	(NA)
	For own use . . . . .	2,049,953	(NA)	2,094,770	(NA)
	Ductile (nodular) iron castings . . . . .	4,484,296	(NA)	4,324,723	(NA)
	For sale . . . . .	4,049,912	(NA)	3,914,943	(NA)
	For own use . . . . .	434,384	(NA)	409,780	(NA)
	Ductile iron pressure pipe:				
	Under 14 inches (inside diameter) . . . . .	1,467,333	-	1,380,919	-
3315111201	14 to 24 inches . . . . .	(D)	-	(D)	-
3315111107	30 inches and over . . . . .	(D)	-	(D)	-
3315111108	Ductile iron fittings:				
	Under 14 inches (inside diameter) . . . . .	81,733	3.1	69,543	3.1
3315111111	14 to 24 inches . . . . .	17,483	-	15,712	-
3315111117	30 inches and over . . . . .	5,802	-	6,640	-
3315111118	Construction and utility castings . . . . .	44,914	(Z)	39,340	1.0
3315113206	Automotive uses . . . . .	986,378	(Z)	1,014,996	1.0
3315113101	Machinery uses . . . . .	144,107	2.4	146,313	2.5
3315113216	Other ductile iron castings (except pressure pipe and fittings):				
	For sale . . . . .	878,377	1.2	813,153	1.2
3315113221	For own use . . . . .	108,139	1.6	101,483	1.7
	Gray iron castings . . . . .	6,021,497	(NA)	5,937,606	(NA)
	For sale . . . . .	4,617,445	(NA)	4,447,929	(NA)
	For own use . . . . .	1,404,052	(NA)	1,489,677	(NA)
331511E200	Molds and stools for heavy steel ingots . . . . .	56,473	-	75,296	-
	Gray iron pressure pipe fittings: <sup>1</sup>				
	Under 14 inches (inside diameter) . . . . .	21,956	-	23,195	-
3315115121	14 inches and over (inside diameter) . . . . .	876	7.4	873	7.4
3315115125	Gray iron soil pipe . . . . .	243,954	-	248,676	-
3315117114	Gray iron soil pipe fittings <sup>1</sup> . . . . .	65,280	-	66,304	-
3315117133	Automotive uses . . . . .	1,062,868	1.0	1,045,907	1.0
3315119206	Construction and utility castings . . . . .	648,659	1.0	608,904	1.0
3315119111	All other gray iron castings, including white iron castings:				
3315119116	For sale . . . . .	2,517,381	1.5	2,378,775	1.5
	For own use . . . . .	327,149	6.2	378,088	6.0
	Malleable iron castings . . . . .	271,071	(NA)	271,763	(NA)
	For sale . . . . .	134,280	(NA)	120,600	(NA)
	For own use . . . . .	136,791	(NA)	151,163	(NA)
331511A100	Standard malleable . . . . .	179,715	(Z)	192,030	(Z)
331511C300	Pearlitic malleable . . . . .	91,356	(Z)	79,733	(Z)
	Steel castings (except investment) . . . . .	1,323,872	(NA)	1,218,452	(NA)
	For sale . . . . .	1,249,146	(NA)	1,174,302	(NA)
	For own use . . . . .	74,726	(NA)	44,150	(NA)
	Carbon steel . . . . .	945,227	(NA)	821,861	(NA)
	Railroad specialties . . . . .	714,852	(NA)	589,418	(NA)
3315131102	Side frames, bolsters, couplers, yokes, draft gear, snubbers (self-contained unit type), hopper doors and frames, and break beams . . . . .	288,478	-	235,820	-
3315131103	Other carbon steel railway and transit rolling stock castings . . . . .	426,374	(Z)	353,598	(Z)
3315131215	Other carbon steel castings, including rolls for rolling mills:				
	For sale . . . . .	225,696	0.6	227,346	0.6
	For own use . . . . .	4,679	10.0	5,097	9.3
	Alloy (except high alloy) steel castings . . . . .	249,570	(NA)	262,521	(NA)
3315135101	Railway specialties . . . . .	35,449	1.7	31,874	1.4
3315135113	Other alloy steel castings, including rolls for rolling mills . . . . .	214,121	1.1	230,647	1.1
3315133113	High alloy steel castings:				
	For sale . . . . .	122,099	1.4	120,599	1.4
	For own use . . . . .	6,976	3.3	13,471	1.6

See footnotes at end of table.

**Table 3. Shipments of Iron and Steel Castings by Type of Castings: 1998 and 1997—Con.**

[Quantity in short tons]

Product code	Product description	1998		1997	
		Quantity	Standard error (percent)	Quantity	Standard error (percent)
	Iron and steel castings (except investment castings)—Con.				
	Steel investment castings <sup>2</sup> .....	91,744	(NA)	94,795	(NA)
	For sale <sup>2</sup> .....	87,454	(NA)	90,381	(NA)
	For own use <sup>2</sup> .....	4,290	(NA)	4,414	(NA)
3315120101	Carbon, including low alloy <sup>2</sup> .....	36,758	1.0	31,919	1.0
3315120106	Alloy, including stainless <sup>2</sup> .....	54,986	1.0	62,876	1.0

- Represents zero. D Withheld to avoid disclosing data of individual companies. NA Not available. †Revised by 5 percent or more from previously published data. Z Less than half the unit shown.

<sup>1</sup>Does not include machined, threaded, or assembled fittings.

<sup>2</sup>Shipments are in thousands of pounds.

**Table 4. Manufacturers' Shipments, Exports, and Imports of Iron and Steel Castings: 1998**

[Quantity in short tons]

Product code	Product description <sup>1</sup>	Manufacturers' shipments	Exports of domestic merchandise <sup>1 2</sup>	Imports for consumption <sup>1 3</sup>
3315111201 107, 108	Ductile iron pressure pipe .....	1,891,118	61,422	5,285
3315111111 117, 118	Ductile iron fittings .....	105,018	5,909	33,976
331511E200	Molds for heavy steel ingot .....	56,473	20	3,349
3315115121 125	Gray iron pressure pipe fittings .....	22,832	6,867	20,445
3315117114	Gray iron soil pipe .....	243,954	11,820	9,791
3315117133	Gray iron soil pipe fittings .....	65,280	465	6,737
3315113101 206, 216, 221, 3315119206 111, 116, 331511A100, 331511C300, 3315131102 103, 215, 3315135101 113, 3315133113, 3315120101 106	Iron and steel castings, n.e.c. ....	8,397,683	96,864	270,510

n.e.c. Not elsewhere classified.

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report FT 446, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

**HISTORICAL NOTE**

Data on iron and steel castings have been collected by the Census Bureau since 1943. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal

Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Brenda Campbell, 301-457-1031.

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## STEEL MILL PRODUCTS—MA331B (FORMERLY MA33B)

### INTRODUCTION

These data cover all known producers of steel mill products. The statistics were collected by mail on Census Bureau annual Form MA331B, Steel Mill Products. The survey panel includes all known producers of steel mill products, approximately 382 companies.

### SUMMARY OF FINDINGS

In 1998, steel mill product manufacturers had shipments of \$65.9 billion, which decreased 4 percent from \$68.7 billion in 1997. Steel ingot and semifinished shapes decreased 6 percent to \$4.5 billion in 1998, from \$4.8 billion in 1997. Hot-rolled sheet and strip, including tin mill products decreased 4 percent to \$21.5 billion in 1998, from \$22.3 billion in 1997. Hot-rolled bar and shapes, plates, structural shapes, and piling increased slightly to \$13.2 billion in 1998, from \$13.1 billion in 1997. Steel wire decreased 3 percent to \$2.4 billion in 1998, from \$2.5 billion in 1997. Other wire products shipments were \$2.0 billion in 1998, virtually unchanged from 1997. Steel pipe and tube incurred a 10-percent decrease to \$8.9 billion in 1998, from \$9.9 billion in 1997. Cold-rolled steel sheet and strip decreased to \$10.6 billion in 1998, from \$11.2 billion in 1997, a 6-percent decrease. Cold-finished steel bars and bar shapes decreased 3 percent to \$2.17 billion in 1998, from \$2.25 billion in 1997. Other steel mill products increased 8 percent.

### EXPLANATION OF TERMS

**Net shipments.** This figure is derived by subtracting domestic receipts from total quantity shipments plus steel consumed in producing plants. Prior to 1980, import

receipts were also used in the net shipments calculation. Beginning in 1980, import receipts of steel mill products for further processing were collected separately and were no longer used in the net shipments calculation.

**Carbon steel.** All ferrous materials other than alloy and stainless that are usefully malleable and that contain, by weight, 2 percent or less of carbon (in effect, all steel other than that complying with the definition for alloy or stainless).

**Alloy steel.** Steels not complying with the definition of stainless steel and containing, by weight, one or more of the following elements, in proportion shown: 0.3 percent or more of aluminum, chromium, cobalt, or nickel; 0.0008 percent or more of boron; 0.4 percent or more of copper or lead; 1.65 percent or more of manganese; 0.08 percent or more of molybdenum; 0.06 percent or more of niobium; or 0.6 percent or more of silicon.

**Stainless steel.** Alloy steels containing, by weight, 1.2 percent or less of carbon and 10.5 percent or more of chromium, with or without other elements and a minimum of 50-percent iron. However, all tool steel and valve steel are excluded.

**Heat resisting steel.** Alloy steels containing, by weight, less than 0.3 percent of carbon and 4 percent or more, but less than 10.5 percent, of chromium.

**Table 5. Value of Shipments of Steel Mill Products by Class of Products: 1998 and 1997**

[Value in thousands of dollars]

Product code	Product description	1998	1997
	<b>Total.....</b>	<b>65,910,537</b>	<b>68,712,197</b>
3311113	Steel ingot and semifinished shapes.....	4,517,078	4,801,545
3311115	Hot-rolled sheet and strip, including tin mill products <sup>1</sup> .....	21,542,702	22,330,742
3311117	Hot-rolled bars and shapes, plates, structural shapes, and piling.....	13,180,556	13,091,194
3311119	Steel wire.....	2,439,486	2,502,801
331222-	Other wire products.....	1,996,404	2,022,056
3312100	Steel pipe and tube.....	8,880,545	9,902,758
3312211	Cold-rolled steel sheet and strip.....	10,564,780	11,242,141
3312213	Cold-finished steel bars and bar shapes.....	2,172,780	2,246,614
331111L	Other steel mill products (except wire products).....	616,206	572,346

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Galvanized, metallic coated, and electrical sheet and strip are included in product code 3311115, "Hot-rolled sheet and strip."

**Table 6. Production of Raw Steel: 1998 and 1997**

[Thousands of metric tons]

Product description	1998	1997
<b>Total.....</b>	<b>95,223</b>	<b>96,949</b>
By grade of steel:		
Carbon.....	83,445	83,934
Alloy.....	9,465	10,529
Stainless.....	2,313	2,487
By type of furnace:		
Electric.....	40,192	40,819
Basic oxygen, open hearth, and other types of furnaces.....	55,031	56,130

**Table 7. Receipts, Consumption, Shipments, and Net Shipments of Steel Mill Products: 1998**

[Quantity in metric tons. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Number of companies	Receipts <sup>2 3</sup> (quantity)	Steel consumed in producing plants (quantity)	Total shipments		Net shipments <sup>4</sup> (quantity)
					Quantity	Value f.o.b. plant	
	Steel .....	(NA)	26,558,126	1,275,257	113,630,386	65,910,537	88,347,517
	Carbon steel .....	279	24,138,766	1,104,415	101,846,691	52,999,035	78,812,340
3311113110	Ingots .....	5	(D)	(D)	112,562	50,005	224,518
	Semifinished products:						
3311113140	Blooms, billets, sheet bars, tin mill bars, tube rounds, and skelp.....	32	(D)	(D)	2,657,155	887,836	(D)
3311113190	Wire rods .....	22	2,923,971	224,421	4,785,927	1,854,014	2,086,378
3311113150	Slabs .....	12	(D)	(D)	780,997	210,668	(D)
	Finished products:						
3311117110	Plates, cut lengths .....	15	(D)	(D)	4,636,559	2,263,715	4,308,514
3311117120	Plates, in coils.....	5	(D)	(D)	(D)	(D)	(D)
	Sheet:						
3311115110	Hot rolled, including hot-rolled bands .....	23	10,889,114	310,025	19,374,318	7,135,101	8,795,229
3312211110	Cold rolled .....	25	1,486,523	208,543	13,053,712	6,410,782	11,775,731
	Sheet and strip:						
	Galvanized:						
3311115120	Hot dipped .....	15	(D)	(D)	9,817,442	6,231,951	9,670,720
3311115130	Electrolytic .....	13	(D)	(D)	3,305,784	2,254,125	3,290,494
3311115140	Electrical.....	1	(D)	(D)	(D)	(D)	(D)
3311115150	All other metallic coated, including long ternes ..	10	(D)	(D)	1,103,981	815,129	1,093,080
	Strip:						
3311115160	Hot rolled .....	14	(D)	(D)	2,335,219	922,076	1,738,892
3312211120	Cold rolled .....	20	(D)	(D)	1,228,092	1,099,107	1,035,832
	Tin mill products:						
33111151C0	Blackplate .....	9	(D)	(D)	479,084	242,835	454,574
33111151D0	Electrolytic and hot dipped tinplate .....	8	(D)	(D)	2,490,417	1,680,059	2,475,009
33111151E0	Tin free steel .....	5	(D)	(D)	468,956	309,335	460,339
33111151F0	All other tin mill products, including short ternes and foil .....	2	-	-	(D)	(D)	(D)
	Structural shapes (heavy):						
3311117130	Wide flange .....	4	-	-	(D)	(D)	(D)
3311117140	Standard heavy shapes .....	7	(D)	(D)	2,247,865	1,048,791	2,247,843
33111171E0	Sheet piling and bearing piles .....	3	-	-	(D)	(D)	(D)
	Bars:						
3311117190	Hot-rolled bars (except concrete reinforcing) ....	34	(D)	(D)	6,584,273	3,068,232	5,595,230
33111171A0	Light structurals (under 3 inches) .....	9	(D)	(D)	1,495,944	633,044	1,481,900
33111171B0	Concrete reinforcing bars .....	15	-	-	5,331,755	1,839,564	5,331,755
3312213110	Cold-finished bars .....	34	(D)	(D)	1,453,938	1,165,408	1,375,432
331111L	Rails, wheels, and track accessories <sup>5</sup> .....	9	(D)	(D)	1,005,309	616,206	874,293
	Pipe and tubes:						
	Line pipe:						
3312100110	16 inches outside diameter and under .....	20	-	-	1,049,135	653,568	1,049,135
3312100120	Over 16 inches outside diameter .....	8	-	-	641,030	486,221	641,030
3312100130	Oil country goods .....	13	-	-	771,514	523,666	771,514
	Pressure tubing:						
3312100150	Seamless .....	9	(D)	(D)	105,723	94,069	97,469
3312100160	Welded .....	14	-	-	335,370	398,347	335,370
	Mechanical tubing:						
33121001A0	Seamless .....	14	(D)	(D)	120,446	136,395	119,999
33121001B0	Welded .....	56	(D)	(D)	2,246,448	2,173,100	2,197,940
33121001F0	Structurals .....	25	(D)	(D)	1,527,221	895,180	1,523,230
33121001G0	Miscellaneous, including standard pipe .....	33	(D)	(D)	1,554,580	1,071,588	1,541,679
	Wire:						
	Plain wire:						
3312225110	Flat wire .....	11	5,526	254	93,038	109,076	87,766
	Round wire:						
	Thermally treated:						
3312225120	Under 1.5 mm in diameter .....	16	(D)	(D)	67,469	75,366	28,752
3312225130	1.5 mm or above in diameter .....	22	(D)	(D)	259,563	193,229	188,802
	Other round wire:						
3312225140	Under 1.5 mm in diameter .....	12	(D)	(D)	224,188	281,892	238,867
3312225150	1.5 mm or above in diameter .....	34	(D)	(D)	1,390,735	743,610	1,110,413
3312225160	Other shape wire .....	9	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.

**Table 7. Receipts, Consumption, Shipments, and Net Shipments of Steel Mill Products: 1998—Con.**

[Quantity in metric tons. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Number of companies	Receipts <sup>2 3</sup> (quantity)	Steel consumed in producing plants (quantity)	Total shipments		Net shipments <sup>4</sup> (quantity)
					Quantity	Value f.o.b. plant	
	Steel—Con.						
	Carbon steel—Con.						
	Finished products—Con.						
	Plated or coated with zinc:						
	Round wire:						
3312225170	Under 1.5 mm in diameter .....	13	(D)	(D)	51,597	46,770	49,930
3312225180	1.5 mm or above in diameter .....	20	88,612	624	263,601	182,223	175,613
3312225190	Other shape wire, including flat .....	9	(D)	(D)	72,998	60,771	41,744
	Other coated wire:						
33122251A0	Flat wire .....	3	(D)	(D)	3,009	4,225	19,339
33122251B0	Round wire .....	19	(D)	(D)	126,599	130,488	123,683
33122251C0	Other shape wire .....	6	-	-	(D)	(D)	(D)
	Wire products: <sup>6</sup>						
3312223120	Nails and staples .....	24	(D)	(D)	642,953	671,356	642,492
331222B110	Barbed and twisted wire .....	7	(D)	(D)	125,050	118,544	125,023
3312227110	Wire fence, woven and welded .....	12	(D)	(D)	434,827	289,026	433,341
331222B120	Bale ties .....	7	-	-	32,218	21,439	32,218
3312221110	Wire rope and cable .....	14	(D)	(D)	168,754	380,799	168,607
	Wire strand:						
3312221230	For prestressed concrete .....	6	-	-	225,942	154,985	225,942
3312221240	Other .....	13	-	-	174,105	231,408	174,105
3312229110	Woven wire netting .....	10	(D)	(D)	133,775	128,847	132,348
	Alloy steel .....	78	1,481,197	103,282	9,179,600	7,252,274	7,801,684
3311113120	Ingots .....	14	(D)	(D)	321,392	209,445	392,257
	Semifinished products:						
3311113160	Blooms, billets, sheet bars, rounds, and skelp .....	17	(D)	(D)	1,159,476	763,008	194,775
33111131A0	Wire rods .....	5	(D)	(D)	(D)	(D)	(D)
3311113170	Slabs .....	3	(D)	(D)	(D)	(D)	(D)
	Finished products:						
3311117150	Plates, cut lengths .....	9	(D)	(D)	953,429	658,794	953,669
3311117160	Plates, in coils .....	2	(D)	(D)	(D)	(D)	(D)
3311117170	Structural shapes (3 inches and under) .....	3	-	-	(D)	(D)	(D)
	Sheet:						
3311115170	Hot rolled .....	8	21,298	-	1,216,519	524,938	1,195,221
3312211130	Cold rolled .....	7	(D)	(D)	120,217	71,849	117,755
	Sheet and strip:						
3311115180	Galvanized hot dipped .....	3	-	-	106,786	81,586	106,786
3311115190	All other metallic coated, including electrolytic .....	6	(D)	(D)	(D)	(D)	(D)
	Strip:						
33111151A0	Hot rolled .....	3	20,913	-	(D)	(D)	(D)
3312211140	Cold finished .....	12	(D)	(D)	322,542	543,874	310,937
	Bars:						
33111171C0	Hot rolled, including structural shapes under 3 inches .....	18	254,544	353	2,399,235	1,443,990	2,145,043
3312213120	Cold finished .....	25	(D)	(D)	475,270	493,660	475,217
	Tool steel:						
33111171F0	High speed .....	7	(D)	(D)	12,446	121,795	11,619
33111171G0	Other than high speed .....	8	(D)	(D)	44,413	173,304	43,455
	Pipe and tubes:						
3312100140	Oil country goods and line pipe .....	8	(D)	(D)	952,535	815,404	952,533
3312100170	Pressure tubing .....	5	(D)	(D)	6,020	23,065	5,918
33121001C0	Mechanical tubing .....	10	(D)	(D)	406,378	568,605	310,543
33121001H0	Miscellaneous, including standard and structural .....	6	(D)	(D)	(D)	(D)	(D)
33122251D0	Wire (plain and coated) .....	12	7,012	-	45,236	111,865	38,224

See footnotes at end of table.

**Table 7. Receipts, Consumption, Shipments, and Net Shipments of Steel Mill Products: 1998—Con.**

[Quantity in metric tons. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Number of companies	Receipts <sup>2 3</sup> (quantity)	Steel consumed in producing plants (quantity)	Total shipments		Net shipments <sup>4</sup> (quantity)
					Quantity	Value f.o.b. plant	
	Steel—Con.						
3311113130	Stainless steel.....	83	938,163	67,560	2,604,096	5,659,228	1,733,493
	Ingots .....	12	(D)	(D)	44,069	70,343	2,691
	Semifinished products:						
3311113180	Blooms, billets, slabs, sheet bars, tube rounds, and skelp .....	16	(D)	(D)	252,877	329,320	163,591
33111131B0	Wire rods .....	5	14,614	-	30,535	93,624	15,921
	Finished products:						
3311117180	Plates and structurals .....	7	4,219	-	138,733	367,311	134,514
	Sheet and strip:						
33111151B0	Hot rolled .....	6	600,418	-	543,470	663,150	(S)
3312211150	Cold rolled .....	18	(D)	(D)	1,238,514	2,439,168	1,129,000
	Bars:						
33111171D0	Hot rolled .....	9	(D)	(D)	27,257	102,770	20,990
3312213130	Cold finished .....	13	(D)	(D)	121,252	513,712	120,195
	Pipe and tubes:						
	Pressure tubing:						
3312100180	Seamless .....	8	(D)	(D)	(D)	(D)	(D)
3312100190	Welded .....	11	(D)	(D)	70,724	322,756	70,715
	Mechanical tubing:						
33121001D0	Seamless .....	6	(D)	(D)	2,950	62,749	1,639
33121001E0	Welded .....	16	(D)	(D)	64,764	283,976	64,763
33121001J0	Other pipe and tube .....	6	(D)	(D)	(D)	(D)	(D)
	Wire:						
	Round wire:						
33122251E0	Under 0.75 mm in diameter .....	14	(D)	(D)	18,027	116,887	17,824
33122251F0	0.75 mm to under 1.5 mm in diameter .....	13	432	-	6,086	36,816	5,682
33122251G0	1.5 mm and above in diameter .....	15	1,764	-	32,023	138,477	30,259
33122251H0	Other shape wire, including flat wire .....	9	(D)	(D)	1,177	15,211	1,031

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. S Does not meet publication standards.

<sup>1</sup>Product codes in the 3312225 series also include products in the 3311119 series; the same applies for 3312211 and 331111D; 3312213 and 331111F; and 3312100 and 331111B.

<sup>2</sup>Excludes receipts and shipments of steel processed on a conversion basis for nonsteel producing companies. Receipts data represent receipts at producing mills only and include receipts from domestic sources.

<sup>3</sup>Import receipts of steel mill products for 1998 are as follows: total, 6,488,792 metric tons; carbon, 6,290,154 metric tons; alloy, 79,443 metric tons; stainless, 119,195 metric tons.

<sup>4</sup>Net shipments are derived by subtracting domestic receipts from total quantity shipments, plus steel consumed in producing plants.

<sup>5</sup>Product code 331111L combines product codes 331111L110, 331111L120, 331111L130, 331111L140, 331111L150, 331111L160, and 331111L170.

<sup>6</sup>Represents wire products produced within steel works and wire drawing establishments. See the 1997 Economic Census, Manufacturing sector, Tables 6A and 6B for detailed information.

Note: Quantity data converted to metric tons; therefore, detail may not add to total because of rounding.

**Table 8. Receipts, Consumption, Shipments, and Net Shipments of Steel Mill Products: 1997**

[Quantity in metric tons. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Number of companies	Receipts <sup>2 3</sup> (quantity)	Steel consumed in producing plants (quantity)	Total shipments		Net shipments <sup>4</sup> (quantity)
					Quantity	Value f.o.b. plant	
	Steel .....	(NA)	27,486,253	1,241,033	116,540,900	68,712,197	90,295,680
3311113110	Carbon steel.....	277	25,058,739	1,065,180	103,899,926	54,782,147	79,906,366
	Ingots .....	5	(D)	(D)	103,620	53,357	188,953
	Semifinished products:						
3311113140	Blooms, billets, sheet bars, tin mill bars, tube rounds, and skelp.....	33	4,352,825	22,980	2,403,008	726,130	(S)
3311113190	Wire rods .....	21	3,106,268	196,345	4,874,077	1,961,096	1,964,154
3311113150	Slabs .....	12	853,439	1,261	851,503	234,904	(S)
	Finished products:						
3311117110	Plates, cut lengths .....	15	(D)	(D)	4,445,364	2,163,206	4,254,402
3311117120	Plates, in coils .....	5	(D)	(D)	(D)	(D)	(D)
	Sheet:						
3311115110	Hot rolled, including hot rolled bands .....	24	12,106,250	324,465	20,532,499	7,954,027	8,750,713
3312211110	Cold rolled .....	27	1,364,381	189,703	13,777,309	6,990,947	12,602,630
	Sheet and strip:						
	Galvanized:						
3311115120	Hot dipped .....	17	(D)	(D)	9,163,465	6,010,883	9,024,899
3311115130	Electrolytic .....	14	(D)	(D)	2,843,964	2,039,198	2,835,282
3311115140	Electrical .....	3	(D)	(D)	(D)	(D)	(D)
3311115150	All other metallic coated, including long ternes. .	10	(D)	(D)	1,051,885	787,816	1,042,337
	Strip:						
3311115160	Hot rolled .....	17	(D)	(D)	2,375,859	945,860	1,805,248
3312211120	Cold rolled .....	21	(D)	(D)	1,228,845	1,121,427	1,055,944
	Tin mill products:						
33111151C0	Blackplate .....	9	(D)	(D)	610,406	326,711	584,195
33111151D0	Electrolytic and hot dipped tin plate .....	8	(D)	(D)	2,646,612	1,799,927	2,631,991
33111151E0	Tin free steel .....	5	(D)	(D)	485,898	319,875	477,281
33111151F0	All other tin mill products, including short ternes and foil .....	2	-	-	(D)	(D)	(D)
	Structural shapes (heavy):						
3311117130	Wide flange .....	5	-	-	(D)	(D)	(D)
3311117140	Standard heavy shapes .....	8	-	-	2,425,231	1,072,051	2,425,231
33111171E0	Sheet piling and bearing piles .....	4	-	-	319,502	139,564	319,502
	Bars:						
3311117190	Hot-rolled bars (except concrete reinforcing). . . .	36	(D)	(D)	6,551,859	3,007,378	5,475,453
33111171A0	Light structurals (under 3 inches) .....	9	(D)	(D)	1,507,956	615,708	1,494,437
33111171B0	Concrete reinforcing bars .....	17	-	-	5,663,269	1,923,388	5,663,269
3312213110	Cold-finished bars .....	35	(D)	(D)	1,515,543	1,186,597	1,444,669
331111L---	Rails, wheels, and track accessories <sup>5</sup> .....	10	(D)	(D)	936,827	572,346	814,087
	Pipe and tubes:						
	Line pipe:						
3312100110	16 inches outside diameter and under .....	21	-	-	1,189,703	714,777	1,189,703
3312100120	Over 16 inches outside diameter .....	8	-	-	392,540	280,862	392,540
3312100130	Oil country goods .....	14	-	-	1,504,802	1,027,380	1,504,802
	Pressure tubing:						
3312100150	Seamless .....	9	(D)	(D)	128,709	119,271	122,002
3312100160	Welded .....	14	-	-	340,178	403,517	340,178
	Mechanical tubing:						
33121001A0	Seamless .....	14	(D)	(D)	122,020	143,183	120,961
33121001B0	Welded .....	59	(D)	(D)	2,261,745	2,191,550	2,213,989
33121001F0	Structurals .....	24	(D)	(D)	1,584,506	939,002	1,580,651
33121001G0	Miscellaneous, including standard pipe .....	32	(D)	(D)	1,628,822	1,249,522	1,616,853
	Wire:						
	Plain wire:						
3312225110	Flat wire .....	11	6,157	177	103,021	111,409	97,041
	Round wire:						
	Thermally treated:						
3312225120	Under 1.5 mm in diameter .....	16	(D)	(D)	61,559	69,152	36,473
3312225130	1.5 mm or above in diameter .....	23	(D)	(D)	255,700	199,642	188,902
	Other round wire:						
3312225140	Under 1.5 mm in diameter .....	14	(D)	(D)	230,019	277,082	248,425
3312225150	1.5 mm or above in diameter .....	36	(D)	(D)	1,435,268	787,792	1,238,525
3312225160	Other shape wire .....	9	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.



**Table 8. Receipts, Consumption, Shipments, and Net Shipments of Steel Mill Products: 1997—Con.**

[Quantity in metric tons. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Number of companies	Receipts <sup>2 3</sup> (quantity)	Steel consumed in producing plants (quantity)	Total shipments		Net shipments <sup>4</sup> (quantity)
					Quantity	Value f.o.b. plant	
	Steel—Con.						
	Carbon steel—Con.						
	Finished products—Con.						
	Plated or coated with zinc:						
	Round wire:						
3312225170	Under 1.5 mm in diameter .....	12	(D)	(D)	59,312	51,914	58,161
3312225180	1.5 mm or above in diameter .....	19	96,321	760	251,544	174,016	'155,983
3312225190	Other shape wire, including flat .....	9	(D)	(D)	'86,549	'68,848	'58,759
	Other coated wire:						
33122251A0	Flat wire .....	3	(D)	(D)	3,547	4,508	20,890
33122251B0	Round wire .....	20	(D)	(D)	117,937	125,126	115,199
33122251C0	Other shape wire .....	6	-	-	(D)	(D)	(D)
	Wire products <sup>6</sup> :						
3312223120	Nails and staples .....	24	(D)	(D)	'607,816	694,910	'607,355
331222B110	Barbed and twisted wire .....	8	(D)	(D)	139,131	135,526	139,108
3312227110	Wire fence, woven and welded .....	14	(D)	(D)	'438,885	'296,464	'438,356
331222B120	Bale ties .....	7	-	-	32,316	21,295	32,316
3312221110	Wire rope and cable .....	13	(D)	(D)	171,598	372,095	170,998
	Wire strand:						
3312221230	For prestressed concrete .....	6	-	-	215,178	150,016	215,178
3312221240	Other .....	12	-	-	177,231	240,328	177,231
3312229110	Woven wire netting .....	10	(D)	(D)	'113,137	'111,422	'112,041
	Alloy steel .....	80	1,570,668	'107,151	9,992,557	7,742,761	8,622,521
3311113120	Ingots .....	13	(D)	(D)	'337,764	'225,481	'414,739
	Semifinished products:						
3311113160	Blooms, billets, sheet bars, rounds, and skelp .....	15	(D)	(D)	1,577,636	921,610	'638,647
33111131A0	Wire rods .....	4	(D)	(D)	(D)	(D)	(D)
3311113170	Slabs .....	2	(D)	(D)	(D)	(D)	(D)
	Finished products:						
3311117150	Plates, cut lengths .....	8	(D)	(D)	798,932	557,814	799,105
3311117160	Plates, in coils .....	3	(D)	(D)	(D)	(D)	(D)
3311117170	Structural shapes (3 inches and under) .....	3	-	-	6,601	5,348	6,601
	Sheet:						
3311115170	Hot rolled .....	9	'22,607	-	1,560,141	685,205	1,538,487
3312211130	Cold rolled .....	7	(D)	(D)	151,961	88,415	151,234
	Sheet and strip:						
3311115180	Galvanized hot dipped .....	3	(D)	(D)	127,833	87,990	127,833
3311115190	All other metallic coated, including electrolytic ..	6	(D)	(D)	(D)	(D)	(D)
	Strip:						
33111151A0	Hot rolled .....	4	21,348	-	'1,953	1,219	(S)
3312211140	Cold finished .....	12	(D)	(D)	294,146	519,126	285,494
	Bars:						
33111171C0	Hot rolled, including structural shapes under 3						
	inches .....	17	(D)	(D)	2,475,229	1,473,387	2,212,383
3312213120	Cold finished .....	25	(D)	(D)	467,169	486,900	467,087
	Tool steel:						
33111171F0	High speed .....	7	(D)	(D)	12,483	118,977	11,820
33111171G0	Other than high speed .....	7	(D)	(D)	47,386	182,722	46,635
	Pipe and tubes:						
3312100140	Oil country goods and line pipe .....	8	(D)	(D)	1,195,003	1,014,604	1,195,001
3312100170	Pressure tubing .....	6	(D)	(D)	9,770	28,307	9,529
33121001C0	Mechanical tubing .....	11	(D)	(D)	572,965	773,720	438,283
33121001H0	Miscellaneous, including standard and						
	structural .....	4	(D)	(D)	(D)	(D)	(D)
33122251D0	Wire (plain and coated) .....	13	4,233	-	'44,422	'122,259	'40,152

See footnotes at end of table.

**Table 8. Receipts, Consumption, Shipments, and Net Shipments of Steel Mill Products: 1997—Con.**

[Quantity in metric tons. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Number of companies	Receipts <sup>2 3</sup> (quantity)	Steel consumed in producing plants (quantity)	Total shipments		Net shipments <sup>4</sup> (quantity)
					Quantity	Value f.o.b. plant	
	Steel—Con.						
3311113130	Stainless steel .....	87	950,326	'68,702	'2,648,417	6,187,289	'1,766,793
	Ingots .....	11	(D)	(D)	44,323	71,973	(D)
	Semifinished products:						
3311113180	Blooms, billets, slabs, sheet bars, tube rounds, and skelp .....	15	(D)	(D)	'318,337	448,961	'238,935
33111131B0	Wire rods .....	5	'16,370	-	33,558	103,449	17,188
	Finished products:						
3311117180	Plates and structurals.....	6	7,124	-	140,169	397,217	133,346
	Sheet and strip:						
33111151B0	Hot rolled .....	7	624,711	-	562,727	820,902	(S)
3312211150	Cold rolled .....	19	(D)	(D)	1,166,480	2,522,226	1,066,498
	Bars:						
33111171D0	Hot rolled .....	8	(D)	(D)	36,901	133,074	'27,147
3312213130	Cold finished .....	13	(D)	(D)	130,232	573,117	128,691
	Pipe and tubes:						
	Pressure tubing:						
3312100180	Seamless .....	8	(D)	(D)	(D)	(D)	(D)
3312100190	Welded .....	12	(D)	(D)	'72,281	'330,256	'72,272
	Mechanical tubing:						
33121001D0	Seamless .....	5	(D)	(D)	2,799	57,784	1,769
33121001E0	Welded .....	16	(D)	(D)	69,032	301,017	69,030
33121001J0	Other pipe and tube .....	6	(D)	(D)	(D)	(D)	(D)
	Wire:						
	Round wire:						
33122251E0	Under 0.75 mm in diameter .....	14	(D)	(D)	'17,508	'116,202	'17,119
33122251F0	0.75 mm to under 1.5 mm in diameter .....	13	327	45	5,290	32,787	5,009
33122251G0	1.5 mm and above in diameter .....	17	2,011	-	33,895	147,127	31,884
33122251H0	Other shape wire, including flat wire.....	9	(D)	(D)	'2,405	'20,369	'2,274

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. 'Revised by 5 percent or more from previously published data. S Does not meet publication standards.

<sup>1</sup>Product codes in the 3312225 series also include products in the 3311119 series; the same applies for 3312211 and 331111D; 3312213 and 331111F; and 3312100 and 331111B.

<sup>2</sup>Excludes receipts and shipments of steel processed on a conversion basis for nonsteel producing companies. Receipts data represent receipts at producing mills only and include receipts from domestic sources.

<sup>3</sup>Import receipts of steel mill products for 1997 are as follows: total, 6,290,131 metric tons; carbon, 6,086,380 metric tons; alloy, 75,182 metric tons; stainless, 119,195 metric tons.

<sup>4</sup>Net shipments are derived by subtracting domestic receipts from total quantity shipments, plus steel consumed in producing plants.

<sup>5</sup>Product code 331111L combines product codes 331111L110, 331111L120, 331111L130, 331111L140, 331111L150, 331111L160, and 331111L170.

<sup>6</sup>Represents wire products produced within steel works and wire drawing establishments. See the 1997 Economic Census, Manufacturing sector, Tables 6A and 6B for detailed information.

Note: Quantity data converted to metric tons; therefore, detail may not add to total because of rounding.

**Table 9. Minimill Shipments of Selected Steel Mill Products: 1998 and 1997**

[Quantity in metric tons]

Product code <sup>1</sup>	Product description	1998				1997			
		Number of minimill companies	Industry	Minimills	Percent of minimills	Number of minimill companies	Industry	Minimills	Percent of minimills
3311113110	Carbon steel <sup>2</sup> .....	27	44,264,286	16,212,098	36.6	27	39,413,855	16,544,217	42.0
	Ingots .....	1	112,562	(D)	(D)	1	103,620	(D)	(D)
	Semifinished products:								
3311113140, 50	Blooms, billets, slabs, sheet bars, tin mill bars, tube rounds, and skelp .....	18	3,438,152	1,237,588	46.6	19	3,254,511	1,104,815	46.0
3311113190	Wire rods .....	6	4,785,927	1,716,679	35.9	4	4,753,550	1,706,001	35.9
	Finished products:								
3311117110, 20	Plates, all lengths .....	4	(D)	1,432,522	(D)	4	(D)	1,219,198	(D)
3311115160	Hot-rolled strip .....	4	2,335,219	84,479	3.6	4	2,375,859	94,717	4.0
	Structural shapes (heavy):								
3311117130	Wide flange .....	3	(D)	902,470	(D)	3	(D)	830,576	(D)
3311117140	Standard heavy shapes .....	6	2,247,865	1,953,012	86.9	6	2,425,231	2,115,958	87.2
33111171E0	Sheet piling and bearing piles .....	1	316,001	(D)	(D)	1	319,502	(D)	(D)
	Bars:								
3311117190	Hot-rolled bars (except concrete reinforcing) .....	16	6,548,273	3,511,567	53.6	16	6,549,080	3,558,721	54.3
33111171A0	Light structurals (under 3 inches) .....	7	1,495,944	1,098,187	73.4	7	1,507,956	1,109,857	73.6
33111171B0	Concrete reinforcing bars .....	11	5,331,755	3,431,631	64.4	11	5,562,491	3,764,996	67.7
3312213110	Cold-finished bars .....	2	1,453,938	(D)	(D)	2	1,523,004	(D)	(D)
331111L	Rails, wheels, and track accessories <sup>3</sup> .....	2	1,005,309	(D)	(D)	2	923,119	(D)	(D)
	Pipe and tubes:								
3312100110	Line pipe, 16 inches outside diameter and under .....	2	1,049,135	(D)	(D)	2	1,189,785	(D)	(D)
3312100130	Oil country goods .....	2	771,514	(D)	(D)	2	1,504,802	(D)	(D)
33121001A0	Mechanical tubing, seamless .....	1	120,446	(D)	(D)	1	128,747	(D)	(D)
33121001F0	Structurals .....	2	1,527,221	(D)	(D)	2	1,561,067	(D)	(D)
33121001G0	Miscellaneous, including standard pipe .....	2	1,554,580	(D)	(D)	2	1,623,340	(D)	(D)
3312225	Wire <sup>4</sup> .....	2	(D)	(D)	(D)	2	(D)	(D)	(D)
331222	Wire products <sup>5</sup> .....	1	1,937,624	(D)	(D)	1	1,796,406	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Product codes in 3312225 series also include products in 3311119 series, same applies for 3312211 and 331111D; 3312213 and 331111F; and 3312100 and 331111B.

<sup>2</sup>Total data are for selected product codes only.

<sup>3</sup>Product code 331111L combines product codes 331111L110, 331111L120, 331111L130, 331111L140, 331111L150, 331111L160, and 331111L170.

<sup>4</sup>Product code 3312225 combines product codes 3312225100 through 33122251H0.

<sup>5</sup>Product code 331222 combines product codes 3312223122, 331222B110, 3312227110, 331222B120, 3312221110, 3312221230, 3312221240, and 3312229110.

Note: Quantity data converted to metric tons; therefore, detail may not add to total because of rounding.

**Table 10. Net Shipments, Exports, Imports, and Apparent Consumption of Steel Mill Products: 1998**

[Quantity in metric tons. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1 3</sup>		Imports for consumption <sup>1 4</sup>		Apparent consumption <sup>6</sup>	
		Net (quantity) <sup>2</sup>	Total value f.o.b. plant	Quantity	Value at port	Quantity	Value c.i.f. <sup>5</sup>	Quantity	Value
Total		88,347,517	65,910,537	3,483,190	3,611,300	17,794,317	183,257,808	102,658,645	245,557,045
	Carbon steel:								
3311113110	Ingots	224,518	50,005	23,100	26,993	131,892	37,326	333,311	60,338
3311113140, 50	Semifinished blooms, billets, sheet bars, tin mill bars, tube rounds, skelp, and slabs	(D)	1,098,504	127,038	58,250	5,601,692	31,529,976	(D)	32,570,230
3311113190	Semifinished wire rods	2,086,378	1,854,014	-	-	-	-	2,289,896	1,854,014
3311117110, 20	Finished plates, both cut in lengths and in coils	(D)	(D)	-	-	-	-	(D)	(D)
3311115110, 60	Finished sheet and strip, hot rolled including hot rolled bands	10,534,121	8,057,177	50,939	49,371	20,003	207,943	10,503,184	8,215,749
3312211110	Finished sheet, cold rolled	11,775,731	6,410,785	334,180	181,289	18,939	258,316	11,460,490	6,487,812
3311115120	Finished sheet and strip, galvanized, hot dipped	9,670,720	6,231,951	23,041	20,812	1,032,148	14,682,086	10,679,827	20,893,225
3311115130	Finished sheet and strip, galvanized, electrolytic	3,290,494	2,254,125	162,028	128,107	-	-	3,128,466	2,126,018
3311115140, 50	Finished sheet and strip, electrical and other metallic coating, including long ternes	(D)	(D)	136,114	155,863	243,372	5,474,904	(D)	(D)
3312211120	Finished strip, cold rolled	1,035,832	1,099,107	27,161	29,040	8,693	842,255	1,017,364	1,912,322
	Finished tin mill products:								
33111151C0	Blackplate	454,574	242,835	12,442	5,626	-	-	442,132	237,209
33111151D0	Electrolytic and hot dipped tinplate	2,475,009	1,680,059	240,037	143,150	291,506	3,303,599	2,526,477	4,840,508
33111151E0, 51F0	Tin free steel and other tin mill products, including short ternes and foil	(D)	(D)	(NA)	(NA)	(NA)	(NA)	(D)	(D)
3311117130, 40	Finished structural shapes (heavy), both wide flange and standard heavy shapes	(D)	(D)	268,455	130,768	2,400,547	4,692,332	(D)	(D)
33111171E0	Finished sheet piling and bearing piles	316,001	141,049	14,490	13,655	198,405	596,019	499,916	723,413
	Finished bars:								
3311117190	Hot-rolled bars (except concrete reinforcing)	5,595,230	3,068,232	103,046	60,566	148,996	1,199,865	5,641,181	4,207,531
33111171A0	Light structurals (under 3 inches)	1,481,900	633,044	89,440	54,582	253,187	349,944	1,645,647	928,406
33111171B0	Concrete reinforcing	5,331,755	1,839,564	103,046	60,566	1,117,647	8,832,049	6,346,356	10,611,047
3312213110	Cold finished	1,375,432	1,165,408	31,945	26,034	94,754	1,924,766	1,438,241	3,064,140
331111L	Finished rails, wheels, and track accessories <sup>7</sup>	874,293	616,206	74,228	53,717	301,461	501,990	1,101,526	1,064,479
3312100110, 120	Finished line pipe, all diameters	1,690,165	1,139,789	255,935	260,582	1,047,661	12,573,791	2,481,892	13,452,998
3312100130	Finished pipe and tubes, oil country goods	771,514	523,666	155,840	240,116	116,764	449,602	732,438	733,152
33121001F0	Finished pipe and tubes, structurals	1,523,230	895,180	70,251	70,399	579,980	2,226,206	2,032,959	3,050,987
3312100150, 160, 1A0, 1B0, 1G0	Finished pipe and tubes, (except line pipe, oil country goods, and structurals)	4,292,457	3,873,499	85,989	113,869	1,074,078	12,555,411	5,280,546	16,315,041
3312225110, 20-60	Finished plain wire	1,895,466	1,522,443	30,926	38,092	-	-	1,864,540	1,484,351
3312225170-90	Finished wire, plated or coated with zinc	267,287	289,764	10,812	11,965	-	-	256,475	277,799
33122251A0, 1B0, 1C0	Finished wire, plated or coated, other than with zinc	(D)	(D)	23,952	33,268	-	-	(D)	(D)
312223120	Finished wire nails and staples	642,492	671,356	24,160	46,905	372,201	1,107,616	990,533	1,732,067
331222B110	Finished barbed and twisted wire	125,023	118,544	3,188	4,876	12,424	10,014	134,259	123,682
3312227110, 312229110	Finished wire fence (woven and welded) and woven wire netting	565,689	417,873	12,010	17,855	63,055	310,982	616,735	711,000
331222B120	Finished wire bale ties	32,218	21,439	(NA)	(NA)	(NA)	(NA)	32,218	21,439
3312221110	Finished wire rope and cable	168,607	380,799	14,211	40,040	115,108	3,691,690	269,503	4,032,449
3312221230	Finished wire strand for prestressed concrete	225,942	154,985	5,915	10,767	59,776	832,939	279,804	977,157
3312221240	Finished wire strand (except for prestressed concrete)	174,105	231,408	(NA)	(NA)	(NA)	(NA)	174,105	231,408
	Alloy steel:								
3311113120	Ingots	392,257	209,445	31,375	32,756	7,956	199,103	368,838	375,792
3311113160, 70	Semifinished blooms, billets, sheet bars, tube rounds, skelp and slabs	(D)	(D)	18,401	29,132	259,976	2,700,398	(D)	(D)
3311117150, 60, 5170-90, 51A0, 3312211130, 11140	Finished plate, sheet or strip, both hot and cold rolled or cold finished	(D)	(D)	147,666	142,724	763,941	16,136,722	(D)	(D)
33111131A0, 7170, 71C0, 3312213120	Semifinished wire rods, finished structural shapes (3 inches and under) and bars, hot rolled including structural shapes under 3 inches and cold finished	(D)	(D)	188,687	177,564	919,925	10,144,473	(D)	(D)
33111171F0	Finished tool steel, high-speed	11,619	121,795	1,134	9,583	2,402	1,111,709	12,887	1,223,921
33111171G0	Finished tool steel (except high speed)	43,455	173,304	7,167	21,781	52,795	3,345,538	89,083	3,497,061
3312100140	Finished oil country goods and line pipe	952,533	815,404	266,302	314,133	23,646	1,415,494	709,877	1,916,765
33122251D0	Finished wire, plain or coated	38,224	111,865	42,196	100,888	69,614	4,179,174	65,642	4,190,151

See footnotes at end of table.

**Table 10. Net Shipments, Exports, Imports, and Apparent Consumption of Steel Mill Products: 1998—Con.**

[Quantity in metric tons. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1 3</sup>		Imports for consumption <sup>1 4</sup>		Apparent consumption <sup>6</sup>	
		Net (quantity) <sup>2</sup>	Total value f.o.b. plant	Quantity	Value at port	Quantity	Value c.i.f. <sup>5</sup>	Quantity	Value
	Total—Con.								
	Stainless steel:								
3311113130	Ingots . . . . .	2,691	70,343	4,934	20,852	4,779	89,131	2,536	138,622
3311113180	Semifinished blooms, billets, slabs, sheet bars, tube rounds, and skelp. . . . .	163,591	329,320	-	-	-	-	163,591	329,320
33111131B0, 71D0	Semifinished wire rods and finished bars, hot rolled . . . . .	36,911	196,394	3,191	9,706	56,481	3,499,179	90,201	3,685,867
3311117180	Finished plates and structurals . . . . .	134,514	367,311	34,953	80,698	19,938	1,379,079	119,499	1,665,692
33111151B0	Finished sheet and strip, hot rolled . . . . .	(D)	663,150	20,446	34,225	19,661	1,667,976	(D)	2,296,901
3312211150	Finished sheet and strip, cold rolled . . . . .	1,129,000	65,871	78,165	195,679	14,750	1,580,107	1,065,586	1,450,299
3312213130	Finished bars, cold finished. . . . .	120,195	513,712	8,961	45,969	71,498	9,739,834	182,731	10,207,577
33122251E0, 51F0, 51G0, 51H0	Finished wire. . . . .	54,796	54,796	7,066	38,953	27,941	5,617,680	75,671	5,633,523
3312100170, 01C0 01H0, 01D0, 01E0, 01F0, 0180, 0190	Alloy steel, including stainless, pipe and tubes, n.e.c. . . . .	(D)	(D)	108,628	269,534	174,724	12,260,590	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Includes quantities of steel consumed in steel producing plants in manufacture of fabricated products and maintenance, repair, and operating supplies (MRO), while excluding receipts. Refer to Table 7 for net shipments detail.

<sup>3</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>4</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>5</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>6</sup>Apparent consumption is derived by subtracting exports from total manufacturers' shipments plus imports.

<sup>7</sup>Data for manufacturers' shipments, product code 331111L combines product codes 331111L110, 331111L120, 331111L130, 331111L140, 331111L150, 331111L160, and 331111L170, for exports and imports, product code 331111L combines product codes 331111L110, 331111L120, 331111L130, and 331111L140, product codes 331111L150, 331111L160, 331111L170 are not applicable. Refer to Table 6 for details.

Note: Quantity data converted to metric tons; therefore, detail may not add to total because of rounding.

**HISTORICAL NOTE**

Data on steel mill products have been collected by the Census Bureau since 1921. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal

Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Dana Brooks, 301-457-4797.

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## ALUMINUM INGOT AND MILL PRODUCTS—M331D (FORMERLY M33D)

### INTRODUCTION

These data cover companies engaged in the production, in the continental United States, of aluminum ingot and/or mill products. Master alloys are included. Receipts of imported aluminum products are also included. Companies engaged in tolling operations are also surveyed.

The statistics were collected by mail on Census Bureau monthly Form M33D, Aluminum Producers and Importers Report (Receipt, Shipments, and Stocks). The panel for this survey consists of all known producers of aluminum ingot and mill products shipping 10,000 pounds or more of aluminum ingot and mill products per month, approximately 250 companies. Based on an earlier study, small producers shipping less than 10,000 pounds per month would not significantly affect the survey results.

### SUMMARY OF FINDINGS

Net shipments of aluminum ingot and mill products totaled 15,179 million pounds in 1998, a 1-percent increase from the 14,990 million pounds in 1997.

### EXPLANATION OF TERMS

**Gross shipments.** Represents the quantity of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

**Receipts.** Represents metal physically received, both from imports and from domestic sources. Metal received under toll arrangements, even though title or ownership of the metal may remain with the shipper, is also included. Scrap receipts are not included.

**Inventories.** Includes all forms of scrap, ingot, metal in process, and finished products listed in this report. All metal physically in plant inventories at the end of the month, whether or not title or ownership of the metal may have been transferred, including toll arrangements.

**Ingot inventory.** All metal that is in the form of extrusion billets or other ingot and molten metal, primary and secondary.

**Scrap inventory.** Purchased and toll-treated aluminum-base scrap and sweated pig in all forms, as well as home or runaround scrap. Also includes remelt scrap ingot (RSI).

**All other inventory.** Includes all mill products that are in a finished state or are in the process of being finished.

**Integrated producers.** Companies in the United States that produce primary aluminum ingot (from alumina) and may also produce mill products.

**Nonintegrated producers.** Companies that produce mill products in the United States and that are not affiliated with a domestic primary ingot producer.

**Smelters.** Companies whose aluminum facilities are exclusively devoted to producing specification ingot from scrap.

**Ingot (billet), extrusion.** A solid or hollow cast form, usually cylindrical, suitable for extruding.

**Other ingot and molten metal, primary and secondary.** Molten aluminum or a solid form (other than extrusion ingot) suitable for remelting or fabricating, produced either from alumina or from scrap; excludes RSI, which is considered scrap until remelted and cast into specification ingot.

**Foil.** A flat rolled product, rectangular in cross-section, and less than 0.006 inch.

**Sheet.** A rolled product, flat or coiled, rectangular in cross-section, and 0.006 inch in thickness but under 0.250 inches in thickness.

**Plate.** A flat rolled product, rectangular in cross-section, and 0.250 inch or greater in thickness.

**Wire.** A solid wrought product that is long in relation to cross-section, which is square, round, rectangular, hexagonal, or octagonal in shape and whose diameter or greatest perpendicular distance between parallel faces (except for flattened wire) is less than 0.375 inch.

**Drawing stock (redraw rod) (continuous cast or rolled).** A solid round product that is long in relation to cross-section, 0.375 inch or greater in diameter, produced by continuous casting followed by size-rolling or by rolling from D.C. cast ingot, suitable for drawing into wire.

**Rod and bar (rolled and/or extruded).** A solid round, square, rectangular, hexagon, or octagonal-shaped product that is long in relation to cross-section, 0.375 inch or greater in diameter or in at least one perpendicular distance between parallel faces, produced by continuous casting or rolling or by extruding; other than drawing stock and D.C. cast ingot.

**Pipe and tube (extruded and drawn).** A hollow wrought product with a uniform wall thickness (except as affected by corner radii) that is long in relation to its cross-section, round, square, rectangular, hexagonal, octagonal, or elliptical in shape, produced either by hot extruding and/or brought to final dimensions by cold drawing through a die.

**Extruded shapes.** A product produced by extruding, that is long in relation to its cross-sectional dimension and has a cross-section other than that of rod and bar or pipe and tube.

**Cable, ACSR, and aluminum (bare).** Aluminum stranded conductor reinforced by a core of steel (ACSR); or any other bare stranded aluminum conductor.

**Powder, atomized.** Powder produced by blowing or aspirating molten metal through an orifice.

**Other flake, powder, and paste.** Includes the following products:

*Powder.* An aggregate of discrete particles of aluminum, substantially all of which are finer than 1,000 microns (minus 18 mesh).

*Paste.* A blend of powder or flake with a thinner or plasticizer.

*Powder, flaked.* Powder consisting of flat or scale-like particles of a thickness that is small compared with other dimensions, and is produced by milling in the presence of a lubricant.

**Forgings (excluding impact extrusions).** A product worked to a predetermined shape by one or more processes such as hammering, upsetting, pressing, and rolling.

**Impacts (excluding collapsible tubes and cans).** A product formed in a confining die from a metal slug, usually cold, by a rapid simple stroke application of force through a punch, causing the metal to flow around the punch, and/or through an opening in the punch or die.

Table 11. **Net Shipments and Inventories of Aluminum Ingot and Mill Products: 1998 and 1997**

[Thousands of pounds]

Month and year	Mill products	Month-end aluminum inventories <sup>1</sup>
<b>1998</b>		
<b>Total</b> .....	<b>15,178,655</b>	<b>4,109,145</b>
January .....	1,235,858	4,103,848
February .....	1,166,333	4,095,307
March .....	1,299,440	4,083,385
April .....	1,291,999	4,105,108
May .....	1,262,841	4,117,722
June .....	1,293,655	4,121,505
July .....	1,293,594	4,172,174
August .....	1,275,225	4,075,409
September .....	1,287,656	4,026,869
October .....	1,359,156	3,977,817
November .....	1,218,673	3,985,337
December .....	1,194,225	4,109,145
<b>1997</b>		
<b>Total</b> .....	<b>14,990,287</b>	<b>4,106,481</b>
January .....	1,185,199	4,072,767
February .....	1,164,992	4,070,729
March .....	1,281,617	4,038,761
April .....	1,307,369	4,032,349
May .....	1,312,936	4,007,682
June .....	1,303,147	4,022,979
July .....	1,253,673	3,982,640
August .....	1,288,120	4,051,340
September .....	1,306,484	4,021,479
October .....	1,285,469	4,015,360
November .....	1,147,209	4,072,604
December .....	1,154,072	4,106,481

<sup>1</sup>Use December inventory data for annual total inventory.

**Table 12. Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1998**

[Thousands of pounds]

Product code	Product description	Number of companies	Total			January			February		
			Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>
	Aluminum mill products .....	(NA)	16,545,857	1,367,202	15,178,655	1,347,263	111,405	1,235,858	1,274,055	107,722	1,166,333
	Sheet, plate, and foil .....	(NA)	11,278,670	834,265	10,444,405	910,881	68,409	842,472	856,600	61,141	795,459
	Sheet .....	(NA)	9,717,288	834,265	8,883,023	779,262	68,409	710,853	731,001	61,141	669,860
33532 22	Nonheat-treatable <sup>2</sup> .....	24	9,433,401	834,265	8,599,136	754,110	68,409	685,701	707,010	61,141	645,869
33532 24	Heat-treatable .....	11	283,887	-	283,887	25,152	-	25,152	23,991	-	23,991
	Plate .....	(NA)	408,596	-	408,596	39,169	-	39,169	33,573	-	33,573
33531 15	Nonheat-treatable .....	7	105,982	-	105,982	8,880	-	8,880	7,622	-	7,622
33531 13	Heat-treatable .....	7	302,614	-	302,614	30,289	-	30,289	25,951	-	25,951
33533 00	Foil .....	13	1,152,786	-	1,152,786	92,450	-	92,450	92,026	-	92,026
	Rod, wire, and cable .....	(NA)	1,192,477	456,286	736,191	94,510	36,087	58,423	92,863	39,146	53,717
	Rod and bare wire .....	(NA)	545,514	456,286	89,228	43,350	36,087	7,263	43,485	39,146	4,339
33552 20	Drawing stock (redraw rod) <sup>3</sup> .....	7	443,468	456,286	(12,818)	33,620	36,087	(2,467)	35,100	39,146	(4,046)
33501 31	Bare wire .....	13	102,046	-	102,046	9,730	-	9,730	8,385	-	8,385
	Cable and insulated wire .....	(NA)	646,963	-	646,963	51,160	-	51,160	49,378	-	49,378
33501 63	ACSR and aluminum cable, bare .....	3	193,431	-	193,431	18,011	-	18,011	15,469	-	15,469
33570 99	Wire and cable, insulated or covered .....	9	453,532	-	453,532	33,149	-	33,149	33,909	-	33,909
	Rod, bar, pipe, tube, and shapes .....	(NA)	3,714,040	76,651	3,637,389	313,567	6,909	306,658	295,879	7,435	288,444
	Rod and bar (rolled and extruded) .....	(NA)	468,805	76,651	392,154	45,102	6,909	38,193	43,190	7,435	35,755
33500 20	Alloys other than 2,000 and 7,000 series .....	14	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33541 18	Alloys in 2,000 and 7,000 series .....	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Pipe and tube (extruded and drawn) .....	(NA)	359,250	(D)	359,250	30,218	(D)	30,218	28,558	(D)	28,558
33542 63	Alloys other than 2,000 and 7,000 series .....	22	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33542 61	Alloys in 2,000 and 7,000 series .....	11	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Extruded shapes .....	(NA)	2,885,985	-	2,885,985	238,247	-	238,247	224,131	-	224,131
33541 25	Alloys other than 2,000 and 7,000 series .....	83	2,793,216	-	2,793,216	230,299	-	230,299	216,099	-	216,099
33541 28	Alloys in 2,000 and 7,000 series .....	10	92,769	-	92,769	7,948	-	7,948	8,032	-	8,032
	All other .....	(NA)	360,670	-	360,670	28,305	-	28,305	28,713	-	28,713
	Powder and paste .....	(NA)	145,980	-	145,980	12,168	-	12,168	12,261	-	12,261
33991 13	Atomized .....	5	96,150	-	96,150	7,906	-	7,906	8,084	-	8,084
33991 16	Other flake, powder and paste .....	9	49,830	-	49,830	4,262	-	4,262	4,177	-	4,177
	Forgings and impacts .....	(NA)	214,690	-	214,690	16,137	-	16,137	16,452	-	16,452
34635 21	Forgings .....	18	164,170	-	164,170	12,116	-	12,116	12,168	-	12,168
34635 41	Impacts .....	8	50,520	-	50,520	4,021	-	4,021	4,284	-	4,284
19002 00	Scrap receipts <sup>4</sup> .....	(NA)	(NA)	5,679,696	(NA)	(NA)	506,315	(NA)	(NA)	491,216	(NA)
			March			April			May		
	Aluminum mill products .....	(NA)	1,410,196	110,756	1,299,440	1,417,721	125,722	1,291,999	1,381,492	118,651	1,262,841
	Sheet, plate, and foil .....	(NA)	951,590	62,563	889,027	947,211	75,638	871,573	952,350	71,442	880,908
	Sheet .....	(NA)	813,504	62,563	750,941	809,946	75,638	734,308	819,710	71,442	748,268
33532 22	Nonheat-treatable <sup>2</sup> .....	24	786,626	62,563	724,063	785,263	75,638	709,625	793,634	71,442	722,192
33532 24	Heat-treatable .....	11	26,878	-	26,878	24,683	-	24,683	26,076	-	26,076
	Plate .....	(NA)	37,063	-	37,063	36,356	-	36,356	36,363	-	36,363
33531 15	Nonheat-treatable .....	7	10,323	-	10,323	10,279	-	10,279	10,626	-	10,626
33531 13	Heat-treatable .....	7	26,740	-	26,740	26,077	-	26,077	25,737	-	25,737
33533 00	Foil .....	13	101,023	-	101,023	100,909	-	100,909	96,277	-	96,277

See footnotes at end of table.



Table 12. **Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1998—Con.**

[Thousands of pounds]

Product code	Product description	Number of companies	March			April			May		
			Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>
	Aluminum mill products—Con.										
	Rod, wire, and cable . . . . .	(NA)	108,032	39,446	68,586	107,387	43,330	64,057	93,771	39,650	54,121
33552 20	Rod and bare wire . . . . .	(NA)	51,365	39,446	11,919	48,382	43,330	5,052	45,325	39,650	5,675
	Drawing stock (redraw rod) <sup>3</sup> . . . . .	7	42,842	39,446	3,396	38,845	43,330	(4,485)	36,729	39,650	(2,921)
33501 31	Bare wire . . . . .	13	8,523	-	8,523	9,537	-	9,537	8,596	-	8,596
33501 63	Cable and insulated wire . . . . .	(NA)	56,667	-	56,667	59,005	-	59,005	48,446	-	48,446
	ACSR and aluminum cable, bare . . . . .	3	17,303	-	17,303	19,482	-	19,482	14,121	-	14,121
33570 99	Wire and cable, insulated or covered . . . . .	9	39,364	-	39,364	39,523	-	39,523	34,325	-	34,325
	Rod, bar, pipe, tube, and shapes . . . . .	(NA)	320,091	8,747	311,344	333,179	6,754	326,425	306,216	7,559	298,657
	Rod and bar (rolled and extruded) . . . . .	(NA)	42,915	8,747	34,168	45,781	6,754	39,027	40,996	7,559	33,437
33500 20	Alloys other than 2,000 and 7,000 series . . . . .	14	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33541 18	Alloys in 2,000 and 7,000 series . . . . .	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Pipe and tube (extruded and drawn) . . . . .	(NA)	30,103	(D)	30,103	33,010	(D)	33,010	29,718	(D)	29,718
33542 63	Alloys other than 2,000 and 7,000 series . . . . .	22	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33542 61	Alloys in 2,000 and 7,000 series . . . . .	11	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Extruded shapes . . . . .	(NA)	247,073	-	247,073	254,388	-	254,388	235,502	-	235,502
33541 25	Alloys other than 2,000 and 7,000 series . . . . .	83	238,349	-	238,349	246,180	-	246,180	227,385	-	227,385
33541 28	Alloys in 2,000 and 7,000 series . . . . .	10	8,724	-	8,724	8,208	-	8,208	8,117	-	8,117
	All other . . . . .	(NA)	30,483	-	30,483	29,944	-	29,944	29,155	-	29,155
	Powder and paste . . . . .	(NA)	11,260	-	11,260	11,554	-	11,554	11,673	-	11,673
33991 13	Atomized . . . . .	5	7,705	-	7,705	7,762	-	7,762	8,300	-	8,300
33991 16	Other flake, powder and paste . . . . .	9	3,555	-	3,555	3,792	-	3,792	3,373	-	3,373
	Forgings and impacts . . . . .	(NA)	19,223	-	19,223	18,390	-	18,390	17,482	-	17,482
34635 21	Forgings . . . . .	18	14,184	-	14,184	13,868	-	13,868	12,917	-	12,917
34635 41	Impacts . . . . .	8	5,039	-	5,039	4,522	-	4,522	4,565	-	4,565
19002 00	Scrap receipts <sup>4</sup> . . . . .	(NA)	(NA)	507,876	(NA)	(NA)	569,659	(NA)	(NA)	494,272	(NA)
			June			July			August		
	Aluminum mill products . . . . .	(NA)	1,408,101	114,446	1,293,655	1,412,260	118,666	1,293,594	1,395,220	119,995	1,275,225
	Sheet, plate, and foil . . . . .	(NA)	956,544	70,426	886,118	966,154	74,999	891,155	951,987	70,492	881,495
	Sheet . . . . .	(NA)	826,915	70,426	756,489	834,712	74,999	759,713	819,553	70,492	749,061
33532 22	Nonheat-treatable <sup>2</sup> . . . . .	24	803,009	70,426	732,583	814,326	74,999	739,327	798,679	70,492	728,187
33532 24	Heat-treatable . . . . .	11	23,906	-	23,906	20,386	-	20,386	20,874	-	20,874
	Plate . . . . .	(NA)	33,651	-	33,651	33,509	-	33,509	31,144	-	31,144
33531 15	Nonheat-treatable . . . . .	7	8,440	-	8,440	8,157	-	8,157	8,459	-	8,459
33531 13	Heat-treatable . . . . .	7	25,211	-	25,211	25,352	-	25,352	22,685	-	22,685
33533 00	Foil . . . . .	13	95,978	-	95,978	97,933	-	97,933	101,290	-	101,290
	Rod, wire, and cable . . . . .	(NA)	99,433	37,303	62,130	98,897	38,429	60,468	100,924	43,423	57,501
33552 20	Rod and bare wire . . . . .	(NA)	43,675	37,303	6,372	44,991	38,429	6,562	44,784	43,423	1,361
	Drawing stock (redraw rod) <sup>3</sup> . . . . .	7	34,925	37,303	(2,378)	37,046	38,429	(1,383)	36,856	43,423	(6,567)
33501 31	Bare wire . . . . .	13	8,750	-	8,750	7,945	-	7,945	7,928	-	7,928
33501 63	Cable and insulated wire . . . . .	(NA)	55,758	-	55,758	53,906	-	53,906	56,140	-	56,140
	ACSR and aluminum cable, bare . . . . .	3	15,080	-	15,080	14,830	-	14,830	15,693	-	15,693
33570 99	Wire and cable, insulated or covered . . . . .	9	40,678	-	40,678	39,076	-	39,076	40,447	-	40,447

See footnotes at end of table.

**Table 12. Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1998—Con.**

[Thousands of pounds]

Product code	Product description	Number of companies	June			July			August			
			Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	
	Aluminum mill products—Con.											
	Rod, bar, pipe, tube, and shapes	(NA)	319,388	6,717	312,671	318,990	5,238	313,752	311,933	6,080	305,853	
33500 20	Rod and bar (rolled and extruded)	(NA)	38,823	6,717	32,106	36,794	5,238	31,556	36,219	6,080	30,139	
33541 18	Alloys other than 2,000 and 7,000 series	14	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
	Alloys in 2,000 and 7,000 series	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
33542 63	Pipe and tube (extruded and drawn)	(NA)	31,394	(D)	31,394	32,352	(D)	32,352	30,636	(D)	30,636	
33542 61	Alloys other than 2,000 and 7,000 series	22	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
	Alloys in 2,000 and 7,000 series	11	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
33541 25	Extruded shapes	(NA)	249,171	-	249,171	249,844	-	249,844	245,078	-	245,078	
33541 28	Alloys other than 2,000 and 7,000 series	83	241,334	-	241,334	241,674	-	241,674	236,614	-	236,614	
	Alloys in 2,000 and 7,000 series	10	7,837	-	7,837	8,170	-	8,170	8,464	-	8,464	
	All other	(NA)	32,736	-	32,736	28,219	-	28,219	30,376	-	30,376	
33991 13	Powder and paste	(NA)	13,292	-	13,292	12,616	-	12,616	12,629	-	12,629	
33991 16	Atomized	5	8,544	-	8,544	7,567	-	7,567	8,227	-	8,227	
	Other flake, powder and paste	9	4,748	-	4,748	5,049	-	5,049	4,402	-	4,402	
34635 21	Forgings and impacts	(NA)	19,444	-	19,444	15,603	-	15,603	17,747	-	17,747	
34635 41	Forgings	18	14,742	-	14,742	11,738	-	11,738	14,151	-	14,151	
19002 00	Impacts	8	4,702	-	4,702	3,865	-	3,865	3,596	-	3,596	
	Scrap receipts <sup>4</sup>	(NA)	(NA)	470,488	(NA)	(NA)	495,541	(NA)	(NA)	475,229	(NA)	
			Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	
			September			October						
	Aluminum mill products	(NA)	1,400,781	113,125	1,287,656	1,485,505		1,26,349			1,359,156	
	Sheet, plate, and foil	(NA)	956,751	73,156	883,595	1,006,899		75,297			931,602	
	Sheet	(NA)	830,471	73,156	757,315	867,891		75,297			792,594	
33532 22	Nonheat-treatable <sup>2</sup>	24	807,219	73,156	734,063	844,072		75,297			768,775	
33532 24	Heat-treatable	11	23,252	-	23,252	23,819		-			23,819	
	Plate	(NA)	30,656	-	30,656	33,513		-			33,513	
33531 15	Nonheat-treatable	7	9,255	-	9,255	8,166		-			8,166	
33531 13	Heat-treatable	7	21,401	-	21,401	25,347		-			25,347	
33533 00	Foil	13	95,624	-	95,624	105,495		-			105,495	
	Rod, wire, and cable	(NA)	102,375	33,975	68,400	109,212		46,174			63,038	
33552 20	Rod and bare wire	(NA)	46,837	33,975	12,862	47,212		46,174			1,038	
	Drawing stock (redraw rod) <sup>5</sup>	7	38,244	33,975	4,269	39,039		46,174			(7,135)	
33501 31	Bare wire	13	8,593	-	8,593	8,173		-			8,173	
33501 63	Cable and insulated wire	(NA)	55,538	-	55,538	62,000		-			62,000	
	ACSR and aluminum cable, bare	3	16,107	-	16,107	18,028		-			18,028	
33570 99	Wire and cable, insulated or covered	9	39,431	-	39,431	43,972		-			43,972	

See footnotes at end of table.

**Table 12. Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1998—Con.**

[Thousands of pounds]

Product code	Product description	Number of companies	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>
	Aluminum mill products—Con.							
	Rod, bar, pipe, tube, and shapes . . . . .	(NA)	310,715	5,994	304,721	338,033	4,878	333,155
33500 20	Rod and bar (rolled and extruded) . . . . .	(NA)	35,668	5,994	29,674	38,045	4,878	33,167
33541 18	Alloys other than 2,000 and 7,000 series . . . . .	14	(D)	(D)	(D)	(D)	(D)	(D)
	Alloys in 2,000 and 7,000 series . . . . .	6	(D)	(D)	(D)	(D)	(D)	(D)
33542 63	Pipe and tube (extruded and drawn) . . . . .	(NA)	29,775	(D)	29,775	32,942	(D)	32,942
33542 61	Alloys other than 2,000 and 7,000 series . . . . .	22	(D)	(D)	(D)	(D)	(D)	(D)
	Alloys in 2,000 and 7,000 series . . . . .	11	(D)	(D)	(D)	(D)	(D)	(D)
33541 25	Extruded shapes . . . . .	(NA)	245,272	-	245,272	267,046	-	267,046
33541 28	Alloys other than 2,000 and 7,000 series . . . . .	83	238,398	-	238,398	259,604	-	259,604
	Alloys in 2,000 and 7,000 series . . . . .	10	6,874	-	6,874	7,442	-	7,442
	All other . . . . .	(NA)	30,940	-	30,940	31,361	-	31,361
33991 13	Powder and paste . . . . .	(NA)	12,608	-	12,608	11,417	-	11,417
33991 16	Atomized . . . . .	5	8,036	-	8,036	7,980	-	7,980
	Other flake, powder and paste . . . . .	9	4,572	-	4,572	3,437	-	3,437
34635 21	Forgings and impacts . . . . .	(NA)	18,332	-	18,332	19,944	-	19,944
34635 41	Forgings . . . . .	18	14,191	-	14,191	15,461	-	15,461
19002 00	Impacts . . . . .	8	4,141	-	4,141	4,483	-	4,483
	Scrap receipts <sup>4</sup> . . . . .	(NA)	(NA)	412,701	(NA)	(NA)	459,137	(NA)
			November			December		
	Aluminum mill products . . . . .	(NA)	1,319,880	101,207	1,218,673	1,293,383	99,158	1,194,225
	Sheet, plate, and foil . . . . .	(NA)	913,306	65,138	848,168	908,397	65,564	842,833
33532 22	Sheet . . . . .	(NA)	792,062	65,138	726,924	792,261	65,564	726,697
33532 24	Nonheat-treatable <sup>2</sup> . . . . .	24	770,085	65,138	704,947	769,368	65,564	703,804
	Heat-treatable . . . . .	11	21,977	-	21,977	22,893	-	22,893
33531 15	Plate . . . . .	(NA)	31,548	-	31,548	32,051	-	32,051
33531 13	Nonheat-treatable . . . . .	7	8,063	-	8,063	7,712	-	7,712
33533 00	Heat-treatable . . . . .	7	23,485	-	23,485	24,339	-	24,339
	Foil . . . . .	13	89,696	-	89,696	84,085	-	84,085
33552 20	Rod, wire, and cable . . . . .	(NA)	92,644	31,377	61,267	92,429	27,946	64,483
	Rod and bare wire . . . . .	(NA)	43,498	31,377	12,121	42,610	27,946	14,664
33501 31	Drawing stock (redraw rod) <sup>3</sup> . . . . .	7	36,067	31,377	4,690	34,155	27,946	6,209
	Bare wire . . . . .	13	7,431	-	7,431	8,455	-	8,455
33501 63	Cable and insulated wire . . . . .	(NA)	49,146	-	49,146	49,819	-	49,819
33570 99	ACSR and aluminum cable, bare . . . . .	3	14,045	-	14,045	15,262	-	15,262
	Wire and cable, insulated or covered . . . . .	9	35,101	-	35,101	34,557	-	34,557

See footnotes at end of table.

Table 12. **Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1998—Con.**

[Thousands of pounds]

Product code	Product description	Number of companies	Gross shipments	Total receipts	Net shipments <sup>1</sup>	November		December	
						Gross shipments	Total receipts	Gross shipments	Total receipts
	Aluminum mill products—Con.								
	Rod, bar, pipe, tube, and shapes . . . . .	(NA)	284,415	4,692	279,723	261,634	5,648	255,986	
	Rod and bar (rolled and extruded) . . . . .	(NA)	32,481	4,692	27,789	32,791	5,648	27,143	
33500 20	Alloys other than 2,000 and 7,000 series . . . . .	14	(D)	(D)	(D)	(D)	(D)	(D)	
33541 18	Alloys in 2,000 and 7,000 series . . . . .	6	(D)	(D)	(D)	(D)	(D)	(D)	
	Pipe and tube (extruded and drawn) . . . . .	(NA)	27,440	(D)	27,440	23,104	(D)	23,104	
33542 63	Alloys other than 2,000 and 7,000 series . . . . .	22	(D)	(D)	(D)	(D)	(D)	(D)	
33542 61	Alloys in 2,000 and 7,000 series . . . . .	11	(D)	(D)	(D)	(D)	(D)	(D)	
	Extruded shapes . . . . .	(NA)	224,494	-	224,494	205,739	-	205,739	
33541 25	Alloys other than 2,000 and 7,000 series . . . . .	83	217,780	-	217,780	199,500	-	199,500	
33541 28	Alloys in 2,000 and 7,000 series . . . . .	10	6,714	-	6,714	6,239	-	6,239	
	All other . . . . .	(NA)	29,515	-	29,515	30,923	-	30,923	
	Powder and paste . . . . .	(NA)	13,691	-	13,691	10,811	-	10,811	
33991 13	Atomized . . . . .	5	8,339	-	8,339	7,700	-	7,700	
33991 16	Other flake, powder and paste . . . . .	9	5,352	-	5,352	3,111	-	3,111	
	Forgings and impacts . . . . .	(NA)	15,824	-	15,824	20,112	-	20,112	
34635 21	Forgings . . . . .	18	12,617	-	12,617	16,017	-	16,017	
34635 41	Impacts . . . . .	8	3,207	-	3,207	4,095	-	4,095	
19002 00	Scrap receipts <sup>4</sup> . . . . .	(NA)	(NA)	395,183	(NA)	(NA)	402,079	(NA)	

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available.

<sup>1</sup>Net shipments are derived by subtracting total receipts from gross shipments.

<sup>2</sup>Receipts from "Heat-treatable sheet" are combined with "Nonheat-treatable sheet" to avoid disclosing data for individual companies.

<sup>3</sup>Receipts for "Bare wire" and "Cable and insulated wire" are included in "Drawing stock" to avoid disclosing data for individual companies.

<sup>4</sup>Data for "Scrap" are included in total aluminum mill products receipts or net shipments.

Note: Total receipts includes domestic and import receipts data.

**Table 13. Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1997**

[Thousands of pounds]

Product code	Product description	Number of companies	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>
			Total			January			February		
	Aluminum mill products.....	(NA)	16,311,489	1,321,202	14,990,287	1,279,621	94,422	1,185,199	1,269,790	104,798	1,164,992
	Sheet, plate, and foil.....	(NA)	11,165,874	775,043	10,390,831	887,635	51,092	836,543	877,125	60,248	816,877
	Sheet.....	(NA)	9,624,301	775,043	8,849,258	764,036	51,092	712,944	753,853	60,248	693,605
33532 22	Nonheat-treatable <sup>2</sup> .....	22	9,344,069	775,043	8,569,026	740,642	51,092	689,550	730,506	60,248	670,258
33532 24	Heat-treatable.....	10	280,232	-	280,232	23,394	-	23,394	23,347	-	23,347
	Plate.....	(NA)	402,487	-	402,487	31,914	-	31,914	31,621	-	31,621
33531 15	Nonheat-treatable.....	6	112,867	-	112,867	9,462	-	9,462	9,994	-	9,994
33531 13	Heat-treatable.....	4	289,620	-	289,620	22,452	-	22,452	21,627	-	21,627
33533 00	Foil.....	13	1,139,086	-	1,139,086	91,685	-	91,685	91,651	-	91,651
	Rod, wire, and cable.....	(NA)	1,140,801	446,287	694,514	90,735	33,159	57,576	87,327	34,476	52,851
	Rod and bare wire.....	(NA)	504,370	446,287	58,083	40,419	33,159	7,260	41,839	34,476	7,363
33552 20	Drawing stock (redraw rod) <sup>3</sup> .....	5	373,191	446,287	(73,096)	28,676	33,159	(4,483)	31,148	34,476	(3,328)
33501 31	Bare wire.....	13	131,179	-	131,179	11,743	-	11,743	10,691	-	10,691
	Cable and insulated wire.....	(NA)	636,431	-	636,431	50,316	-	50,316	45,488	-	45,488
33501 63	ACSR and aluminum cable, bare.....	3	203,807	-	203,807	15,740	-	15,740	14,498	-	14,498
33570 99	Wire and cable, insulated or covered.....	11	432,624	-	432,624	34,576	-	34,576	30,990	-	30,990
	Rod, bar, pipe, tube, and shapes.....	(NA)	3,646,886	99,872	3,547,014	272,681	10,171	262,510	276,425	10,074	266,351
	Rod and bar (rolled and extruded).....	(NA)	471,565	99,872	371,693	37,946	10,171	27,775	39,511	10,074	29,437
33500 20	Alloys other than 2,000 and 7,000 series.....	16	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33541 18	Alloys in 2,000 and 7,000 series.....	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Pipe and tube (extruded and drawn).....	(NA)	341,442	(D)	341,442	27,381	(D)	27,381	27,033	(D)	27,033
33542 63	Alloys other than 2,000 and 7,000 series.....	24	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33542 61	Alloys in 2,000 and 7,000 series.....	10	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Extruded shapes.....	(NA)	2,833,879	-	2,833,879	207,354	-	207,354	209,881	-	209,881
33541 25	Alloys other than 2,000 and 7,000 series.....	86	2,723,980	-	2,723,980	199,192	-	199,192	201,296	-	201,296
33541 28	Alloys in 2,000 and 7,000 series.....	12	109,899	-	109,899	8,162	-	8,162	8,585	-	8,585
	All other.....	(NA)	357,928	-	357,928	28,570	-	28,570	28,913	-	28,913
	Powder and paste.....	(NA)	143,772	-	143,772	10,095	-	10,095	10,720	-	10,720
33991 13	Atomized.....	6	90,127	-	90,127	6,850	-	6,850	7,006	-	7,006
33991 16	Other flake, powder and paste.....	12	53,645	-	53,645	3,245	-	3,245	3,714	-	3,714
	Forgings and impacts.....	(NA)	214,156	-	214,156	18,475	-	18,475	18,193	-	18,193
34635 21	Forgings.....	20	157,325	-	157,325	13,878	-	13,878	13,710	-	13,710
34635 41	Impacts.....	8	56,831	-	56,831	4,597	-	4,597	4,483	-	4,483
19002 00	Scrap receipts <sup>4</sup> .....	(NA)	(NA)	7,025,589	(NA)	(NA)	586,470	(NA)	(NA)	589,250	(NA)
			March			April			May		
	Aluminum mill products.....	(NA)	1,396,610	114,993	1,281,617	1,428,855	121,486	1,307,369	1,432,500	119,564	1,312,936
	Sheet, plate, and foil.....	(NA)	954,201	68,242	885,959	987,612	69,258	918,354	999,456	76,530	922,926
	Sheet.....	(NA)	826,283	68,242	758,041	849,311	69,258	780,053	863,143	76,530	786,613
33532 22	Nonheat-treatable <sup>2</sup> .....	22	803,685	68,242	735,443	824,272	69,258	755,014	837,946	76,530	761,416
33532 24	Heat-treatable.....	10	22,598	-	22,598	25,039	-	25,039	25,197	-	25,197
	Plate.....	(NA)	31,096	-	31,096	31,607	-	31,607	33,624	-	33,624
33531 15	Nonheat-treatable.....	6	9,634	-	9,634	10,497	-	10,497	9,829	-	9,829
33531 13	Heat-treatable.....	4	21,462	-	21,462	21,110	-	21,110	23,795	-	23,795
33533 00	Foil.....	13	96,822	-	96,822	106,694	-	106,694	102,689	-	102,689

See footnotes at end of table.

**Table 13. Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1997—Con.**

[Thousands of pounds]

Product code	Product description	Number of companies	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>
			March			April			May		
	Aluminum mill products—Con.										
	Rod, wire, and cable . . . . .	(NA)	97,021	37,241	59,780	104,439	42,944	61,495	98,179	35,854	62,325
33552 20	Rod and bare wire . . . . .	(NA)	43,547	37,241	6,306	44,921	42,944	1,977	45,267	35,854	9,413
	Drawing stock (redraw rod) <sup>3</sup> . . . . .	5	32,714	37,241	(4,527)	34,264	42,944	(8,680)	35,092	35,854	(762)
33501 31	Bare wire . . . . .	13	10,833	-	10,833	10,657	-	10,657	10,175	-	10,175
33501 63	Cable and insulated wire . . . . .	(NA)	53,474	-	53,474	59,518	-	59,518	52,912	-	52,912
	ACSR and aluminum cable, bare . . . . .	3	18,447	-	18,447	19,200	-	19,200	18,577	-	18,577
33570 99	Wire and cable, insulated or covered . . . . .	11	35,027	-	35,027	40,318	-	40,318	34,335	-	34,335
	Rod, bar, pipe, tube, and shapes . . . . .	(NA)	315,617	9,510	306,107	304,877	9,284	295,593	305,093	7,180	297,913
	Rod and bar (rolled and extruded) . . . . .	(NA)	43,073	9,510	33,563	39,949	9,284	30,665	38,898	7,180	31,718
33500 20	Alloys other than 2,000 and 7,000 series . . . . .	16	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33541 18	Alloys in 2,000 and 7,000 series . . . . .	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Pipe and tube (extruded and drawn) . . . . .	(NA)	28,298	(D)	28,298	31,528	(D)	31,528	27,448	(D)	27,448
33542 63	Alloys other than 2,000 and 7,000 series . . . . .	24	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
33542 61	Alloys in 2,000 and 7,000 series . . . . .	10	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Extruded shapes . . . . .	(NA)	244,246	-	244,246	233,400	-	233,400	238,747	-	238,747
33541 25	Alloys other than 2,000 and 7,000 series . . . . .	86	235,022	-	235,022	224,261	-	224,261	229,249	-	229,249
33541 28	Alloys in 2,000 and 7,000 series . . . . .	12	9,224	-	9,224	9,139	-	9,139	9,498	-	9,498
	All other . . . . .	(NA)	29,771	-	29,771	31,927	-	31,927	29,772	-	29,772
	Powder and paste . . . . .	(NA)	11,362	-	11,362	11,553	-	11,553	12,372	-	12,372
33991 13	Atomized . . . . .	6	7,283	-	7,283	7,253	-	7,253	8,426	-	8,426
33991 16	Other flake, powder and paste . . . . .	12	4,079	-	4,079	4,300	-	4,300	3,946	-	3,946
	Forgings and impacts . . . . .	(NA)	18,409	-	18,409	20,374	-	20,374	17,400	-	17,400
34635 21	Forgings . . . . .	20	13,719	-	13,719	15,266	-	15,266	12,624	-	12,624
34635 41	Impacts . . . . .	8	4,690	-	4,690	5,108	-	5,108	4,776	-	4,776
19002 00	Scrap receipts <sup>4</sup> . . . . .	(NA)	(NA)	649,000	(NA)	(NA)	647,980	(NA)	(NA)	654,847	(NA)
			June			July			August		
	Aluminum mill products . . . . .	(NA)	1,414,058	110,911	1,303,147	1,372,433	118,760	1,253,673	1,400,471	112,351	1,288,120
	Sheet, plate, and foil . . . . .	(NA)	958,222	65,443	892,779	942,990	75,080	867,910	954,416	69,798	884,618
	Sheet . . . . .	(NA)	825,050	65,443	759,607	795,865	75,080	720,785	830,036	69,798	760,238
33532 22	Nonheat-treatable <sup>2</sup> . . . . .	22	801,749	65,443	736,306	772,839	75,080	697,759	806,441	69,798	736,643
33532 24	Heat-treatable . . . . .	10	23,301	-	23,301	23,026	-	23,026	23,595	-	23,595
	Plate . . . . .	(NA)	34,786	-	34,786	33,607	-	33,607	34,470	-	34,470
33531 15	Nonheat-treatable . . . . .	6	10,671	-	10,671	10,662	-	10,662	8,987	-	8,987
33531 13	Heat-treatable . . . . .	4	24,115	-	24,115	22,945	-	22,945	25,483	-	25,483
33533 00	Foil . . . . .	13	98,386	-	98,386	113,518	-	113,518	89,910	-	89,910
	Rod, wire, and cable . . . . .	(NA)	100,522	35,968	64,554	94,983	36,230	58,753	98,968	36,237	62,731
33552 20	Rod and bare wire . . . . .	(NA)	44,875	35,968	8,907	40,340	36,230	4,110	42,435	36,237	6,198
	Drawing stock (redraw rod) <sup>3</sup> . . . . .	5	33,410	35,968	(2,558)	29,559	36,230	(6,671)	31,613	36,237	(4,624)
33501 31	Bare wire . . . . .	13	11,465	-	11,465	10,781	-	10,781	10,822	-	10,822
33501 63	Cable and insulated wire . . . . .	(NA)	55,647	-	55,647	54,643	-	54,643	56,533	-	56,533
	ACSR and aluminum cable, bare . . . . .	3	19,676	-	19,676	19,176	-	19,176	17,769	-	17,769
33570 99	Wire and cable, insulated or covered . . . . .	11	35,971	-	35,971	35,467	-	35,467	38,764	-	38,764

See footnotes at end of table.

**Table 13. Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1997—Con.**

[Thousands of pounds]

Product code	Product description	Number of companies	June			July			August			
			Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	
	Aluminum mill products—Con.											
	Rod, bar, pipe, tube, and shapes	(NA)	326,604	9,500	317,104	304,314	7,450	296,864	315,917	6,316	309,601	
	Rod and bar (rolled and extruded)	(NA)	42,953	9,500	33,453	34,805	7,450	27,355	34,946	6,316	28,630	
33500 20	Alloys other than 2,000 and 7,000 series	16	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
33541 18	Alloys in 2,000 and 7,000 series	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
	Pipe and tube (extruded and drawn)	(NA)	29,852	(D)	29,852	26,738	(D)	26,738	29,246	(D)	29,246	
33542 63	Alloys other than 2,000 and 7,000 series	24	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
33542 61	Alloys in 2,000 and 7,000 series	10	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
	Extruded shapes	(NA)	253,799	-	253,799	242,771	-	242,771	251,725	-	251,725	
33541 25	Alloys other than 2,000 and 7,000 series	86	244,049	-	244,049	233,876	-	233,876	242,542	-	242,542	
33541 28	Alloys in 2,000 and 7,000 series	12	9,750	-	9,750	8,895	-	8,895	9,183	-	9,183	
	All other	(NA)	28,710	-	28,710	30,146	-	30,146	31,170	-	31,170	
	Powder and paste	(NA)	11,280	-	11,280	12,096	-	12,096	12,391	-	12,391	
33991 13	Atomized	6	7,715	-	7,715	7,370	-	7,370	7,653	-	7,653	
33991 16	Other flake, powder and paste	12	3,565	-	3,565	4,726	-	4,726	4,738	-	4,738	
	Forgings and impacts	(NA)	17,430	-	17,430	18,050	-	18,050	18,779	-	18,779	
34635 21	Forgings	20	11,350	-	11,350	13,730	-	13,730	13,638	-	13,638	
34635 41	Impacts	8	6,080	-	6,080	4,320	-	4,320	5,141	-	5,141	
19002 00	Scrap receipts <sup>4</sup>	(NA)	(NA)	556,280	(NA)	(NA)	570,760	(NA)	(NA)	558,437	(NA)	
			Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>	
			September			October						
	Aluminum mill products	(NA)	1,419,206	112,722	1,306,484	1,402,184		116,715			1,285,469	
	Sheet, plate, and foil	(NA)	960,182	63,443	896,739	941,440		64,554			876,886	
	Sheet	(NA)	833,078	63,443	769,635	810,730		64,554			746,176	
33532 22	Nonheat-treatable <sup>2</sup>	22	808,428	63,443	744,985	786,070		64,554			721,516	
33532 24	Heat-treatable	10	24,650	-	24,650	24,660		-			24,660	
	Plate	(NA)	35,719	-	35,719	37,180		-			37,180	
33531 15	Nonheat-treatable	6	8,838	-	8,838	8,397		-			8,397	
33531 13	Heat-treatable	4	26,881	-	26,881	28,783		-			28,783	
33533 00	Foil	13	91,385	-	91,385	93,530		-			93,530	
	Rod, wire, and cable	(NA)	97,298	40,470	56,828	100,465		44,611			55,854	
	Rod and bare wire	(NA)	42,586	40,470	2,116	39,058		44,611			(5,553)	
33552 20	Drawing stock (redraw rod) <sup>5</sup>	5	31,505	40,470	(8,965)	27,749		44,611			(16,862)	
33501 31	Bare wire	13	11,081	-	11,081	11,309		-			11,309	
33501 63	Cable and insulated wire	(NA)	54,712	-	54,712	61,407		-			61,407	
	ACSR and aluminum cable, bare	3	15,906	-	15,906	18,128		-			18,128	
33570 99	Wire and cable, insulated or covered	11	38,806	-	38,806	43,279		-			43,279	

See footnotes at end of table.

Table 13. **Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1997—Con.**

[Thousands of pounds]

Product code	Product description	Number of companies						
			Gross shipments	Total receipts	Net shipments <sup>1</sup>	Gross shipments	Total receipts	Net shipments <sup>1</sup>
		September			October			
	Aluminum mill products—Con.							
	Rod, bar, pipe, tube, and shapes	(NA)	330,980	8,809	322,171	327,075	7,550	319,525
	Rod and bar (rolled and extruded)	(NA)	40,580	8,809	31,771	39,009	7,550	31,459
33500 20	Alloys other than 2,000 and 7,000 series	16	(D)	(D)	(D)	(D)	(D)	(D)
33541 18	Alloys in 2,000 and 7,000 series	6	(D)	(D)	(D)	(D)	(D)	(D)
	Pipe and tube (extruded and drawn)	(NA)	29,727	(D)	29,727	31,740	(D)	31,740
33542 63	Alloys other than 2,000 and 7,000 series	24	(D)	(D)	(D)	(D)	(D)	(D)
33542 61	Alloys in 2,000 and 7,000 series	10	(D)	(D)	(D)	(D)	(D)	(D)
	Extruded shapes	(NA)	260,673	-	260,673	256,326	-	256,326
33541 25	Alloys other than 2,000 and 7,000 series	86	250,891	-	250,891	246,300	-	246,300
33541 28	Alloys in 2,000 and 7,000 series	12	9,782	-	9,782	10,026	-	10,026
	All other	(NA)	30,746	-	30,746	33,204	-	33,204
	Powder and paste	(NA)	13,430	-	13,430	13,396	-	13,396
33991 13	Atomized	6	8,162	-	8,162	7,439	-	7,439
33991 16	Other flake, powder and paste	12	5,268	-	5,268	5,957	-	5,957
	Forgings and impacts	(NA)	17,316	-	17,316	19,808	-	19,808
34635 21	Forgings	20	12,457	-	12,457	15,056	-	15,056
34635 41	Impacts	8	4,859	-	4,859	4,752	-	4,752
19002 00	Scrap receipts <sup>4</sup>	(NA)	(NA)	580,716	(NA)	(NA)	579,756	(NA)
		November			December			
	Aluminum mill products	(NA)	1,248,116	100,907	1,147,209	1,247,645	93,573	1,154,072
	Sheet, plate, and foil	(NA)	844,429	56,061	788,368	858,166	55,294	802,872
	Sheet	(NA)	727,404	56,061	671,343	745,512	55,294	690,218
33532 22	Nonheat-treatable <sup>2</sup>	22	707,862	56,061	651,801	723,629	55,294	668,335
33532 24	Heat-treatable	10	19,542	-	19,542	21,883	-	21,883
	Plate	(NA)	31,565	-	31,565	35,298	-	35,298
33531 15	Nonheat-treatable	6	6,900	-	6,900	8,996	-	8,996
33531 13	Heat-treatable	4	24,665	-	24,665	26,302	-	26,302
33533 00	Foil	13	85,460	-	85,460	77,356	-	77,356
	Rod, wire, and cable	(NA)	84,761	37,938	46,823	86,103	31,159	54,944
	Rod and bare wire	(NA)	38,824	37,938	886	40,259	31,159	9,100
33552 20	Drawing stock (redraw rod) <sup>3</sup>	5	29,020	37,938	(8,918)	28,441	31,159	(2,718)
33501 31	Bare wire	13	9,804	-	9,804	11,818	-	11,818
	Cable and insulated wire	(NA)	45,937	-	45,937	45,844	-	45,844
33501 63	ACSR and aluminum cable, bare	3	13,134	-	13,134	13,556	-	13,556
33570 99	Wire and cable, insulated or covered	11	32,803	-	32,803	32,288	-	32,288

See footnotes at end of table.



Table 13. **Shipments and Receipts of Aluminum Ingot and Mill Products by Type of Producer: 1997—Con.**

[Thousands of pounds]

Product code	Product description	Number of companies	Gross shipments	Total receipts	Net shipments <sup>1</sup>	November		December	
						Gross shipments	Total receipts	Gross shipments	Total receipts
	Aluminum mill products—Con.								
	Rod, bar, pipe, tube, and shapes . . . . .	(NA)	293,091	6,908	286,183	274,212	7,120	267,092	
33500 20	Rod and bar (rolled and extruded) . . . . .	(NA)	38,881	6,908	31,973	41,014	7,120	33,894	
33541 18	Alloys other than 2,000 and 7,000 series . . . . .	16	(D)	(D)	(D)	(D)	(D)	(D)	
	Alloys in 2,000 and 7,000 series . . . . .	6	(D)	(D)	(D)	(D)	(D)	(D)	
33542 63	Pipe and tube (extruded and drawn) . . . . .	(NA)	26,221	(D)	26,221	26,230	(D)	26,230	
33542 61	Alloys other than 2,000 and 7,000 series . . . . .	24	(D)	(D)	(D)	(D)	(D)	(D)	
	Alloys in 2,000 and 7,000 series . . . . .	10	(D)	(D)	(D)	(D)	(D)	(D)	
33541 25	Extruded shapes . . . . .	(NA)	227,989	-	227,989	206,968	-	206,968	
33541 28	Alloys other than 2,000 and 7,000 series . . . . .	86	219,091	-	219,091	198,211	-	198,211	
	Alloys in 2,000 and 7,000 series . . . . .	12	8,898	-	8,898	8,757	-	8,757	
	All other . . . . .	(NA)	25,835	-	25,835	29,164	-	29,164	
33991 13	Powder and paste . . . . .	(NA)	10,942	-	10,942	14,135	-	14,135	
33991 16	Atomized . . . . .	6	6,590	-	6,590	8,380	-	8,380	
	Other flake, powder and paste . . . . .	12	4,352	-	4,352	5,755	-	5,755	
34635 21	Forgings and impacts . . . . .	(NA)	14,893	-	14,893	15,029	-	15,029	
34635 41	Forgings . . . . .	20	11,058	-	11,058	10,839	-	10,839	
19002 00	Impacts . . . . .	8	3,835	-	3,835	4,190	-	4,190	
	Scrap receipts <sup>4</sup> . . . . .	(NA)	(NA)	534,535	(NA)	(NA)	517,558	(NA)	

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available.

<sup>1</sup>Net shipments are derived by subtracting total receipts from gross shipments.

<sup>2</sup>Receipts from "Heat-treatable sheet" are combined with "Nonheat-treatable sheet" to avoid disclosing data for individual companies.

<sup>3</sup>Receipts for "Bare wire" and "Cable and insulated wire" are included in "Drawing stock" to avoid disclosing data for individual companies.

<sup>4</sup>Data for "Scrap" are included in total aluminum mill products receipts or net shipments.

Note: Total receipts includes domestic and import receipts data.

**Table 14. Inventories of Aluminum Ingot, Mill Products, and Scrap by Type of Producer: 1998 and 1997**

[Thousands of pounds]

Type of inventory	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
<b>1998</b>												
<b>Total . . . . .</b>	<b>4,103,848</b>	<b>4,095,307</b>	<b>4,083,385</b>	<b>4,105,108</b>	<b>4,117,722</b>	<b>4,121,505</b>	<b>4,172,174</b>	<b>4,075,409</b>	<b>4,026,869</b>	<b>3,977,817</b>	<b>3,985,337</b>	<b>4,109,145</b>
Integrated . . . . .	2,865,292	2,841,483	2,799,768	2,752,466	2,751,566	2,698,475	2,715,494	2,630,915	2,611,335	2,567,431	2,580,658	2,673,088
Nonintegrated . . . . .	1,008,506	1,017,475	1,050,191	1,122,778	1,148,943	1,205,499	1,226,111	1,211,489	1,197,550	1,189,620	1,185,652	1,213,390
Smelters <sup>1</sup> . . . . .	230,050	236,349	233,426	229,864	217,213	217,531	230,569	233,005	217,984	220,766	219,027	222,667
Ingot . . . . .	1,443,255	1,421,979	1,457,764	1,418,864	1,419,794	1,429,947	1,481,012	1,465,423	1,400,409	1,377,822	1,393,284	1,403,017
Integrated <sup>1</sup> . . . . .	984,910	957,552	981,836	964,943	947,661	954,593	976,735	975,648	928,995	905,757	927,683	941,733
Nonintegrated <sup>1</sup> . . . . .	350,827	356,682	372,564	351,791	370,477	376,078	394,318	375,568	364,732	364,498	354,570	353,779
Smelters <sup>1</sup> . . . . .	107,518	107,745	103,364	102,130	101,656	99,276	109,959	114,207	106,682	107,567	111,031	107,505
Scrap . . . . .	668,125	662,831	639,715	681,841	679,826	712,089	743,308	731,699	727,233	710,166	679,684	739,761
Integrated <sup>1</sup> . . . . .	366,070	361,028	332,691	332,534	343,889	351,148	371,403	355,972	352,024	350,222	328,987	357,540
Nonintegrated <sup>1</sup> . . . . .	179,523	173,199	176,962	221,573	220,380	242,686	251,295	256,929	263,907	246,745	242,701	267,059
Smelters <sup>1</sup> . . . . .	122,532	128,604	130,062	127,734	115,557	118,255	120,610	118,798	111,302	113,199	107,996	115,162
All other . . . . .	1,992,468	2,010,497	1,985,906	2,004,403	2,018,102	1,979,469	1,947,854	1,878,287	1,899,227	1,889,829	1,912,369	1,966,367
Integrated <sup>1</sup> . . . . .	1,514,312	1,522,903	1,485,241	1,454,989	1,460,016	1,392,734	1,367,356	1,299,295	1,330,316	1,311,452	1,323,988	1,373,815
Nonintegrated <sup>1 2</sup> . . . . .	478,156	487,594	500,665	549,414	558,086	586,735	580,498	578,992	568,911	578,377	588,381	592,552
Smelters <sup>1 2</sup> . . . . .	-	-	-	-	-	-	-	-	-	-	-	-
<b>1997</b>												
<b>Total . . . . .</b>	<b>4,072,767</b>	<b>4,070,729</b>	<b>4,038,761</b>	<b>4,032,349</b>	<b>4,007,682</b>	<b>4,022,979</b>	<b>3,982,640</b>	<b>4,051,340</b>	<b>4,021,479</b>	<b>4,015,360</b>	<b>4,072,604</b>	<b>4,106,481</b>
Integrated . . . . .	2,823,332	2,861,248	2,847,317	2,826,478	2,807,615	2,815,239	2,808,313	2,830,262	2,827,839	2,822,420	2,854,289	2,880,668
Nonintegrated . . . . .	1,052,448	1,021,019	1,000,428	1,022,932	1,018,897	1,016,196	973,443	1,026,820	1,000,831	994,828	1,021,706	1,022,007
Smelters . . . . .	196,987	188,462	191,016	182,939	181,170	191,544	200,884	194,258	192,809	198,112	196,609	203,806
Ingot . . . . .	1,450,010	1,457,408	1,412,279	1,422,420	1,383,690	1,423,941	1,371,225	1,359,884	1,343,234	1,349,313	1,383,906	1,444,268
Integrated <sup>3</sup> . . . . .	1,043,193	1,045,462	1,012,418	1,023,209	1,008,996	1,027,062	997,762	982,532	969,658	984,636	1,009,320	1,029,129
Nonintegrated <sup>3</sup> . . . . .	318,857	322,646	307,260	304,733	281,876	298,103	277,275	282,472	284,449	274,307	280,727	313,787
Smelters <sup>3</sup> . . . . .	87,960	89,300	92,601	94,478	92,818	98,776	96,188	94,880	89,127	90,370	93,859	101,352
Scrap . . . . .	732,735	694,142	657,160	661,009	649,079	637,647	700,840	694,371	687,403	690,465	655,908	680,069
Integrated <sup>3</sup> . . . . .	375,506	357,347	337,448	338,262	341,246	327,746	373,261	363,811	359,878	360,510	338,414	366,339
Nonintegrated <sup>3</sup> . . . . .	248,202	237,633	221,297	234,286	219,481	217,133	222,883	231,182	223,843	222,213	214,744	211,276
Smelters <sup>3</sup> . . . . .	109,027	99,162	98,415	88,461	88,352	92,768	104,696	99,378	103,682	107,742	102,750	102,454
Other . . . . .	1,890,022	1,919,179	1,969,322	1,948,920	1,974,913	1,961,391	1,910,575	1,997,085	1,990,842	1,975,582	2,032,790	1,982,144
Integrated <sup>3</sup> . . . . .	1,404,633	1,458,439	1,497,451	1,465,007	1,457,373	1,460,431	1,437,290	1,483,919	1,498,303	1,477,274	1,506,555	1,485,200
Nonintegrated <sup>2 3</sup> . . . . .	485,389	460,740	471,871	483,913	517,540	500,960	473,285	513,166	492,539	498,308	526,235	496,944
Smelters <sup>2 3</sup> . . . . .	-	-	-	-	-	-	-	-	-	-	-	-

- Represents zero.

<sup>1</sup>Number of companies reporting aluminum inventory data for December 1998 only are: Ingot integrated 13; Ingot nonintegrated 119; Ingot smelters 20; Scrap integrated 13; Scrap nonintegrated 119; Scrap smelters 17; Other integrated 11; Other nonintegrated 128; Other smelters 3.

<sup>2</sup>All other, smelters are combined with "All other, nonintegrated" to avoid disclosing data for individual companies.

<sup>3</sup>Number of companies reporting aluminum inventory data for December 1997 only are: Ingot integrated 14; Ingot nonintegrated 125; Ingot smelters 21; Scrap integrated 14; Scrap nonintegrated 126; Scrap smelters 18; Other integrated 11; Other nonintegrated 142; and Other smelters 3.

**Table 15. Gross Shipments of Aluminum Mill Products by Type of Producer and Month: 1998**

[Thousands of pounds]

Product description	Total	Integrated	Noninte- grated	Total	Integrated	Noninte- grated	Total	Integrated	Noninte- grated
	Total			January			February		
<b>Total</b> .....	<b>16,545,857</b>	<b>11,226,821</b>	<b>5,319,036</b>	<b>1,347,263</b>	<b>923,266</b>	<b>423,997</b>	<b>1,274,055</b>	<b>871,573</b>	<b>402,482</b>
Sheet and plate and foil.....	11,278,670	8,736,219	2,542,451	910,881	712,342	198,539	856,600	671,285	185,315
Drawing stock, wire, and cable .....	1,192,477	826,099	366,378	94,510	67,232	27,278	92,863	63,556	29,307
Rod and bare wire .....	545,514	444,245	101,269	43,350	37,555	5,795	43,485	35,064	8,421
Cable and insulated wire.....	646,963	381,854	265,109	51,160	29,677	21,483	49,378	28,492	20,886
Rod, bar, pipe, tube, and shapes ...	3,714,040	1,499,169	2,214,871	313,567	131,070	182,497	295,879	124,162	171,717
All other <sup>1</sup> .....	360,670	165,334	195,336	28,305	12,622	15,683	28,713	12,570	16,143
	March			April			May		
<b>Total</b> .....	<b>1,410,196</b>	<b>957,092</b>	<b>453,104</b>	<b>1,417,721</b>	<b>963,032</b>	<b>454,689</b>	<b>1,381,492</b>	<b>944,440</b>	<b>437,052</b>
Sheet and plate and foil.....	951,590	739,548	212,042	947,211	736,517	210,694	952,350	742,683	209,667
Drawing stock, wire, and cable .....	108,032	74,954	33,078	107,387	72,879	34,508	93,771	65,865	27,906
Rod and bare wire .....	51,365	41,542	9,823	48,382	39,599	8,783	45,325	37,045	8,280
Cable and insulated wire.....	56,667	33,412	23,255	59,005	33,280	25,725	48,446	28,820	19,626
Rod, bar, pipe, tube, and shapes ...	320,091	127,983	192,108	333,179	139,710	193,469	306,216	122,643	183,573
All other <sup>1</sup> .....	30,483	14,607	15,876	29,944	13,926	16,018	29,155	13,249	15,906
	June			July			August		
<b>Total</b> .....	<b>1,408,101</b>	<b>941,898</b>	<b>466,203</b>	<b>1,412,260</b>	<b>963,686</b>	<b>448,574</b>	<b>1,395,220</b>	<b>940,582</b>	<b>454,638</b>
Sheet and plate and foil.....	956,544	736,768	219,776	966,154	755,348	210,806	951,987	734,412	217,575
Drawing stock, wire, and cable .....	99,433	65,353	34,080	98,897	66,859	32,038	100,924	70,514	30,410
Rod and bare wire .....	43,675	34,422	9,253	44,991	36,337	8,654	44,784	37,091	7,693
Cable and insulated wire.....	55,758	30,931	24,827	53,906	30,522	23,384	56,140	33,423	22,717
Rod, bar, pipe, tube, and shapes ...	319,388	124,705	194,683	318,990	129,447	189,543	311,933	122,452	189,481
All other <sup>1</sup> .....	32,736	15,072	17,664	28,219	12,032	16,187	30,376	13,204	17,172
	Total	Integrated	Noninte- grated	Total	Integrated	Noninte- grated	Total	Integrated	Noninte- grated
	September			October					
<b>Total</b> .....	<b>1,400,781</b>	<b>946,051</b>	<b>454,730</b>	<b>1,485,505</b>	<b>1,000,917</b>	<b>484,588</b>			
Sheet and plate and foil.....	956,751	738,222	218,529	1,006,899	770,397	236,502			
Drawing stock, wire, and cable .....	102,375	72,949	29,426	109,212	75,406	33,806			
Rod and bare wire .....	46,837	37,519	9,318	47,212	38,700	8,512			
Cable and insulated wire.....	55,538	35,430	20,108	62,000	36,706	25,294			
Rod, bar, pipe, tube, and shapes ...	310,715	120,491	190,224	338,033	139,798	198,235			
All other <sup>1</sup> .....	30,940	14,389	16,551	31,361	15,316	16,045			
	November			December					
<b>Total</b> .....	<b>1,319,880</b>	<b>887,097</b>	<b>432,783</b>	<b>1,293,383</b>	<b>887,187</b>	<b>406,196</b>			
Sheet and plate and foil.....	913,306	696,614	216,692	908,397	702,083	206,314			
Drawing stock, wire, and cable .....	92,644	65,584	27,060	92,429	64,948	27,481			
Rod and bare wire .....	43,498	35,830	7,668	42,610	33,541	9,069			
Cable and insulated wire.....	49,146	29,754	19,392	49,819	31,407	18,412			
Rod, bar, pipe, tube, and shapes ...	284,415	112,262	172,153	261,634	104,446	157,188			
All other <sup>1</sup> .....	29,515	12,637	16,878	30,923	15,710	15,213			

<sup>1</sup>Data for shipments of "All other" include "Powder and paste" and "Forgings and impacts."

**Table 16. Gross Shipments of Aluminum Mill Products by Type of Producer and Month: 1997**

[Thousands of pounds]

Product description	Total	Integrated	Noninte- grated	Total	Integrated	Noninte- grated	Total	Integrated	Noninte- grated
	Total			January			February		
<b>Total .....</b>	<b>16,311,489</b>	<b>11,161,846</b>	<b>5,149,643</b>	<b>1,279,621</b>	<b>882,550</b>	<b>397,071</b>	<b>1,269,790</b>	<b>874,914</b>	<b>394,876</b>
Sheet and plate and foil.....	11,165,874	8,734,873	2,431,001	887,635	692,563	195,072	877,125	684,646	192,479
Drawing stock, wire, and cable .....	1,140,801	787,621	353,180	90,735	61,582	29,153	87,327	58,618	28,709
Rod and bare wire .....	504,370	414,227	90,143	40,419	32,261	8,158	41,839	34,397	7,442
Cable and insulated wire.....	636,431	373,394	263,037	50,316	29,321	20,995	45,488	24,221	21,267
Rod, bar, pipe, tube, and shapes ...	3,646,886	1,458,010	2,188,876	272,681	111,882	160,799	276,425	115,715	160,710
All other <sup>1</sup> .....	357,928	181,342	176,586	28,570	16,523	12,047	28,913	15,935	12,978
	March			April			May		
<b>Total .....</b>	<b>1,396,610</b>	<b>975,099</b>	<b>421,511</b>	<b>1,428,855</b>	<b>972,410</b>	<b>456,445</b>	<b>1,432,500</b>	<b>977,032</b>	<b>455,468</b>
Sheet and plate and foil.....	954,201	758,925	195,276	987,612	765,738	221,874	999,456	770,995	228,461
Drawing stock, wire, and cable .....	97,021	68,335	28,686	104,439	71,472	32,967	98,179	71,143	27,036
Rod and bare wire .....	43,547	36,046	7,501	44,921	37,399	7,522	45,267	38,044	7,223
Cable and insulated wire.....	53,474	32,289	21,185	59,518	34,073	25,445	52,912	33,099	19,813
Rod, bar, pipe, tube, and shapes ...	315,617	131,678	183,939	304,877	118,409	186,468	305,093	119,613	185,480
All other <sup>1</sup> .....	29,771	16,161	13,610	31,927	16,791	15,136	29,772	15,281	14,491
	June			July			August		
<b>Total .....</b>	<b>1,414,058</b>	<b>963,010</b>	<b>451,048</b>	<b>1,372,433</b>	<b>957,140</b>	<b>415,293</b>	<b>1,400,471</b>	<b>947,659</b>	<b>452,812</b>
Sheet and plate and foil.....	958,222	743,224	214,998	942,990	765,904	177,086	954,416	743,861	210,555
Drawing stock, wire, and cable .....	100,522	71,159	29,363	94,983	66,009	28,974	98,968	68,828	30,140
Rod and bare wire .....	44,875	37,278	7,597	40,340	32,850	7,490	42,435	35,284	7,151
Cable and insulated wire.....	55,647	33,881	21,766	54,643	33,159	21,484	56,533	33,544	22,989
Rod, bar, pipe, tube, and shapes ...	326,604	134,546	192,058	304,314	109,382	194,932	315,917	119,324	196,593
All other <sup>1</sup> .....	28,710	14,081	14,629	30,146	15,845	14,301	31,170	15,646	15,524
	Total	Integrated	Noninte- grated	Total	Integrated	Noninte- grated	Total	Integrated	Noninte- grated
	September			October					
<b>Total .....</b>	<b>1,419,206</b>	<b>964,058</b>	<b>455,148</b>	<b>1,402,184</b>	<b>941,632</b>	<b>460,552</b>			
Sheet and plate and foil.....	960,182	746,898	213,284	941,440	734,113	207,327			
Drawing stock, wire, and cable .....	97,298	66,692	30,606	100,465	66,715	33,750			
Rod and bare wire .....	42,586	35,037	7,549	39,058	31,516	7,542			
Cable and insulated wire.....	54,712	31,655	23,057	61,407	35,199	26,208			
Rod, bar, pipe, tube, and shapes ...	330,980	135,160	195,820	327,075	124,681	202,394			
All other <sup>1</sup> .....	30,746	15,308	15,438	33,204	16,123	17,081			
	November			December					
<b>Total .....</b>	<b>1,248,116</b>	<b>847,933</b>	<b>400,183</b>	<b>1,247,645</b>	<b>858,409</b>	<b>389,236</b>			
Sheet and plate and foil.....	844,429	659,110	185,319	858,166	668,896	189,270			
Drawing stock, wire, and cable .....	84,761	58,852	25,909	86,103	58,216	27,887			
Rod and bare wire .....	38,824	32,512	6,312	40,259	31,603	8,656			
Cable and insulated wire.....	45,937	26,340	19,597	45,844	26,613	19,231			
Rod, bar, pipe, tube, and shapes ...	293,091	118,546	174,545	274,212	119,074	155,138			
All other <sup>1</sup> .....	25,835	11,425	14,410	29,164	12,223	16,941			

<sup>1</sup>Data for shipments of "All other" include "Powder and paste" and "Forgings and impacts."



Table 17. Net Shipments of Aluminum Mill Products by Month: 1998 and 1997—Con.

[Thousands of pounds]

Product description	Total	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<b>1997—Con.</b>													
Sheet, plate, and foil—Con.													
Sheet.....	8,849,258	712,944	693,605	758,041	780,053	786,613	759,607	720,785	760,238	769,635	746,176	671,343	690,218
Nonheat-treatable.....	8,569,026	689,550	670,258	735,443	755,014	761,416	736,306	697,759	736,643	744,985	721,516	651,801	668,335
Heat-treatable ..	280,232	23,394	23,347	22,598	25,039	25,197	23,301	23,026	23,595	24,650	24,660	19,542	21,883
Plate.....	402,487	31,914	31,621	31,096	31,607	33,624	34,786	33,607	34,470	35,719	37,180	31,565	35,298
Nonheat-treatable.....	112,867	9,462	9,994	9,634	10,497	9,829	10,671	10,662	8,987	8,838	8,397	6,900	8,996
Heat-treatable ..	289,620	22,452	21,627	21,462	21,110	23,795	24,115	22,945	25,483	26,881	28,783	24,665	26,302
Foil.....	1,139,086	91,685	91,651	96,822	106,694	102,689	98,386	113,518	89,910	91,385	93,530	85,460	77,356
Rod, wire, and cable. . .	694,514	57,576	52,851	59,780	61,495	62,325	64,554	58,753	62,731	56,828	55,854	46,823	54,944
Rod and bare wire ..	58,083	7,260	7,363	6,306	1,977	9,413	8,907	4,110	6,198	2,116	(5,553)	886	9,100
Drawing stock (redraw rod) total receipts.....	446,287	33,159	34,476	37,241	42,944	35,854	35,968	36,230	36,237	40,470	44,611	37,938	31,159
Drawing stock (redraw rod), ..	(73,096)	(4,483)	(3,328)	(4,527)	(8,680)	(762)	(2,558)	(6,671)	(4,624)	(8,965)	(16,862)	(8,918)	(2,718)
Bare wire.....	131,179	11,743	10,691	10,833	10,657	10,175	11,465	10,781	10,822	11,081	11,309	9,804	11,818
Cable and insulated wire.....	636,431	50,316	45,488	53,474	59,518	52,912	55,647	54,643	56,533	54,712	61,407	45,937	45,844
ACSR and aluminum cable, bare.....	203,807	15,740	14,498	18,447	19,200	18,577	19,676	19,176	17,769	15,906	18,128	13,134	13,556
Wire and cable, insulated or covered.....	432,624	34,576	30,990	35,027	40,318	34,335	35,971	35,467	38,764	38,806	43,279	32,803	32,288
Rod, bar, pipe, tube, and shapes.....	3,547,014	262,510	266,351	306,107	295,593	297,913	317,104	296,864	309,601	322,171	319,525	286,183	267,092
Rod, bar, pipe, tube and shapes, total receipts.....	99,872	10,171	10,074	9,510	9,284	7,180	9,500	7,450	6,316	8,809	7,550	6,908	7,120
Rod and bar (rolled and extruded).....	371,693	27,775	29,437	33,563	30,665	31,718	33,453	27,355	28,630	31,771	31,459	31,973	33,894
Pipe and tube (extruded and drawn).....	341,442	27,381	27,033	28,298	31,528	27,448	29,852	26,738	29,246	29,727	31,740	26,221	26,230
Extruded shapes ..	2,833,879	207,354	209,881	244,246	233,400	238,747	253,799	242,771	251,725	260,673	256,326	227,989	206,968
Alloys other than 2,000 and 7,000 series.....	2,723,980	199,192	201,296	235,022	224,261	229,249	244,049	233,876	242,542	250,891	246,300	219,091	198,211
Alloys in 2,000 and 7,000 series.....	109,899	8,162	8,585	9,224	9,139	9,498	9,750	8,895	9,183	9,782	10,026	8,898	8,757
All other.....	357,928	28,570	28,913	29,771	31,927	29,772	28,710	30,146	31,170	30,746	33,204	25,835	29,164
Powder and paste ..	143,772	10,095	10,720	11,362	11,553	12,372	11,280	12,096	12,391	13,430	13,396	10,942	14,135
Atomized.....	90,127	6,850	7,006	7,283	7,253	8,426	7,715	7,370	7,653	8,162	7,439	6,590	8,380
Other flake, powder and paste.....	53,645	3,245	3,714	4,079	4,300	3,946	3,565	4,726	4,738	5,268	5,957	4,352	5,755
Forgings and impacts.....	214,156	18,475	18,193	18,409	20,374	17,400	17,430	18,050	18,779	17,316	19,808	14,893	15,029
Forgings.....	157,325	13,878	13,710	13,719	15,266	12,624	11,350	13,730	13,638	12,457	15,056	11,058	10,839
Impacts.....	56,831	4,597	4,483	4,690	5,108	4,776	6,080	4,320	5,141	4,859	4,752	3,835	4,190
Scrap receipts <sup>1</sup> .....	7,025,589	586,470	589,250	649,000	647,980	654,847	556,280	570,760	558,437	580,716	579,756	534,535	517,558

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Data not included in net shipments information.

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**HISTORICAL NOTE**

Data on aluminum ingot and mill products have been collected by the Census Bureau since 1942. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**FUNDING**

The M33D survey is conducted under the sponsorship of the Aluminum Association.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Renee Coley, 301-457-4767.

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## NONFERROUS CASTINGS—MA331E (FORMERLY MA33E)

### INTRODUCTION

These data cover producers of nonferrous castings, whether for commercial sale or for use by the producing company.

The statistics were collected by mail on Census Bureau annual Form MA331E, Nonferrous Castings. The survey panel was first mailed for survey year 1994. It now consists of about 795 producers of nonferrous castings selected from approximately 2,500 establishments identified in the 1997 Economic Census, Manufacturing sector.

### SUMMARY OF FINDINGS

In 1998, U.S. producers of nonferrous castings shipped over 4,810 million pounds of nonferrous shapes and forms, slightly more than the 4,564 million pounds shipped in 1997. Shipments of aluminum castings in 1998 totaled 3,398 million pounds, roughly 210 million pounds more than in 1997. The shipment of copper castings increased from 553 million pounds in 1997 to 562 million pounds in 1998. Less significant increases occurred in the shipment of magnesium castings and zinc castings between 1997 and 1998. The shipments of magnesium castings in 1997 and 1998 totaled 38 and 39 million pounds, respectively. Shipments of zinc castings increased from 458 million pounds in 1997 to 470 million pounds in 1998. Shipments of lead castings totaled 339 million pounds in 1998, approximately 12 million pounds more than were shipped in 1997.

### EXPLANATION OF TERMS

**Shipments for sale.** Represents commercial sales only (castings shipped to the trade). Intracompany sales are not

included in this category. Value figures represent only these shipments.

**Shipments for own use.** Represents castings shipped for use by the reporting company or by a subsidiary, parent, or other affiliated company. Castings produced and consumed at the same location in the production of finished products are also included.

**Sand casting.** Castings produced by pouring molten metal into a sand mold and allowing it to solidify.

**Permanent mold casting.** Castings produced by introducing molten metal by gravity, or low pressure, into a mold constructed of durable material, usually iron or steel, and allowing it to solidify.

**Semipermanent casting.** Mold castings are made using an expendable core such as sand.

**Die casting.** Castings produced by introducing molten metal under high pressure into a metal mold or die and allowing it to solidify.

**Centrifugal casting.** Castings produced by pouring molten metal into a spinning mold. Centrifugal force acts to distribute the metal uniformly around the interior of the mold.

**Continuous casting.** Castings produced by introducing molten metal by gravity into a watercooled graphite die from which the solidified form is continuously drawn.



**Table 18. Producers' Shipments of Nonferrous Castings: 1998 and 1997**

[Thousands of pounds]

Year	By type of customer			By metal				
	Total	For sale	For own use	Aluminum and aluminum-base alloy	Copper and copper-base alloy	Magnesium and magnesium-base alloy	Zinc and zinc-base alloy	Lead and lead-base alloy die
1998.....	4,810,633	3,024,451	1,786,182	3,398,066	562,239	41,482	469,569	339,277
1997.....	4,564,251	2,846,509	1,717,742	3,187,752	552,960	38,514	457,866	327,159

<sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 19. Value of Shipments of Nonferrous Castings: 1998 and 1997**

[Value in thousands of dollars]

Product description	Value		Standard error of estimate (percent) for column —	
	1998	1997		
	A	B	A	B
<b>Nonferrous castings.....</b>	<b>7,493,573</b>	<b>7,219,121</b>	<b>(NA)</b>	<b>(NA)</b>
Aluminum and aluminum-based alloy.....	5,292,885	5,172,590	(Z)	1.0
Copper and copper-based alloy.....	1,048,672	991,974	(Z)	0.8
Magnesium and magnesium-based alloy.....	229,142	225,685	(Z)	1.5
Zinc and zinc-based alloy.....	914,467	818,963	(Z)	0.9
Lead and lead-based alloy.....	8,407	9,909	0.2	9.9

NA Not available. Z Less than half the unit value shown.

Note: Dollar value represents value of castings for sale.

Table 20. **Quantity of Shipments of Nonferrous Castings by Type and Method of Castings: 1998 and 1997**

[Quantity in thousands of pounds]

Product code	Product description	Quantity		Standard error of estimate (percent) for column —	
		1998	1997	A	B
		A	B	A	B
	Nonferrous castings .....	4,810,633	4,564,251	(NA)	(NA)
	For sale .....	3,024,451	2,846,509	(NA)	(NA)
	For own use .....	1,786,182	1,717,742	(NA)	(NA)
	Aluminum and aluminum-base alloy .....	3,398,066	3,187,752	(NA)	(NA)
	For sale .....	2,216,432	2,073,607	0.1	1.0
	For own use .....	1,181,634	1,114,145	(Z)	0.3
3315240101	Sand .....	326,889	326,134	(NA)	(NA)
	For sale .....	295,295	298,599	(Z)	0.7
	For own use .....	31,594	27,535	(Z)	0.5
3315240206	Permanent and semipermanent mold <sup>1</sup> .....	1,146,237	1,051,192	(NA)	(NA)
3315210000	Die .....	1,640,472	1,532,804	(NA)	(NA)
	For sale .....	1,094,843	'995,049	0.2	2.3
	For own use .....	545,629	537,755	(Z)	0.6
3315240421	All other <sup>1</sup> .....	282,549	'277,621	(NA)	(NA)
	Copper and copper-base alloy .....	562,239	552,960	(NA)	(NA)
	For sale .....	364,658	346,938	(Z)	0.7
	For own use .....	197,581	206,022	(Z)	0.3
3315250426	Sand .....	264,693	274,296	(NA)	(NA)
	For sale .....	159,397	162,363	0.1	1.1
	For own use .....	105,296	111,933	(Z)	0.5
3315250531	Permanent and semipermanent mold <sup>1</sup> .....	45,732	44,454	(NA)	(NA)
3315220101	Die <sup>1</sup> .....	11,407	'11,261	(NA)	(NA)
3315250536	Centrifugal <sup>1</sup> .....	54,021	54,939	(NA)	(NA)
3315250546	All other <sup>1</sup> .....	196,984	168,009	(NA)	(NA)
	Magnesium and magnesium-base alloy .....	41,482	38,514	(NA)	(NA)
	For sale .....	(D)	(D)	(NA)	(NA)
	For own use .....	(D)	(D)	(NA)	(NA)
3315280201	Sand <sup>1</sup> .....	(D)	(D)	(NA)	(NA)
3315220311	Die <sup>1</sup> .....	30,033	28,140	(NA)	(NA)
3315280211	All other <sup>1</sup> .....	(D)	(D)	(NA)	(NA)
	Zinc and zinc-base alloy .....	469,569	'457,866	(NA)	(NA)
	For sale .....	391,165	'376,524	0.1	1.7
	For own use .....	78,404	81,342	(Z)	1.0
3315220206	Die <sup>1</sup> .....	452,891	'432,170	(NA)	(NA)
3315280201	All other <sup>1</sup> .....	26,276	25,696	(NA)	(NA)
3315220416	Lead and lead-base alloy die <sup>1</sup> .....	339,277	'327,159	(NA)	(NA)

D Withheld to avoid disclosing data for individual companies. NA Not available. 'Revised by 5 percent or more from previously published data. Z Less than half the unit value shown.

<sup>1</sup>Castings "For sale" and "For own use" are combined to avoid disclosing data for individual companies.

Note: Comparable data for Schedule B export numbers and HTSUSA import numbers are not available.

### HISTORICAL NOTE

Data on nonferrous castings have been collected by the Census Bureau since 1942. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal

Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

### CONTACT FOR DATA USERS

For additional information about these data, contact Brenda Campbell, 301-457-1031.

## INVENTORIES OF STEEL PRODUCING MILLS—M331J (FORMERLY M33J)

### INTRODUCTION

These data cover producers and steel service centers. Important nonmanufacturing activities such as construction and mining are not included.

The statistics are based on a survey of manufacturers and represent total U.S. inventories of steel mill shapes and forms. Estimates are included for companies whose reports were not received in time for tabulation.

Data for producers are based on information collected by mail on Census Bureau monthly Form M33J, Net Shipments and Inventories of Steel Mill Shapes and Forms (Producers Report), from companies that produce over 90 percent of total steel output. Estimates have been derived to represent 100-percent coverage of steel producers. These estimates are benchmarked annually to Current Industrial Reports Series MA331B, *Steel Mill Products*, the last being 1996.

### SUMMARY OF FINDINGS

Total inventories of steel mill shapes and forms held by steel producers, and steel service centers (warehouses) increased from 20.5 million short tons at the end of December 31, 1997, to 21.9 million short tons in 1998.

Inventories held by steel service centers increased from 7.3 million short tons to 8.5 million short tons in 1998, and inventories held by steel producers increased from 13.2 million short tons to 13.4 million short tons for 1998.

### EXPLANATION OF TERMS

**Steel mill shapes and forms.** Steel mill shapes and forms include ingot, semifinished shapes such as billets and wire rods, bar and bar shapes, sheet, strip plate, tinplate, terneplate, blackplate, wire, structural shapes, and piling.

Rough and machined castings and forgings, powder, and all fabricated steel products or components such as purchased stampings are excluded.

Table 21. **Inventories of Steel Mill Shapes and Forms Held by Steel Service Centers, Steel Producers, and Related Statistics: 1998 and 1997**

[Million short tons]

Product description	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<b>1998</b>												
<b>Total inventories . . . . .</b>	<b>21.1</b>	<b>21.3</b>	<b>21.3</b>	<b>21.3</b>	<b>21.6</b>	<b>21.1</b>	<b>21.9</b>	<b>22.2</b>	<b>21.6</b>	<b>21.5</b>	<b>21.7</b>	<b>21.9</b>
Steel service centers: <sup>1</sup>												
Inventories, end-of-month <sup>1</sup> . . .	7.3	7.5	7.4	7.7	7.8	8.1	8.3	8.6	8.5	8.5	8.5	8.5
Producing mills:												
Inventories, end-of-month . . . .	13.8	13.8	13.9	13.6	13.8	13.0	13.6	13.6	13.1	13.0	13.2	13.4
Steel in process . . . . .	7.8	7.8	7.9	7.7	7.7	7.1	7.6	7.6	7.2	7.2	7.5	7.7
Finished steel . . . . .	6.0	6.0	6.0	5.9	6.1	5.9	6.0	6.0	5.9	5.8	5.7	5.7
<b>1997</b>												
<b>Total inventories . . . . .</b>	<b>19.7</b>	<b>19.8</b>	<b>19.8</b>	<b>20.1</b>	<b>20.3</b>	<b>20.1</b>	<b>20.1</b>	<b>20.1</b>	<b>20.0</b>	<b>20.0</b>	<b>20.3</b>	<b>20.5</b>
Steel service centers: <sup>1</sup>												
Inventories, end-of-month <sup>1</sup> . . .	6.9	7.0	7.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.3
Producing mills:												
Inventories, end-of-month . . . .	12.8	12.8	12.8	12.9	13.1	12.9	12.9	12.9	12.8	12.8	13.1	13.2
Steel in process . . . . .	7.3	7.3	7.3	7.3	7.5	7.4	7.4	7.3	7.2	7.2	7.3	7.4
Finished steel . . . . .	5.5	5.5	5.5	5.6	5.6	5.5	5.5	5.6	5.6	5.6	5.8	5.8

<sup>1</sup>Source: Steel Service Center Institute.

Table 22. **Net Shipments and Imports of Steel Mill Shapes: 1998 and 1997**

[Thousands of short tons]

Month and year	Manufacturers' net shipments <sup>1</sup>	Imports for consumption <sup>2</sup>
<b>1998</b>		
<b>Total.....</b>	<b>102,427</b>	<b>36,685</b>
December.....	7,360	2,495
November.....	7,382	3,546
October.....	8,257	3,670
September.....	8,228	3,433
August.....	8,514	3,948
July.....	8,161	3,531
June.....	9,007	3,220
May.....	8,927	3,278
April.....	9,270	2,860
March.....	9,447	2,353
February.....	8,790	2,140
January.....	9,084	2,211
<b>1997</b>		
<b>Total.....</b>	<b>104,957</b>	<b>27,284</b>
December.....	8,648	1,854
November.....	8,467	2,052
October.....	9,424	2,311
September.....	9,072	2,273
August.....	8,668	2,142
July.....	8,785	2,433
June.....	8,968	2,316
May.....	8,768	2,520
April.....	8,907	2,338
March.....	8,529	2,162
February.....	8,091	2,127
January.....	8,630	2,756

<sup>1</sup>Source: American Iron and Steel Institute (AISI).

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*. Import tonnage is derived from following HTSUSA import numbers: 7206.10.0000 - 7306.90.5000.

Table 23. **Comparison of Manufacturers' Net Shipments With Apparent Consumption of Steel Mill Shapes by Selected Years: 1993 to 1997**

[Thousands of short tons]

Product description	1997	1996	1995	1994	1993
Manufacturers' net shipments .....	88,886	87,656	85,118	99,144	91,372
Exports <sup>1</sup> .....	3,841	3,123	6,355	3,527	3,653
Imports <sup>2</sup> .....	14,209	14,449	21,163	26,675	17,898
Apparent consumption <sup>3</sup> .....	99,254	98,982	99,926	122,292	105,617

<sup>1</sup>Source: Current Industrial Report MA331B, *Steel Mill Products*. Net shipments figures are somewhat understated because of method used to calculate these data. These figures are derived by subtracting total domestic receipts of all mill shapes at producing mills from total quantity of shipments, plus steel consumed in producing plants. Prior to 1980, import receipts were also used in net shipments calculation. Beginning in 1980, import receipts of steel mill products for further processing were collected separately and were no longer used in net shipments calculation.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*. Import tonnage is derived from the following HTSUSA numbers: 7206.10.0000-7306.90.5000.

<sup>3</sup>Apparent consumption is derived by subtracting exports from total of net shipments plus imports.

### HISTORICAL NOTE

Data on inventories of steel mills shapes have been collected by the Census Bureau since 1962. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.

Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

### CONTACT FOR DATA USERS

For additional information about these data, contact Ann Truffa, 301-457-4846.

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## INSULATED WIRE AND CABLE—MA335J (FORMERLY MA33L)

### INTRODUCTION

These data cover companies engaged in manufacturing insulated wire and cable and/or fabricating appliance wire, cord, or flexible cordage from purchased insulated wire.

The statistics were collected by mail on Census Bureau annual Form MA335J, Insulated Wire and Cable. The survey panel includes all known insulators of wire and cable, as well as the largest producers of appliance wire, cord, and flexible cord sets from purchased insulated wire as measured by the dollar value of shipments from the 1997 Economic Census, Manufacturing sector. No estimate is included for the smaller fabricators. The total number of companies is approximately 223.

### SUMMARY OF FINDINGS

In 1998, the total value of manufacturers' shipments of copper insulated wire and cable decreased by 2 percent to \$11,067 million from \$11,254 million in 1997. Copper magnet wire decreased 7 percent from the 1997 level of \$1,149 million from \$1,065 million in 1998. Aluminum magnet wire decreased by 4 percent in 1998 to \$124 million from the 1997 level of \$129 million. In 1998, insulated optical fiber cable decreased by less than 1 percent to \$1,849 million from the \$1,853 million in 1997. Optical fiber decreased by 7 percent to \$1,135 million from the 1997 level of \$1,210 million.

Quantity of shipments of aluminum insulated wire and cable increased by 3 percent in 1998 to 697 million pounds, from the 1997 level of 679 million pounds.

### EXPLANATION OF TERMS

**Gross weight.** Includes insulating materials but excludes packaging materials.

**AWG.** American wire gauge.

**Dual rated products.** All dual rated products are classified according to their highest ratings.

**Multi-insulated cables.** All multi-insulated cables are classified according to their primary insulation, i.e., the layer of material designed to do the electrical insulating, usually the first layer of material applied over the conductor.

**Insulated wire and cable.** All insulated wire and cable for transmitting electrical energy, signals, or communications. Excludes bare and tinned wire and cable and Aluminum Cable Steel Reinforced (ACSR).

**Magnet wire (including insulating magnet strip conductor).** All insulated wire of the type generally used in the winding of coils, including Litz wire and including insulating magnet sheet, strip, and foil. The thermal classification for bondable wires are determined by the underlying insulation. Also, the combination (film fabrics) product is classified based on the insulation on the top side.

**Electronic wire and cable.** All single and multiconductor wire and cable used for transmission, reception, or reproduction of electrical frequencies (16 gauge and smaller). Excludes telephone cable. See "Apparatus Wire and Cable" for larger gauges.

**Telephone wire and cable.** All wire and cables used in the telephone industry to transmit, receive, and monitor communications signals. Excludes coaxial and other electronic wire and cable.

**Power wire and cable.** All insulated wire and cable used for the transmission and distribution of electrical energy. Excludes communications, aircraft, and marine types.

**Control wire and signal wire and cable.** All insulated wire and cable used to transmit signals to control and actuate relays, valves, servo-mechanisms, and related devices, including traffic control cable and fire alarm cable. Excludes elevator hatch and traveling cable.

**Building wire and cable.** All wire and cable (600 volts or less) having UL labels, used within structures for light and power.

**Apparatus wire and cable.** Insulated wire and cable used in connecting electrical apparatus to a power source, and appliance wiring material (14 AWG and larger) used for internal wiring. See "Electronic Wire and Cable" for appliance wiring material smaller than 14 AWG.

**Other insulated wire and cable.** Includes bulk automotive battery and ignition wire, elevator hatch and traveling cable, airframe, shipboard, and ground support cable.

**Table 24. Summary of Shipments of Copper Insulated Wire and Cable: 1998 and 1997**

[Value in thousands of dollars]

Product code	Product description	1998	1997
335929A	Insulated wire and cable . . . . .	15,116,149	15,466,387
335929B	Electronic wire and cable . . . . .	2,759,645	2,797,940
3359291	Telephone and telegraph wire and cable . . . . .	2,443,154	2,252,492
335929C	Power wire and cable . . . . .	1,579,745	1,562,245
335929D	Portable power cable . . . . .	35,918	54,118
331419E	Control and signal wire and cable . . . . .	287,686	286,077
335929E	Building wire and cable . . . . .	2,768,669	2,947,944
331491G	Apparatus wire and cordage . . . . .	792,501	810,489
3359121	Other insulated wire and cable . . . . .	400,130	543,192
327215A2	Magnet wire . . . . .	1,064,507	1,149,415
	Insulated optical fiber cable . . . . .	1,849,026	1,852,803
	Optical fiber cable . . . . .	1,135,168	1,209,672

**Table 25. Shipments of Copper Insulated Wire and Cable: 1998 and 1997**

[Copper content in thousands of pounds. Value in thousands of dollars]

Product code	Product description	Shipments, including interplant transfers <sup>1</sup>					
		1998			1997		
		Number of companies	Copper content <sup>2</sup>	Value	Number of companies	Copper content <sup>2</sup>	Value
335929 pt.	Insulated wire (except magnet wire and optical wire) . . . . .	(NA)	2,993,641	11,067,448	(NA)	2,853,324	11,254,497
335929A	Electronic wire and cable . . . . .	86	240,456	2,759,645	86	241,601	2,797,940
	Coaxial cable, armored or unarmored:						
335929A100	Rigid . . . . .	3	(D)	(D)	4	(D)	(D)
335929A120	Semirigid . . . . .	14	32,164	<sup>a</sup> 460,321	14	31,339	479,532
	Flexible:						
335929A130	135 C and over . . . . .	13	3,661	66,174	14	<sup>r</sup> 3,738	<sup>a</sup> 66,739
335929A140	Under 135 C . . . . .	27	27,389	<sup>a</sup> 439,279	28	<sup>a</sup> 27,635	<sup>a</sup> 419,666
335929A150	CATV/broadcast coaxial cable . . . . .	8	(D)	(D)	8	(D)	(D)
335929A160	Antenna lead-in wire . . . . .	9	(D)	(D)	7	(D)	(D)
	Hookup wire (single conductor, shielded, and nonshielded):						
335929A170	135 C and over temperature rating . . . . .	28	19,939	254,293	26	19,502	<sup>r</sup> 267,872
335929A180	Under 135 C temperature rating . . . . .	42	18,265	98,904	40	<sup>a</sup> 21,320	<sup>a</sup> 105,490
	Multiconductor electronic wire and cable (shielded and nonshielded):						
335929A190	Flat and ribbon cable . . . . .	22	8,849	109,230	23	8,299	97,032
	Other multiconductor electronic wire and cable:						
	Shielded:						
335929A1A0	135 C and over temperature rating . . . . .	19	32,211	254,671	19	32,835	263,992
335929A1B0	Under 135 C temperature rating . . . . .	35	32,499	273,645	33	33,151	277,797
	Nonshielded:						
335929A1C0	135 C and over temperature rating . . . . .	15	13,414	150,570	13	11,379	129,372
335929A1D0	Under 135 C temperature rating . . . . .	31	37,976	215,169	31	<sup>r</sup> 38,432	<sup>r</sup> 222,882
335929B	Telephone and telegraph wire and cable . . . . .	31	591,952	2,443,154	30	522,926	2,252,492
335929B110	Jumper and distributing frame wire . . . . .	6	(D)	(D)	7	(D)	(D)
335929B120	Station wire and cable . . . . .	14	22,269	168,312	16	19,769	157,322
335929B130	Telephone cord sets and cordage . . . . .	6	(D)	(D)	5	(D)	(D)
335929B140	Inside wiring cable . . . . .	19	89,448	587,816	19	<sup>r</sup> 84,497	488,563
335929B150	Drop and bridge and duct wire . . . . .	4	60,110	202,270	4	55,049	218,508
335929B160	Rural and urban distribution wire and cable . . . . .	4	(D)	(D)	4	(D)	(D)
335929B170	Polyethylene covered exchange area and toll cable (PIC and PULP insulated) . . . . .	7	323,225	<sup>a</sup> 1,020,394	7	283,302	1,004,244
335929B180	Other telephone and telegraph wire and cable . . . . .	7	(D)	(D)	9	(D)	(D)

See footnotes at end of table.

**Table 25. Shipments of Copper Insulated Wire and Cable: 1998 and 1997—Con.**

[Copper content in thousands of pounds. Value in thousands of dollars]

Product code	Product description	Shipments, including interplant transfers <sup>1</sup>					
		1998			1997		
		Number of companies	Copper content <sup>2</sup>	Value	Number of companies	Copper content <sup>2</sup>	Value
3359291	Power wire and cable.....	25	285,836	1,579,745	24	267,491	1,562,245
3359291810	Paper insulated cable (all voltages, all types).....	2	(D)	(D)	2	(D)	(D)
	Plastics and rubber insulated:						
	600 volts or less:						
3359291820	Portable welding cable.....	8	(D)	(D)	7	(D)	(D)
3352921830	Underground distribution cable (UD, URD).....	9	8,554	301,594	9	7,560	298,219
3359291840	Thermoplastics insulated power cable.....	11	18,413	44,835	11	16,589	47,606
	Thermoset insulated:						
3359291850	Armored, rubber and cross-linked.....	8	10,986	32,528	6	9,674	28,606
3359291860	Unarmored, rubber.....	6	37,014	140,807	6	34,712	136,482
3359291870	Unarmored, cross-linked.....	9	14,064	47,407	8	11,230	34,528
3359291880	Rubber (R, RH, RHH, RHW, USE, etc.).....	4	(D)	(D)	2	(D)	(D)
3359291890	Weatherproof cable.....	4	(D)	(D)	5	(D)	(D)
	Service drop cable:						
33592918A0	Thermoset insulated.....	4	(D)	(D)	4	(D)	(D)
33592918B0	Thermoplastics insulated.....	3	(D)	(D)	3	(D)	(D)
	Over 600 volts:						
33592918C0	Underground distribution cable (UD, URD), all insulations (jacketed and unjacketed).....	7	64,434	390,849	7	55,664	376,563
33592918D0	Thermoplastics insulated power cable, excluding underground.....	4	(D)	(D)	5	(D)	(D)
	Thermoset insulated power cable, excluding underground:						
	Over 600 volts to 15 kV:						
33592918E0	Armored, rubber and cross-linked.....	8	14,789	65,305	6	13,242	58,222
33592918F0	Unarmored, rubber.....	7	40,067	139,938	7	48,897	160,618
33592918G0	Unarmored, cross-linked.....	7	14,687	43,148	7	16,792	55,710
33592918H0	Over 15 kV (rubber and cross-linked).....	4	5,557	36,567	5	5,028	34,817
33592918I0	Other power wire and cable.....	9	14,290	108,353	8	13,341	99,987
3359291	Portable power cable.....	7	9,782	35,918	7	<sup>r</sup> 14,800	<sup>r</sup> 54,118
33592918J0	2 kV or less.....	6	(D)	(D)	6	(D)	(D)
	Over 2 kV:						
33592918K0	Portable cross-linked jacketed cable (mine shovel cable).....	2	(D)	(D)	3	(D)	(D)
33592918L0	Portable noncross-linked jacketed cable.....	3	(D)	(D)	3	(D)	(D)
335929C	Control and signal wire.....	28	58,892	287,686	28	<sup>r</sup> 55,504	286,077
335929C110	Signal wire and cable.....	17	29,768	161,835	17	<sup>r</sup> 28,729	161,705
	Control wire and cable, excluding elevator cable:						
335929C120	Thermoset insulated.....	9	<sup>b</sup> 10,521	<sup>a</sup> 56,133	9	<sup>a</sup> 9,518	<sup>a</sup> 51,286
335929C130	Thermoplastics insulated.....	18	<sup>a</sup> 18,603	<sup>a</sup> 69,718	18	<sup>a</sup> 17,257	<sup>a</sup> 73,086
335929D	Building wire and cable.....	24	1,446,621	2,768,669	24	1,393,168	2,947,944
	Building wire and cable having underwriters' labels:						
	Thermoset insulated:						
335929D110	Cross-linked polyethylene (XHHW).....	11	47,940	129,534	11	43,102	129,196
335929D120	Cross-linked polyethylene (USE).....	12	17,928	51,114	12	17,521	57,480
	Thermoplastics insulated:						
335929D130	Flame-retardant nylon (THHN, THWN).....	16	817,785	1,363,331	17	813,441	1,538,579
335929D140	Moisture and heat resistant (TW, THW).....	12	3,516	6,622	12	3,979	8,479
335929D150	Service entrance cable (SER, SEU, ASE).....	8	<sup>a</sup> 8,973	120,536	8	8,212	109,570
	Nonmetallic branch-circuit and underground feeder:						
335929D160	Type NM-B.....	6	429,686	761,517	6	395,131	784,940
335929D170	Type UF and NMC (corrosion resistant).....	8	44,455	85,116	8	42,810	91,183
335929D180	Metallic armored cable (all AC types).....	12	67,377	222,453	11	<sup>r</sup> 59,385	<sup>r</sup> 198,721
335929D190	Other building wire and cable.....	9	8,961	28,446	10	<sup>a</sup> 9,587	29,796
33141E	Apparatus wire and cordage <sup>3</sup> .....	45	218,480	792,501	45	211,217	810,489
	Flexible cordage:						
331491E110	Thermoset insulated.....	10	11,832	55,088	10	13,894	65,953
331491E120	Thermoplastics, including thermoplastics elastomers.....	15	29,925	50,264	16	31,255	64,074
331491E180	Extension cord sets.....	9	31,396	125,289	9	26,441	113,930
331491E190	Fixed power supply cords.....	18	19,014	135,226	18	20,515	143,825
331491E1A0	Detachable power supply cords.....	6	10,695	61,700	6	9,098	52,948
331491E1B0	Retractable power cords and other.....	10	1,068	14,497	9	<sup>r</sup> 1,052	14,515

See footnotes at end of table.



**Table 25. Shipments of Copper Insulated Wire and Cable: 1998 and 1997—Con.**

[Copper content in thousands of pounds. Value in thousands of dollars]

Product code	Product description	Shipments, including interplant transfers <sup>1</sup>					
		1998			1997		
		Number of companies	Copper content <sup>2</sup>	Value	Number of companies	Copper content <sup>2</sup>	Value
33141E	Apparatus wire and cordage <sup>3</sup> —Con.						
331491E130	Apparatus wire: Appliance fixture wire . . . . .	20	32,998	96,318	19	32,815	102,036
	Appliance wiring material 14 gauge and larger, including motor lead and transformer lead wire:						
331491E140	Thermoset insulated . . . . .	4	(D)	(D)	4	(D)	(D)
331491E150	Thermoplastics insulated . . . . .	9	31,057	64,354	9	34,477	78,086
331491E160	Submersible pump cable . . . . .	7	(D)	(D)	7	(D)	(D)
331491E170	Other apparatus wire and cordage, including tool wire . . . . .	16	25,085	84,215	16	21,577	78,536
335929E	Other insulated wire and cable . . . . .	40	141,622	400,130	42	146,617	543,192
	Automotive:						
335929E110	Bulk automotive primary wire . . . . .	11	91,120	196,008	11	94,765	207,336
335929E120	Bulk battery cable . . . . .	7	15,367	33,553	7	14,582	36,002
335929E130	Bulk ignition wire . . . . .	6	(D)	(D)	7	(D)	(D)
335929E140	Other automotive wire and cable . . . . .	7	10,304	62,102	6	9,628	60,842
	Airframe, shipboard and ground support cable, excluding coaxial cable and ignition cable:						
335929E150	Airframe and missile, including ground support cable . . . . .	10	(D)	(D)	11	(D)	(D)
335929E160	Shipboard cable . . . . .	5	(D)	(D)	5	(D)	(D)
335929E170	Other insulated or covered wire and cable, n.e.c. . . . .	20	15,582	99,296	21	18,471	106,154

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. pt. Part. <sup>r</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Interplant transfers for 1998 totaled \$48,390 and for 1997 totaled \$45,119.

<sup>2</sup>Aluminum content for 1998 totaled 427,747 thousand pounds and for 1997 totaled 416,239 thousand pounds. See Table 26 for additional details.

<sup>3</sup>Data include the following: (a) all known establishments which insulate wire and cable and then fabricate it into finished products, NAICS product class 33141E and (b) establishments from NAICS product class 334290, that manufacture wire, cord, and flexible cord sets from purchased insulated wire.

Note: Data presented in this table are for copper content insulated wire and cable. See Table 26 for aluminum content information. Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated.

**Table 26. Aluminum Shipments of Selected Insulated Wire and Cable: 1998 and 1997**

[Quantity in thousands of pounds]

Product code	Product description	1998		1997	
		Number of companies	Gross weight	Number of companies	Gross weight
335929 pt.	Insulated wire (except magnet wire) .....	(NA)	696,776	(NA)	679,445
335929A	Electronic wire and cable .....	5	72,472	5	78,783
3359291	Power wire and cable .....	11	279,498	9	<sup>1</sup> 274,485
3359291830	Underground distribution cable, all insulations—600 volts or less .....	6	156,213	5	152,037
33592918A0	Service drop cable, thermoset insulated .....	3	35,705	3	34,826
33592918B0	Service drop cable, thermoplastics insulated .....	2	(D)	2	(D)
33592918C0	Underground distribution cable, all insulations—over 600 volts .....	8	44,886	7	<sup>1</sup> 42,279
33592918F0	Thermoset insulated power cable, unarmored, rubber—over 600 volts to 15 kV .....	4	(D)	6	(D)
33592918G0	Thermoset insulated power cable, unarmored, cross-linked—over 600 volts to 15 kV .....	3	(D)	3	(D)
335929D1	Building wire and cable .....	7	75,698	6	62,940
335929D120	Thermoset insulated, cross-linked polyethylene (USE) ..	4	(D)	4	(D)
335929E1	Other insulated wire and cable .....	2	(D)	2	(D)

D Withheld to avoid disclosing data for individual companies. NA Not available. pt. Part. <sup>1</sup>Revised by 5 percent or more from previously published data.

**Table 27. Copper Shipments of Magnet Wire, Including Interplant Transfers: 1998 and 1997**

[Copper gross weight in thousands of pounds. Value in thousands of dollars]

Product code	Product description	Shipments, including interplant transfers <sup>1</sup>					
		1998			1997		
		Number of companies	Gross weight <sup>1</sup>	Value	Number of companies	Gross weight <sup>1</sup>	Value
331491G	Magnet wire .....	(NA)	742,182	1,064,507	(NA)	733,753	<sup>1</sup> 1,149,415
	Class 105 and below:						
331491G110	7 AWG and larger round, including all square and rectangle, film coated .....	5	8,553	12,234	6	7,180	11,081
331491G120	8 to 21 AWG, film coated .....	6	31,367	34,548	5	32,089	37,939
331491G130	22 to 32 AWG, film coated .....	7	3,270	4,481	6	9,105	13,502
331491G140	33 to 44 AWG, film coated .....	7	(D)	(D)	6	(D)	(D)
	Classes 130 and 155:						
331491G150	7 AWG and larger round, including all square and rectangle) .....	1	(D)	(D)	1	(D)	(D)
331491G160	8 to 21 AWG, film coated .....	13	30,308	39,243	11	<sup>1</sup> 31,250	45,065
331491G170	22 to 32 AWG, film coated .....	17	83,530	132,789	14	<sup>1</sup> 95,471	155,298
331491G180	33 to 44 AWG, film coated .....	14	23,848	75,597	12	22,356	72,186
	Class 180 and higher:						
331491G190	7 AWG and larger round (also all square and rectangle) .....	7	38,856	62,412	7	38,951	72,001
331491G1A0	8 to 21 AWG, film coated .....	14	305,632	359,696	11	292,226	389,303
331491G1B0	22 to 32 AWG, film coated .....	13	137,758	198,260	10	125,994	207,357
331491G1C0	33 to 44 AWG, film coated .....	11	(D)	(D)	9	(D)	(D)
331491G110	Miscellaneous film coated, n.e.c. ....	1	(D)	(D)	1	(D)	(D)
	Nonfilm coated (fibrous):						
331491G1D0	Class 130 and below .....	3	(D)	(D)	3	(D)	(D)
331491G1F0	Class 155 and above .....	6	11,406	24,716	6	11,387	25,609
	Nonfilm coated (tape):						
331491G1E0	Class 130 and below .....	5	13,343	18,261	5	13,746	20,258
331491G1G0	Class 155 and above .....	6	3,916	8,698	6	3,664	10,030
331491G1H0	Miscellaneous nonfilm coated, n.e.c. ....	1	(D)	(D)	2	(D)	(D)

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Interplant transfers for 1998 totaled 26,930 thousand pounds and 1997 totaled 40,548 thousand pounds of copper.

**Table 28. Aluminum Shipments of Magnet Wire, Including Interplant Transfers: 1998 and 1997**

[Aluminum gross weight in thousands of pounds. Value in thousands of dollars]

Product code	Product description	Shipments, including interplant transfers <sup>1</sup>					
		1998			1997		
		Number of companies	Gross weight	Value	Number of companies	Gross weight	Value
3331491G	Magnet wire .....	14	70,266	124,040	10	69,280	128,565
	Class 105 and below:						
331491G110	7 AWG and larger round, including all square and rectangle, film coated .....	4	(D)	(D)	3	(D)	(D)
331491G120	8 to 21 AWG, film coated .....	6	15,031	27,866	5	14,751	28,150
331491G130	22 to 32 AWG, film coated .....	3	(D)	(D)	3	(D)	(D)
331491G140	33 to 44 AWG, film coated .....	1	(D)	(D)	1	(D)	(D)
	Class 130 to 155:						
331491G150	7 AWG and larger round, including all square and rectangle, film coated .....	1	(D)	(D)	1	(D)	(D)
331491G160	8 to 21 AWG, film coated .....	5	6,231	8,780	5	5,722	7,741
331491G170	22 to 32 AWG, film coated .....	6	2,479	5,833	6	2,711	6,523
331491G180	33 to 44 AWG, film coated .....	4	(D)	(D)	4	(D)	(D)
	Class 180 and above:						
331491G190	7 AWG and larger round, including all square and rectangle, film coated .....	5	2,876	4,462	5	2,747	4,425
331491G1A0	8 to 21 AWG, film coated .....	9	27,217	49,272	7	25,764	49,992
331491G1B0	22 to 32 AWG, film coated .....	6	5,048	14,182	5	5,042	15,181
331491G1C0	33 to 44 AWG, film coated .....	3	(D)	(D)	2	(D)	(D)
331491G1I0	Miscellaneous film coated, n.e.c. ....	1	(D)	(D)	1	(D)	(D)
	Nonfilm coated (fibrous):						
331491G1D0	Class 130 and below .....	-	-	-	-	-	-
331491G1F0	Class 155 and above .....	1	(D)	(D)	1	(D)	(D)
	Nonfilm coated (tape):						
331491G1E0	Class 130 and below .....	3	(D)	(D)	3	(D)	(D)
331491G1G0	Class 155 and above .....	4	2,624	4,866	4	2,698	5,333
331491G1H0	Miscellaneous nonfilm coated, n.e.c. ....	-	-	-	-	-	-

- Represents zero. D Withheld to avoid disclosing individual companies. n.e.c. Not elsewhere classified. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Interplant transfers for 1998 totaled 6,282 thousand pounds of aluminum and 1997 totaled 6,143 thousand pounds of aluminum.

**Table 29. Value of Shipments of Fiber Optic Cable and Optical Fiber: 1998 and 1997**

[Thousands of dollars]

Product code	Product description	1998		1997	
		Number of companies	Value	Number of companies	Value
33592101	Insulated optical fiber cable .....	37	1,849,026	38	1,852,803
33592101 pt.	Communication applications .....	25	1,817,767	26	1,815,635
	Single-mode stepped-index:				
3359210125	Dispersion shifted .....	11	(D)	9	(D)
3359210128	Dispersion unshifted .....	14	1,146,193	15	1,174,250
3359210131	Multimode stepped index .....	5	(D)	6	(D)
3359210134	Multimode graded index .....	19	195,907	19	200,925
3359210434	Other applications .....	15	31,259	16	37,168
	Optical fiber for data and nondata transmission .....	25	1,135,168	26	1,209,672
327215A235	Optical fiber used for data transmission .....	16	1,087,030	17	1,162,257
327215A238	Optical fiber used for nondata transmission .....	14	48,138	14	47,415

D Withheld to avoid disclosing data for individual companies. pt. Part.

**HISTORICAL NOTE**

Data on insulated wire have been collected by the Census Bureau since 1965. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are

also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Keith McKenzie, 301-457-4777.

# Chapter 7. Electronics

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## COMPUTERS AND OFFICE AND ACCOUNTING MACHINES—MA334R (FORMERLY MA35R)

### INTRODUCTION

These data cover manufacturers of computers and office and accounting machines, except very small firms (generally less than 10 employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies. The statistics were collected by mail on Census Bureau annual Form MA334R, Computers and Office and Accounting Machines. The survey panel includes all known producers of these products, except the very small firms excluded from the scope of the survey. Approximately 818 companies are included. No estimate is derived for the small firms excluded from the scope of the survey.

### SUMMARY OF FINDINGS

In 1998, manufacturers' shipments of computers were valued at \$57.3 billion, an increase from the 1997 total of \$50.2 billion. Shipments of computers increased from 20.9 million in 1997 to 24.0 million in 1998. Personal computers were valued at \$25.3 billion in 1998, compared to \$25.4 billion in 1997. Workstations were valued at \$9.8 billion in 1998, compared to \$5.4 billion in 1997. Notebooks were valued at \$5.7 billion in 1998 compared to \$4.7 billion in 1997. Loaded processor boards and subassemblies were valued at \$25.5 billion, compared to \$27.0 billion in 1997. Computer storage devices were valued at \$7.2 billion in 1998, compared to \$8.8 billion in 1997. Magnetic and optical recording media were valued at \$4.9 billion in 1998, compared to \$5.7 billion in 1997.

### EXPLANATION OF TERMS

**Computers.** These automatic data processing units are capable of: (1) performing arithmetic computations, (2) processing data in accordance with a processing program, (3) immediately storing the processing program and the data necessary for execution of the processing program, and (4) executing a processing program without human intervention, on the basis of instructions contained in the program, to automatically modify execution by logical decision during the performance of processing tasks.

**General-purpose computers.** A computer designed to solve a large variety of problems; e.g., a stored program computer that may be adapted to any of a very large class of applications.

**Digital computers.** A computer that processes information represented by combinations of discrete or discontinuous data, compared with an analog computer for continuous data. More specifically, it is a device for performing sequences or arithmetic and logical operations. Still more specifically, it is a stored program digital computer capable of performing sequences of internally stored instructions, as opposed to calculators, on which a sequence is impressed manually.

**Analog computers.** A computer that represents variables by physical analogies. Thus, any computer that solves problems by translating physical conditions such as flow, temperature, pressure, angular position, or voltage into related mechanical or electrical equivalent circuits as an analog for the physical phenomenon being investigated. In general, it is a computer that uses an analog for each variable and produces analogs as output. Thus, an analog computer measures continuously; whereas, a digital computer counts discretely.

**Hybrid computers.** A computer designed with both digital and analog characteristics, combining the advantages of analog as well as digital computers, when working as a system. Hybrid computers are used extensively in simulation process control systems where it is necessary to have a close representation with the physical world. The hybrid system provides better precision than can be attained with analog computers and greater speed than is possible with digital computers, plus the ability to accept input data in either form.

**Special-purpose computers.** A special-purpose computer is a general-purpose computer programmed and/or configured to operate upon a restricted class of problems.

**Peripheral equipment for computers.** In a data processing system, any equipment, distinct from the processing unit, that may provide the system with outside communication or additional facilities. Includes input/output typewriters and displays sold as part of a large office system. Included are:

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*Input/output equipment.* Terminals include those units that, in addition to their capabilities of displaying data or accepting data input, are capable of performing other functions such as stamping approvals for bank account withdrawals, time stamping, and issuing receipts. A unit is included if it meets all of the following conditions:

1. It is connectable to the processing unit either directly or through one or more other units;
2. It is specifically designed as part of such a system. (It must in particular, unless it is a power supply unit, be able to accept or deliver data in a form (code or signals) that can be used by the system.)

*Computer storage devices.* Storage in addition to the main storage of a computer; e.g., magnetic tapes, disks, or magnetic drums. Auxiliary storage usually holds much larger amounts of information than the main storage, and the information is accessible less rapidly. Computer terminals. A point at which information can enter or leave a computer communication network. An input/output device to send or receive data in an environment associated with the job to be performed, capable of transmitting entries to and obtaining output from the computer system of which it is a part.

*Cash registers.* Stand-alone electronic devices, including adding device with cash drawer and excluding terminals that have interactive communication capabilities. Firmware based, fixed or parameterized function devices developed primarily for cash control, with limited transaction or merchandise information as a byproduct.

*Fund transfer devices.* Devices facilitating the handling of various financial transactions involving the consumer and financial institutions. Typically, these devices provide services such as account status inquiries, transfers of funds to and from various accounts, withdrawals, deposits, and payments.

*Point-of-sale devices.* Devices facilitating the handling of various retail transactions involving the sale, exchange, or return of merchandise or service.

**Accounting machines.** A keyboard actuated machine that prepares accounting records. A machine that may read data from external storage media such as cards or tapes, and automatically produces accounting records or tabulations, usually on continuous forms.

**Calculating machines.** Devices requiring manual means for entering numerical data for performance of arithmetic operations. These machines, by nature, require frequent operator intervention. A calculator uses separate, fixed storage areas for its programs and for the storage of data. These machines cannot execute programs that modify themselves during their execution. There are two major classifications of these machines: printing calculating

machines print one or more of the significant elements of computation; nonprinting calculating machines display one or more of the significant elements of computations. Includes both three- and four-operation printing calculators. Three-operation printing calculators are those incorporating short-cut multiplication and/or fully "automatic multiplication" and division.

**Duplicating machines.** A machine in which an ink image on a master is transferred onto a copy paper.

**Postage franking machines.** Machines that print a design in place of the postage stamp. The machine has a non-reversible totalling device that adds up the total value of the postage printed. In addition, the machine can often be used for other printing on the envelope; e.g., advertising slogans.

**Dictating, transcribing, and recording machines and systems.** Machines that are designed as office machines for conference recording, combination dictating, and telephone recording used to produce a written record, but excluding home-type wire and tape recorders. A single recording unit with a number of dictating stations should be counted as one unit or system. A system consists of a recorder and a transcribing unit with more than one dictating station.

**Standard typewriters.** Machines, electric or nonelectric, designed solely for preparation of documents with letter printlike characters and symbols that are operated manually by consecutive depressing of keyboard keys. A typewriter contains a four-row keyboard, including alpha and numeric as well as special symbols. It may or may not include special attachments to be used in the preparation of addresses or other stencils, braille typing for the blind, and similar materials. In addition, it may or may not include special carriages, pin-feed platens, and other devices used to increase the speed of the typing on continuous forms. Machines that include accounting registers are excluded.

**Bar code.** An array of rectangular bars and spaces arranged in a predetermined pattern, following unambiguous rules in a specific way, to represent elements of data that are referred to as characters.

**Code reader or scanner.** A device that examines a spatial pattern, one part after another, and generates analog or digital signals corresponding to the pattern. The major components of a bar code scanner are an illumination source, a photodetector device, and a microcomputer. A focused light beam is moved across the symbol (bar code), the reflected light is received by the photodetector, which in turn generates a voltage (analog signal) that is proportional to the amount of light reflected by the signal. The signal from the photodetector is conditioned by pre-processor circuitry before being presented to the microcomputer for analysis.

**Decoder.** An electronic package that receives the signals from the scanner, and then performs the algorithm to interpret the signals into meaningful data and provides the interface to other devices.

**Optical character recognition (OCR).** Relies on a sensor to differentiate between light-reflecting background and printed data that do not reflect light. Output from the sensor is fed to a set of recognition logics, and then forwarded to the computer.

**Magnetic strip.** Records, or encodes, information onto a material, using low or high energy electromagnetic charges. These charges or signals can then be read by a decoder that translates them into numbers and characters for identification by a computer.

**Radio frequency.** A system based on the ability of an identification tag (transponder) to receive radio frequency signals and output a code to a reader.

**Voice recognition.** A computer recognizes words in a preprogrammed vocabulary. The operator speaks the words into a microphone, and the word or phrase is recognized by the machine and converted into electronic impulses for the micro or host computer.

**Machine vision.** Devices used for optical noncontact sensing to receive and interpret automatically an image of a real scene, to obtain information, and/or to control machines or processes.

**Image processor.** Selects and interprets data to determine an object's position, location, shape, and size.

**Table 1. Value of Shipments of Computers and Office and Accounting Machines: 1991 to 1998**

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992	1991
3341110000	Electronic computer manufacturing <sup>1</sup> . . . . .	57,347.2	50,249.9	50,681.5	49,038.1	38,260.7	29,659.1	28,571.2	26,274.1
3341111000	Host computers (multiusers) . . . . .	14,860.3	<sup>1</sup> 12,240.0	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
3541117000	Single user computers . . . . .	41,729.4	<sup>1</sup> 36,987.5	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
334111D021	Other computers, including array, analog, hybrid, or special computers not listed above . . . . .	757.6	<sup>1</sup> 1,022.4	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
334418A000	Loaded computer processor boards and board subassemblies <sup>2</sup> . . . . .	25,455.7	<sup>1</sup> 27,040.2	24,937.3	24,447.7	17,514.8	15,087.1	13,745.8	12,590.4
3341121000	Computer storage devices and equipment . . . . .	7,247.5	8,837.4	8,909.2	7,903.0	5,555.6	5,730.7	6,282.4	5,609.7
3341124001	Parts for computer storage devices and subassemblies . . . . .	2,222.3	<sup>1</sup> 2,382.3	1,719.9	2,235.6	1,951.9	1,496.4	1,357.1	780.4
3341131000	Computer terminals . . . . .	529.4	781.4	1,103.9	1,086.0	1,243.5	1,531.3	1,707.9	1,729.5
3341134001	Parts for computer terminals . . . . .	(D)	(D)	199.2	(D)	(D)	275.9	192.1	417.0
3341191000	Computer peripheral equipment, n.e.c. . . . .	11,449.7	13,555.2	11,462.8	12,331.0	11,943.6	9,810.2	8,505.6	7,763.6
3341194001	Parts for input/output equipment . . . . .	2,631.4	2,627.9	5,504.8	2,391.0	2,498.7	2,554.3	3,053.2	4,186.9
3341197	Calculating and accounting machines . . . . .	1,060.4	1,621.9	1,485.0	1,278.9	1,261.5	1,454.2	967.5	973.5
3333136000	Parts for calculating, coin, or currency handling, and accounting machines . . . . .	126.5	127.5	82.9	106.1	86.7	77.7	73.4	97.4
3333131000	Automatic typing and word processing machines . . . . .	(D)	(D)	(D)	(D)	(D)	342.9	465.2	417.1
3333137000	Duplicating machines . . . . .	(D)	(D)	59.9	(D)	68.4	(D)	(D)	(D)
333313A000	Mailing, letter-handling, and addressing machines . . . . .	987.2	1,397.9	1,230.6	1,280.1	967.5	1,267.8	1,152.4	1,124.8
333313D000	Check handling, electric stapling and dictating machines, typewriters, and all other office machines, n.e.c. . . . .	646.0	609.8	579.7	577.7	664.0	(D)	(D)	517.6
333313J000	Parts for office machines, n.e.c. . . . .	336.2	439.4	454.4	440.3	359.6	344.7	263.3	199.2
3346130000	Magnetic and optical recording media . . . . .	4,868.6	<sup>1</sup> 5,739.1	5,739.1	5,106.2	4,777.1	4,483.3	4,336.8	3,894.4

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>In 1997, computer industry data were revised. Previous years are not comparable.

<sup>2</sup>These data are collected on two Current Industrial Report forms, MA334R, *Computer and Office and Accounting Machines*, and MA334Q, *Semiconductors, Printed Circuit Boards, and Other Electronic Components*.

**Table 2. Quantity and Value of Shipments of Computers and Office and Accounting Machines: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3341111	Electronic computers manufacturing .....	141	24,005,974	57,347,226	20,911,518	50,249,861
	Host computers (multiusers):					
3341111001	Large scale systems, including mainframes and super computers .....	14	752,517	5,216,509	'297,237	'5,459,764
3341111003	Medium-scale systems and unix servers .....	34	656,924	6,807,970	'856,181	'5,281,330
3341111005	Personal computer servers <sup>1</sup> .....	20	(D)	(D)	'235,910	'1,206,512
3341111006	Other host computers <sup>1</sup> .....	6	(D)	(D)	33,077	292,427
	Single users computers:					
3341117007	Personal computers .....	45	16,480,780	25,267,321	'15,232,652	'25,366,629
3341117009	Workstations .....	32	717,179	9,794,459	'484,620	'5,387,770
3341117011	Laptops (AC/DC) .....	13	307,954	647,926	502,944	1,256,546
3341117013	Notebooks, subnotebooks (battery operated) .....	13	2,422,268	5,696,204	1,887,441	4,697,793
3341117015	Personal digital assistants <sup>2</sup> .....	3	69,374	47,546	(D)	(D)
3341117017	Other portable computers <sup>2</sup> .....	6	223,378	162,776	(D)	(D)
3341117019	Other single user computers .....	5	205,916	113,167	176,859	112,022
334111D021	Other computers, including array, analog, hybrid or special-purpose computers not included above .....	39	1,715,991	757,571	1,009,085	'1,022,373
34418A	Printed circuit assemblies (loaded boards, subassemblies, and modules) <sup>3</sup> .....	792	(X)	25,455,728	(X)	27,040,174
	Loaded computer processor boards and board subassemblies:					
344418A001	Computer and peripheral printed board assemblies .....	324	(X)	12,209,910	(X)	'12,455,073
344418A003	Communications printed board assemblies .....	246	(X)	5,233,837	(X)	'4,625,398
344418A005	Industrial process control board assemblies .....	220	(X)	787,762	(X)	'615,545
344418A007	Instrumentation printed board assemblies (except industrial) .....	193	(X)	1,447,171	(X)	3,419,520
344418A009	Search and detection printed board assemblies .....	47	(X)	54,488	(X)	'45,172
344418A011	Consumer electronics printed board assemblies .....	135	(X)	466,588	(X)	520,360
344418A013	Other electronics, printed board assemblies including office equipment and point of sales .....	320	(X)	5,255,972	(X)	'5,359,106
3341121	Computer storage devices and equipment .....	90	(X)	7,247,524	(X)	8,837,380
	Rigid magnetic disk drives:					
3341121001	Less than 2-1/2 inches <sup>4</sup> .....	1	(D)	(D)	(D)	(D)
3341121003	2-1/2 inches up to but not including 3-1/2 inches <sup>4</sup> .....	4	(D)	(D)	(D)	(D)
3341121005	3-1/2 inches up to but not including 5-1/4 inches .....	23	1,045,024	1,992,830	1,293,513	'1,781,878
3341121007	5-1/4 inches and greater <sup>4</sup> .....	6	(D)	(D)	(D)	(D)
3341121009	Disk subsystems and disk arrays for multiuser computer systems .....	25	169,479	732,194	323,002	'1,197,901
3341121011	Flexible magnetic disk drives .....	7	(D)	(D)	(D)	(D)
	Optical disk drives, including CD-ROM and magneto-optical equipment:					
	CD-ROM:					
3341121013	"Juke-box" capable of handling multiple disks <sup>5</sup> .....	8	152,332	42,436	(D)	(D)
3341121015	Single-disk equipment <sup>5</sup> .....	7	9,056	11,248	(D)	(D)
3341121017	WORM (write once, read many times) <sup>6</sup> .....	4	(D)	(D)	(D)	(D)
3341121019	Rewritable <sup>6</sup> .....	7	(D)	(D)	(D)	(D)
3341121021	Optical subsystems for multiuser computer systems .....	7	13,987	219,439	15,755	220,431
	Auxiliary storage, not disk or tape-based, for multiuser computer systems:					
3341121023	Encased or enclosed in a housing, enclosure, or cabinet <sup>7</sup> .....	11	(D)	(D)	(D)	(D)
3341121025	Other <sup>7</sup> .....	4	(D)	(D)	(D)	(D)
3341121027	Other direct-access storage equipment .....	12	133,851	177,173	'95,082	177,931
	Serial-access storage equipment (e.g., tape drives):					
3341121029	1/2-inch tape drives .....	11	463,088	1,530,676	461,481	1,515,458
3341121031	1/4-inch tape drives .....	12	525,158	104,697	1,555,833	269,198
3341121033	Helical scan tape drives .....	11	207,488	386,985	232,894	396,441
3341121035	Cassette tape drives .....	5	(D)	(D)	(D)	(D)
3341121037	Other serial-access storage equipment .....	9	1,120,048	460,975	(D)	(D)
3341124001	Computer storage parts and subassemblies .....	18	(X)	2,222,292	(X)	2,382,338

See footnotes at end of table.

**Table 2. Quantity and Value of Shipments of Computers and Office and Accounting Machines: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334113	Computer terminals .....	47	(X)	529,422	(X)	781,419
3341131001	Remote batch terminals .....	6	<sup>a</sup> 27,981	38,730	<sup>a</sup> 21,619	30,514
3341131003	Teleprinters .....	7	19,982	<sup>a</sup> 30,567	34,620	<sup>a</sup> 60,565
	Display terminals, including graphics type, whether or not incorporating a printing mechanism:					
3341131005	X-terminals .....	10	292,876	174,927	269,399	240,931
	Other than X-terminals:					
3341131007	13-inch or less display .....	7	46,983	28,124	50,080	80,550
3341131009	More than 13-inch but less than 19-inch display .....	18	<sup>a</sup> 406,098	<sup>a</sup> 228,960	<sup>a</sup> 656,329	<sup>a</sup> 335,426
3341131011	19-inch or more display .....	8	<sup>b</sup> 6,616	<sup>b</sup> 28,114	<sup>b</sup> 9,237	<sup>b</sup> 33,433
3341134001	Computer terminal parts and subassemblies .....	9	(X)	(D)	(X)	(D)
334119	Computer peripheral equipment, n.e.c. ....	253	(X)	11,449,673	(X)	13,555,223
	Keying equipment:					
3341191001	Keyboards .....	25	15,330,926	750,787	<sup>a</sup> 14,254,027	<sup>a</sup> 612,778
3341191003	Other keying equipment .....	3	(D)	(D)	(D)	(D)
3341191005	Mouse devices .....	11	493,397	9,467	1,138,707	18,023
3341191007	Digitizers and light pen tablets .....	8	99,419	45,015	551,647	123,967
3341191009	Other manual input devices (joysticks, trackballs, touchscreens, etc.) .....	11	<sup>b</sup> 345,537	<sup>a</sup> 33,983	<sup>a</sup> 541,268	48,876
3341191011	Computer output to microfilm (COM) equipment .....	5	1,098	70,081	(D)	(D)
3341191013	Media copying and/or conversion equipment .....	9	<sup>a</sup> 11,395	56,133	14,522	59,390
	Optical scanning devices:					
3341191015	Bar code devices .....	27	3,265,489	<sup>a</sup> 873,056	2,510,694	<sup>a</sup> 909,943
3341191017	OCR equipment .....	11	35,091	210,022	31,515	243,408
	Other than bar code or OCR devices:					
3341191019	Flat bed scanners .....	4	(D)	(D)	(D)	(D)
3341191021	Hand-held scanners .....	4	59,817	69,760	46,476	52,968
3341191023	Other .....	17	117,909	171,466	379,123	170,837
3341191025	Voice recognition equipment .....	6	54,053	32,346	52,713	33,856
3341191027	Magnetic strip and ink recognition equipment .....	10	<sup>b</sup> 305,837	<sup>a</sup> 213,616	(D)	(D)
3341191029	Other document entry equipment .....	2	(D)	(D)	(D)	(D)
	Computer printers:					
	Impact printers:					
3341191031	Line type (typically with a Centronics interface with output measured in lines per minute) .....	13	217,926	290,719	255,680	303,334
3341191033	Serial type (typically with a serial and/or parallel interface with output measured in characters per second) .....	27	<sup>a</sup> 297,043	<sup>b</sup> 174,823	573,259	<sup>b</sup> 231,229
	Nonimpact printers:					
3341191035	Laser .....	35	2,504,046	2,383,747	2,427,255	2,547,687
3341191037	Inkjet .....	15	8,861,789	1,223,452	7,486,107	1,511,483
3341191039	Other (thermal, ion deposition, etc.) .....	23	<sup>a</sup> 200,748	312,250	1,292,218	507,260
3341191041	Peripheral sharing devices .....	12	<sup>a</sup> 297,300	<sup>a</sup> 98,629	<sup>a</sup> 191,190	<sup>b</sup> 74,842
3341191043	Font cartridges .....	3	10,798,199	95,725	(D)	(D)
3341191045	Plotters, including electrostatic .....	13	<sup>b</sup> 22,498	<sup>b</sup> 127,892	<sup>b</sup> 37,740	<sup>b</sup> 217,440
	Monitors, excluding terminals:					
3341191047	Flat panel displays .....	7	325,564	77,766	(D)	(D)
	Other than flat panel displays (e.g., CRT):					
3341191049	Less than 19-inch display .....	21	(D)	(D)	(D)	(D)
3341191051	19-inch or more display .....	9	281,863	237,831	232,940	181,241
3341191053	Monitor screen projection devices (e.g., LCD panels) .....	8	(D)	(D)	(D)	(D)
3341191055	All other input/output devices .....	58	(X)	1,631,020	(X)	1,264,627
3341191057	Accessories for computer peripherals (e.g., device supports and ergonomic aids) .....	35	(X)	1,155,342	(X)	2,380,048
3341194001	Parts and subassemblies for computer peripherals and input/output equipment .....	73	(X)	2,631,443	(X)	2,627,863
3341197	Calculating and accounting machines .....	43	(X)	1,060,422	(X)	1,621,866
3341197003	Funds transfer devices <sup>a</sup> .....	7	(D)	(D)	(D)	(D)
3341197007	Point-of-sale terminals <sup>a</sup> .....	24	(D)	(D)	(D)	(D)
3333134015	Machines for sorting, wrapping, counting, changing, or dispensing coins and/or currency .....	10	555,090	<sup>b</sup> 244,695	489,935	<sup>b</sup> 237,068
3333134025	Other coin or currency handling machines, including cash registers, calculators, accounting, bookkeeping and billing machines, and credit card imprinters .....	12	(X)	<sup>b</sup> 75,083	(X)	<sup>b</sup> 83,123

See footnotes at end of table.



**Table 2. Quantity and Value of Shipments of Computers and Office and Accounting Machines: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3333136000	Parts for calculating, coin or currency handling, and accounting machines. . . . .	11	(X)	126,456	(X)	127,535
3333131000	Automatic typing and word processing machines (all types) . . .	2	(D)	(D)	(D)	(D)
3333137000	Duplicating machines . . . . .	5	(D)	(D)	(D)	(D)
333313A	Mailing, letter handling, and addressing machines . . . . .	31	(X)	987,209	(X)	1,397,911
333313A001	Forms handling equipment, including bursters, decollators, and imprinters . . . . .	8		525,647	396,022	46,220
333313A003	Mailing machines, including postage franking machines <sup>9</sup> . . .	6	(D)	(D)	(D)	(D)
333313A005	Letter and envelope handling machines . . . . .	11		16,483	19,623	307,577
333313A007	Other mailing, letter handling, and addressing machines <sup>9</sup> . . .	9	(D)	(D)	(D)	(D)
333313D	All other office machines, n.e.c. . . . .	44	(X)	645,978	(X)	609,761
333313D001	Check handling machines . . . . .	8		<sup>b</sup> 17,206	24,725	56,998
333313D003	Electric stapling machines, office type . . . . .	4		459,568	385,414	12,493
3345183131	Time recording and time stamp machines . . . . .	10		330,675	326,246	115,015
333313D005	Paper cutting machines and apparatus, office type . . . . .	4		772,601	589,755	19,415
333313D007	Paper shredders . . . . .	2	(D)	(D)	(D)	(D)
333313D008	Perforating or stapling machines, nonelectric . . . . .	5	(D)	(D)	(D)	(D)
333313D009	All other office machines, n.e.c., including pencil sharpeners, typewriters, dictating machines, binding machines, ticket counting machines, and voting machines . . . . .	23	(X)	358,652	(X)	333,441
333313J000	Parts for office machines, n.e.c. . . . .	29	(X)	336,222	(X)	439,384
334613	Magnetic and optical recording media . . . . .	69	(X)	4,868,561	(X)	5,739,079
	Rigid disks:					
3346130111	Less than 2-1/2 inches <sup>10</sup> . . . . .	1	(D)	(D)	(D)	(D)
3346130113	2-1/2 inches up to but not including 3-1/2 inches <sup>10</sup> . . . . .	6	(D)	(D)	(D)	(D)
3346130211	3-1/2 inches up to but not including 5-1/4 inches . . . . .	10		34,594,640	27,578,759	1,254,852
3346130213	5-1/4 inches and greater <sup>10</sup> . . . . .	4	(D)	(D)	(D)	(D)
	Flexible disks:					
3346130611	3-1/2 inches up to but not including 5-1/4 inches . . . . .	15		1,439,279	2,762,167	721,674
3346130613	5-1/4 inches and greater . . . . .	7		<sup>b</sup> 29,966	<sup>a</sup> 11,791	<sup>b</sup> 17,893
3346130615	Optical disks . . . . .	14		329,003	250,883	566,384
3346130501	Bulk magnetic tape . . . . .	6		639,243	133,925	29,399
	Packaged magnetic tape:					
3346130411	In reels for computer use . . . . .	5	(D)	(D)	(D)	(D)
3346130413	In cassette and cartridge for computer use . . . . .	16		485,674	478,540	923,777
3346130415	In forms suitable for audio use . . . . .	10		560,891	483,970	332,702
3346130417	In video cassette, 8-mm and 1/2-inch . . . . .	15		609,145	755,300	868,228
3346130419	In video cassette, 3/4 (19-mm) and 2-inch (51-mm) . . . . .	3		11,784	36,911	18,234
3346130421	Other package magnetic tape . . . . .	3		84,497	203,767	199,452
3346130617	Other magnetic recording media, including parts . . . . .	17	(X)	<sup>b</sup> 80,676	(X)	<sup>b</sup> 215,992
4216900000	Nonmanufacturing revenue of manufacturing establishments: Supplies and accessories for use with computers or business machines (resales) . . . . .	48	(X)	1,597,866	(X)	1,463,167
9999980000	Research and development, testing, and evaluation of systems and components . . . . .	14	(X)	138,745	(X)	96,435
	Software sold with computer systems shipped by manufacturers:					
3346110001	Operating system software . . . . .	12	(X)	65,305	(X)	94,358
3346110002	Utilities and device managers . . . . .	10	(X)	1,443	(X)	2,696
3346110003	Application software . . . . .	36	(X)	392,543	(X)	366,698

See footnotes at end of table.

**Table 2. Quantity and Value of Shipments of Computers and Office and Accounting Machines: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
	Nonmanufacturing revenue of manufacturing establishments—Con.					
3346110004	Software sold with computer systems shipped by manufactures—Con.	9	(X)	55,981	(X)	66,031
5415120000	Other software . . . . .					
	Systems integration revenues, including configuration, installation and site preparation, and custom programming. . . . .	23	(X)	426,518	(X)	410,396
5415190000	Other nonmanufacturing revenues associated with computer systems . . . . .	67	(X)	1,938,433	(X)	1,779,719

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Product codes 3341111005 and 3341111006 have a combined total of 453,693 for quantity and 2,835,777 for shipments for 1998.

<sup>2</sup>Product codes 3341117015 and 3341117017 have a combined total of 195,512 for quantity and 166,695 for shipments for 1997.

<sup>3</sup>These data are collected on two Current Industrial Report forms: MA334R, "Computer and Office Accounting Machines," and MA334Q, "Semiconductors, Printed Circuit Boards, and Other Electronic Components."

<sup>4</sup>Product codes 3341121001, 3341121003, and 3341121007 have a combined total of 64,264 for quantity and 221,065 for shipments for 1998, and 99,714 for quantity and 363,574 for shipments for 1997.

<sup>5</sup>Product codes 3341121013 and 3341121015 have a combined total of 1,881,032 for quantity and 823,982 for shipments for 1997.

<sup>6</sup>Product codes 3341121017 and 3341121019 have a combined total of 680,569 for quantity and 246,472 for shipments for 1998, and 865,077 for quantity and 331,853 for shipments for 1997.

<sup>7</sup>Product codes 3341121023 and 3341121025 have a combined total of 339,164 for quantity and 361,067 for shipments for 1998, and 575,022 for quantity and 347,584 for shipments for 1997.

<sup>8</sup>Product codes 3341197003 and 3341197007 have a combined total of 234,039 for quantity and 740,644 for shipments for 1998, and 368,825 for quantity and 1,301,675 for shipments for 1997.

<sup>9</sup>Product codes 333313A003 and 333313A007 have a combined total of 488,721 for quantity and 648,198 for shipments for 1998, and 578,680 for quantity and 1,044,114 for shipments for 1997.

<sup>10</sup>Product codes 3346130111, 3346130113, and 3346130213 have a combined total of 124,963 for quantity and 275,900 for shipments for 1998, and 71,705 for quantity and 194,400 for shipments for 1997.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item is estimated. <sup>b</sup>Over 26 percent of this item is estimated.

**Table 3. Shipments, Exports, Imports, and Apparent Consumption of Computing and Accounting Machines: 1998**

[Quantity in thousands of units. Value in millions of dollars]

Product code <sup>1</sup>	Product description	Manufacturers' shipments (f.o.b. plant)		Exports of domestic merchandise <sup>1 2</sup>		Imports for consumption <sup>1 3</sup>	
		Quantity	Value	Quantity	Value at port	Quantity	Value
3341111001, 1003, 1005, 1006, 7007, 7009, 7011, 7013, 7015, 7017, 7019, D021	Computers, digital, analog, hybrid, and other. . . . .	24,006.0	57,347.2	3,982.1	8,384.2	6,385.9	7,344.1
3341121011	Flexible magnetic disk drives. . . . .	(D)	(D)	500.5	86.2	41,802.3	999.1
3341121001, 03, 05, 07, 09	Rigid magnetic disk drives, including disk subsystems and disk arrays. . . . .	1,278.8	2,946.1	3,717.7	1,700.4	73,433.6	13,782.0
3341121013, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37	Computer storage devices and equipment, n.e.c. . . . .	3,728.1	3,590.8	1,781.8	1,609.0	48,910.0	3,597.0
3341191035	Laser computer printers . . . . .	2,504.1	2,383.7	986.2	592.7	3,889.1	1,747.7
3341191037	Inkjet computer printers . . . . .	8,861.8	1,223.4	1,529.5	385.9	15,758.3	1,993.4
3341191031, 33, 39	Computer printers, n.e.c. . . . .	715.7	777.8	870.0	439.0	3,550.7	919.6

See footnotes at end of table.

**Table 3. Shipments, Exports, Imports, and Apparent Consumption of Computing and Accounting Machines: 1998—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product code <sup>1</sup>	Product description	Manufacturers' shipments (f.o.b. plant)		Exports of domestic merchandise <sup>1 2</sup>		Imports for consumption <sup>1 3</sup>	
		Quantity	Value	Quantity	Value at port	Quantity	Value
3341191001	Computer keyboards.....	15,330.9	750.8	1,806.0	98.8	51,432.0	580.4
3341131000	Computer terminals.....	800.5	529.4	74.1	127.1	1,119.2	869.9
3341191049, 51	Monitors CRT-type.....	2,789.6	1,040.7	863.6	370.8	33,157.7	6,989.6
3341191047, 53	Monitors, n.e.c.....	75.6	313.3	340.7	231.1	1,864.3	790.2
3341191015, 17, 19, 21, 23, 25	Optical scanning devices and magnetic strip and ink recognition equipment.....	3,803.8	1,585.4	578.8	358.1	8,716.7	903.5
3341191005, 09	Control devices.....	838.9	43.4	127,446.3	82,271.9	3,232.3	384.6
3341191007	Digitizers and light pens.....	99.4	45.0	199.5	62.5	204.9	11,869.7
3341191003, 11, 13, 25, 29, 41, 43, 45, 55	Computer peripheral equipment, n.e.c.....	11,208.6	2,130.7	1,391.0	495.1	65,141.4	452.2
3333137000	Duplicating machines.....	(D)	(D)	51.1	21.7	30.8	58.1
3341197007	Point-of-sales terminals.....	(D)	(D)	60.8	80.2	1,075.3	256.7
34418A, 3341124001, 94001, 91057	Parts, subassemblies, and accessories for computer peripheral equipment.....	(X)	29,242.5	(X)	17,135.4	(X)	26,827.8
3341197003, 3333134015, 4025	Coin or currency handling machines, n.e.c., including cash registers, accounting, bookkeeping, and billing machines, and credit card imprinters.....	586.9	598.5	1,093.2	235.3	102,899.3	1,177.1
3333131000	Automatic typing and word processing machines (all types)...	(D)	(D)	43.9	17.5	20,355.5	32.9
333313A	Mailing, letter handling, and addressing machines.....	1,030.9	987.2	130.4	124.7	316.9	191.3
3345183131	Time recording and time stamping machines.....	330.7	117.8	101.6	12.2	138.7	6.6
333313D001, 03, 05, 07, 08, 09	Office machines, n.e.c.....	12,432.7	528.2	2,596.8	206.0	61,926.2	834.2
3333136000	Parts for calculating, coin, or currency handling, and accounting machines.....	(X)	126.5	(X)	390.8	(X)	283.9
333313J000	Parts for office machines, n.e.c.....	(X)	336.2	(X)	321.0	(X)	119.8
3346130111, 113, 211, 213, 611, 613, 615	Rigid, flexible, and optical disks.....	36,517.9	2,542.7	205,970.5	1,414.8	1,048,554.9	243.4
3346130411, 13, 15, 17, 19, 21	Bulk and packaged magnetic tape.....	2,394.3	2,245.2	78,630	507.1	786,707.6	1,605,672.8
3346130617	Other magnetic recording media, including parts.....	(X)	80.7	186.4	275.5	1,064.0	797.8

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. X Not applicable.

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

**HISTORICAL NOTE**

Data on computers and office and accounting machines have been collected by the Census Bureau since 1953. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Keith McKenzie, 301-457-4777.

# SWITCHGEAR, SWITCHBOARD APPARATUS, RELAYS, AND INDUSTRIAL CONTROLS—MA335A (FORMERLY MA36A)

## INTRODUCTION

These data cover manufacturers of switchgear, switchboard apparatus, relays, and industrial controls, except very small firms (generally less than 20 employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies.

The statistics were collected by mail on Census Bureau annual Form MA335A, Switchgear, Switchboard Apparatus, Relays, and Industrial Controls. The survey panel includes all known producers of these products, except the very small firms excluded from the scope of the survey. Approximately 720 companies are included. No estimate is derived for the small firms excluded from the survey.

## SUMMARY OF FINDINGS

During 1998, the total value of shipments of switchgear and switchboard apparatus was \$6.8 billion, up 3.4 percent from the 1997 value of \$6.6 billion. The 1998 shipments include power circuit breakers, valued at \$481.1 million, an increase of 4.7 percent from 1997; low voltage

panelboards, valued at \$2.2 billion, an increase of 2.2 percent from 1997; fuses and fuse equipment, valued at \$602.6 million, an increase of 8.1 percent from 1997; molded case circuit breakers, valued at \$1.4 billion, an increase of 5.3 percent from 1997; duct, valued at \$278.1 million, a decrease of 2.1 percent from 1997; and switchgear, valued at \$1.9 billion, an increase of 2.4 percent from 1997. During 1998, the total value of shipments of relays and industrial controls was \$8.9 billion, up 1.9 percent from the 1997 value of \$8.8 billion. The 1998 shipments include general-purpose relays valued at \$795.5 million, a decrease of 4.1 percent from 1997; specific-purpose industrial controls, valued at \$3.7 billion, an increase of 4.1 percent from 1997; general-purpose industrial controls, valued at \$4.4 billion, an increase of 1.3 percent from 1997; and motor controller accessories, valued at \$503.9 million, a decrease of 10.8 percent from 1997.

## EXPLANATION OF TERMS

For explanation of terms, see "Contact for Data Users" at the end of this subsection.

Table 4. **Value of Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1993 to 1998**

[Millions of unadjusted dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993
3353131000	Power circuit breakers .....	481.1	459.5	412.7	442.9	550.9	520.8
3353133000	Low-voltage panelboards .....	2,218.2	2,169.4	2,093.3	2,025.4	1,750.8	1,687.1
3353135000	Fuses and fuse equipment .....	602.6	557.4	522.2	500.1	382.1	319.9
3353137000	Molded case circuit breakers .....	1,368.7	1,299.7	1,218.1	1,173.4	1,132.9	1,009.8
3353139000	Duct, 1,000 volts and under .....	278.1	284.0	254.5	238.5	227.9	200.1
335313A000	Switchgear (except ducts) .....	1,875.3	1,830.5	1,868.2	1,758.3	1,663.7	1,581.3
3353141000	Relays, general-purpose .....	795.5	829.7	786.6	808.1	804.0	750.6
3353143000	Specific-purpose industrial controls .....	3,714.3	3,568.2	3,454.9	3,312.4	2,747.9	2,321.6
3353145000	General-purpose industrial controls .....	4,417.8	4,362.7	4,323.8	4,189.2	3,840.3	3,326.3
3353147000	Motor controller accessories and parts for industrial controls .....	503.9	564.8	516.4	503.3	511.6	476.4

**Table 5. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335313	Switchgear and switchboard apparatus. ....	(NA)	(X)	6,824,012	(X)	6,600,501
3353131	Power circuit breakers and parts, all voltages. ....	34	(X)	<sup>a</sup> 481,119	(X)	459,522
3353131001	Power circuit breakers (sold separately) for use in metal-clad switchgear oil and oilless, over 1,000 volts, (number of breakers). ....	10	<sup>a</sup> 3,769	<sup>c</sup> 44,861	4,246	<sup>a</sup> 45,524
3353131004	Parts for power circuit breakers for use in metal-clad switchgear <sup>1</sup> . ....	5	(X)	(D)	(X)	(D)
3353131007	Power circuit breakers, free standing, oil and oilless, from 15.5 kV through 800 kV and above (number of breakers). ....	8	4,659	183,448	4,426	165,061
3353131011	Parts for power circuit breakers, free standing, oil and oilless, from 15.5 kV through 800 kV and above <sup>1</sup> . ....	4	(X)	11,601	(X)	12,723
3353131013	Power circuit breakers (sold separately) in individual enclosure and/or for use in low-voltage switchgear, 1,000 volts and below, excluding molded case circuit breakers (number of breakers) <sup>2</sup> . ....	9	(D)	(D)	(D)	(D)
3353131016	Parts for power circuit breakers in individual enclosures and/or for use in low-voltage switchgear, 1,000 volts and below, excluding molded case circuit breakers <sup>2</sup> . ....	5	(X)	(D)	(X)	(D)
3353131019	All other power circuit breakers (sold separately), oil and oilless, network protectors, and automatic circuit reclosers <sup>2</sup> . ....	9	(X)	190,814	(X)	<sup>f</sup> 184,272
3353131022	Parts for all other power circuit breakers, oil and oilless, network protectors, and automatic circuit reclosers. ....	14	(X)	<sup>e</sup> 50,395	(X)	51,942
3353133	Low voltage panelboards, distribution boards, and other switching and interrupting devices, 1,000 volts and below. ....	119	(X)	<sup>b</sup> 2,218,186	(X)	2,169,372
	Panelboards, including enclosing cabinets:					
3353133201	Fusible, including combination switch fuse. ....	43	(S)	<sup>b</sup> 130,642	(S)	154,516
3353133104	Circuit breaker. ....	52	<sup>b</sup> 1,278,100	<sup>b</sup> 592,373	1,193,896	551,937
	Distribution switchboards:					
3353133207	Fusible. ....	30	<sup>a</sup> 39,314	<sup>a</sup> 153,824	33,045	108,510
3353133211	Circuit breaker. ....	43	73,008	<sup>a</sup> 298,062	84,539	343,635
3353133213	Other, including theater switchboards. ....	7	(D)	(D)	(D)	(D)
	Switches (except switches commonly known as snap, toggle, and rotary switches and switch devices intended primarily to be used with electric motor controls):					
	Knife switches, enclosed:					
3353133216	Heavy duty. ....	11	<sup>a</sup> 1,596,789	<sup>a</sup> 185,657	1,612,169	181,832
3353133219	General duty. ....	7	1,530,157	77,410	1,382,275	68,621
3353133222	Enclosed fusible, service entrance, and branch circuit cutouts. ....	7	(D)	(D)	(D)	(D)
3353133225	Circuit breaker type. ....	17	11,506,848	286,639	10,228,560	265,107
	Load centers:					
3353133228	Grouped metering panels (combinations of two or more meters and related switching units with overcurrent protection associated with each meter, including accessory components, excluding single socket load combinations). ....	13	(S)	37,124	(S)	<sup>a</sup> 35,089
3353133231	Other switches, excluding snap, bolted toggle, push, etc., including open knife switches, motor contact, motor disconnect, meter service equipment other than meter mounting, and test devices. ....	21	(X)	<sup>a</sup> 138,437	(X)	<sup>a</sup> 163,399
3353133234	Other low voltage switchgear apparatus. ....	27	(X)	<sup>b</sup> 294,963	(X)	<sup>a</sup> 279,015
3353135	Fuses and fuse equipment, under 2,300 volts (except power distribution cutouts). ....	21	(X)	<sup>c</sup> 602,551	(X)	<sup>b</sup> 557,356
3353135001	Nonrenewable plug fuses <sup>3</sup> . ....	2	(X)	(D)	(X)	(D)
3353135004	Nonrenewable cartridge fuses. ....	9	(X)	<sup>c</sup> 274,990	(X)	<sup>b</sup> 261,953
3353135007	Renewable plug and cartridge fuses, including renewable links <sup>3</sup> . ....	3	(X)	3,905	(X)	4,382
3353135011	Other fuses and open fuse material, including cutouts, clips, bases, etc. ....	19	(X)	<sup>c</sup> 323,656	(X)	<sup>b</sup> 291,021

See footnotes at end of table.

**Table 5. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335313	Switchgear and switchboard apparatus—Con.					
3353137	Molded case circuit breakers, 1,000 volts and under . . . . .	34	(X)	<sup>a</sup> 1,368,720	(X)	1,299,688
	Industrial type, assembled as complete units in supporting and enclosing housing of insulating materials, with or without accessories or attachments:					
3353137001	With ground fault detection capability . . . . .	14		<sup>b</sup> 76,842	74,665	29,264
3353137004	Without ground fault detection capability. . . . .	18		<sup>b</sup> 36,098,958	<sup>a</sup> 687,598	31,578,925
	Residential or light duty type, primarily for load center application, assembled as complete units in supporting and enclosing housing of insulating materials:					
3353137007	With ground fault detection capability <sup>4</sup> . . . . .	7	(D)	(D)	(D)	(D)
3353137011	Without ground fault detection capability <sup>4</sup> . . . . .	6		58,673,804	312,656	51,634,044
3353137013	Individually enclosed industrial type, excluding panelboards and busway plugs <sup>5</sup> . . . . .	13	(D)	(D)	(D)	(D)
	Other molded case circuit breakers:					
3353137016	Marine and Navy type <sup>6</sup> . . . . .	4	(D)	(D)	(D)	(D)
3353137019	Aircraft and aerospace <sup>6</sup> . . . . .	6		<sup>c</sup> 1,550,445	<sup>c</sup> 136,200	<sup>r</sup> 1,513,154
3353137022	Automotive <sup>5</sup> . . . . .	2	(D)	(D)	(D)	(D)
3353137025	Electronic <sup>5</sup> . . . . .	6	(D)	(D)	(D)	(D)
3353137028	All other types <sup>5</sup> . . . . .	12	(S)	200,882	(S)	177,131
3353139	Duct, including plug-in units and accessories, 1,000 volts and under, consisting of enclosed sectionalized prefabricated bus bars rated 20 A or more, and associated structures and fittings. . . . .	21	(X)	278,125	(X)	284,024
3353139001	Busways <sup>7</sup> . . . . .	19	(D)	(D)	(D)	(D)
3353139004	Trolley-type and lighting distribution duct <sup>7</sup> . . . . .	3	(S)	278,125	(S)	284,024
335313A	Switchgear (except ducts) . . . . .	126	(X)	<sup>a</sup> 1,875,311	(X)	1,830,539
335313A101	Automatic and manual control panels (generators, transformers, feed-controls, etc.) . . . . .	66	(X)	<sup>a</sup> 255,650	(X)	<sup>r</sup> 254,182
335313A204	Metal-clad switchgear (using power circuit breakers, oil and oilless), all voltages above 1,000 volts, up to and including 38 kV, excluding load interrupter switchgear . . . . .	41	(X)	<sup>a</sup> 367,366	(X)	<sup>a</sup> <sup>r</sup> 331,153
335313A307	Metal-enclosed load interrupter switchgear assemblies, all voltages, including parts. . . . .	40	(X)	185,387	(X)	186,912
335313A311	Metal-enclosed low-voltage power circuit breaker switchgear assemblies, 1,000 volts and below, including parts and excluding load interrupter switchgear. . . . .	33	(X)	<sup>b</sup> 134,099	(X)	<sup>r</sup> 137,849
335313A313	Metal-enclosed bus bars when sold separately, above 1,000 volts, including isolated, segregated, nonsegregated, and cable bus bars . . . . .	16	(X)	39,669	(X)	<sup>a</sup> 45,104
	Power switching equipment, 2,300 volts and over, including attachments, auxiliaries, bus supports and fittings, and accessories, but excluding power fuses, sold separately. Also includes single-phase circuit reclosers:					
335313A316	Outdoor, excluding structures . . . . .	27	(X)	364,192	(X)	372,840
335313A319	Indoor. . . . .	11	(X)	10,345	(X)	<sup>a</sup> <sup>r</sup> 8,452
335313A322	Power fuses and fuse links for 2,300 volts and over, ac service, excluding distribution cutouts <sup>8</sup> . . . . .	11	(X)	(D)	(X)	(D)
335313A325	Power and ground connectors generally used in substation construction <sup>8</sup> . . . . .	7	(X)	185,931	(X)	<sup>r</sup> 167,261
335313A328	Overhead transmission and distribution connectors (clamps, taps, terminals, and splices) . . . . .	5	(X)	47,219	(X)	46,298
335313A331	Transmission and distribution connectors, n.e.c., including underground deadends, hot line taps, stirrups, and repair sleeves, etc. <sup>9</sup> . . . . .	4	(X)	(D)	(X)	(D)
335313A334	Distribution cutouts . . . . .	8	(X)	80,431	(X)	84,291
335313A337	Other switchgear devices, including regulators and miscellaneous switchboard devices (for sale separately) <sup>9</sup> . . . . .	22	(X)	<sup>a</sup> 205,122	(X)	<sup>a</sup> <sup>r</sup> 196,197

See footnotes at end of table.

**Table 5. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335314	Relays and industrial controls . . . . .	(NA)	(X)	8,927,615	(X)	<sup>r</sup> 8,760,684
3353141	General-purpose and other relays . . . . .	112	(X)	<sup>b</sup> 795,525	(X)	<sup>a</sup> 829,733
3353141001	Industrial-control relays (all voltages), n.e.c. . . . .	41	(S)	<sup>a</sup> 263,596	(S)	<sup>a</sup> 247,517
	General-purpose electromechanical relays:					
	Over 100 MW actuating power and sealed (either hermetically or environmentally):					
3353141004	0 through 2.0 amperes contact rating <sup>10</sup> . . . . .	8	(D)	(D)	(D)	(D)
3353141007	Over 2.0 through 10.0 amperes contact rating <sup>10</sup> . . . . .	16	(D)	(D)	(D)	(D)
3353141011	Over 10.0 amperes contact rating <sup>10</sup> . . . . .	7	<sup>b</sup> 2,329,371	43,122	2,472,848	<sup>r</sup> 48,403
	Over 100 MW actuating power and not sealed:					
3353141013	0 through 10.0 amperes contact rating . . . . .	14	<sup>a</sup> 859,326	<sup>a</sup> 8,383	<sup>a</sup> 955,637	<sup>a</sup> 9,376
3353141016	Over 10.0 amperes contact rating <sup>11</sup> . . . . .	12	(D)	(D)	(D)	(D)
3353141019	0 through 100 MW actuating power (both sealed and not sealed) <sup>11</sup> . . . . .	2	<sup>a</sup> 723,292	<sup>a</sup> 10,002	859,216	9,842
	Miniature printed circuit mounted electromechanical relays, excluding reed relays (profile height 1/2-inch max.):					
	Sealed (either hermetically or environmentally):					
3353141022	0 through 2.0 amperes contact rating <sup>12</sup> . . . . .	4	(D)	(D)	(D)	(D)
3353141025	Over 2.0 amperes contact rating <sup>12</sup> . . . . .	3	11,271,984	13,409	11,115,959	13,276
3353141028	Not sealed . . . . .	4	(D)	(D)	(D)	(D)
	DIP or SIP footprint:					
3353141031	Sealed (either hermetically or environmentally) . . . . .	2	(D)	(D)	(D)	(D)
	Telephone relays, all types:					
3353141034	Sealed (either hermetically or environmentally) <sup>13</sup> . . . . .	4	(D)	(D)	(D)	(D)
3353141037	Not sealed <sup>13</sup> . . . . .	4	<sup>b</sup> 16,075,112	<sup>b</sup> 15,193	<sup>b</sup> 12,844,017	<sup>b</sup> 14,205
3353141041	General-purpose solid-state relays, pure solid-state, and hybrid solid state, excluding time delay . . . . .	9	(D)	(D)	(D)	(D)
	High performance military/aerospace/aircraft relays and contactors (generally pertaining to Mil-R5757, 6106, 19523, 25108, and 39016):					
3353141043	Round and square can multipole airframe relays and contactors (both sealed and not sealed) (all sizes) . . . . .	5	(D)	(D)	(D)	(D)
	Crystal can types (sealed) :					
3353141046	Larger than full size . . . . .	5	372,268	24,683	(S)	25,317
3353141049	Full size . . . . .	5	<sup>a</sup> 145,775	<sup>a</sup> 9,759	184,164	12,564
3353141052	Half size and smaller, including TO-5 package <sup>14</sup> . . . . .	5	(D)	(D)	(D)	(D)
3353141055	RF, antenna and coaxial relays (sealed and not sealed), excluding reed relays <sup>14</sup> . . . . .	6	<sup>a</sup> 1,389,006	<sup>a</sup> 55,017	<sup>r</sup> 1,234,957	<sup>b</sup> 59,080
	Reed relays:					
	Dry reed:					
3353141058	Miniature size (glass length less than .85 inch) <sup>15</sup> . . . . .	10	(D)	(D)	(D)	(D)
3353141061	Standard size <sup>15</sup> . . . . .	7	13,558,947	29,462	21,898,795	42,432
3353141064	Mercury wetted reed <sup>16</sup> . . . . .	6	(D)	(D)	(D)	(D)
3353141067	Stepping switches, stepping and impulse relays <sup>16</sup> . . . . .	3	(D)	(D)	(D)	(D)
3353141071	Switchgear and protective relays <sup>16</sup> . . . . .	5	579,986	<sup>b</sup> 27,031	627,879	25,811
	Timing relays (timers):					
3353141073	Solid-state/EMR combination . . . . .	22	<sup>b</sup> 1,240,257	<sup>b</sup> 35,363	<sup>a</sup> 1,169,993	<sup>a</sup> 34,060
3353141076	Solid-state-pure . . . . .	18	<sup>a</sup> 338,473	14,204	<sup>r</sup> 394,866	14,897
3353141079	All other timing relays (timers), including pneumatic, motor driven, electronic, etc. . . . .	14	<sup>c</sup> 407,585	<sup>c</sup> 18,147	450,148	18,829
3353141082	All other general-purpose and special-purpose relays, n.e.c. . . . .	23	(X)	<sup>a</sup> 153,239	(X)	169,215
3353141085	Parts for general-purpose and special-purpose relays, sold separately . . . . .	8	(X)	<sup>b</sup> 10,566	(X)	<sup>b</sup> 16,769
3353143	Specific-purpose industrial controls . . . . .	245	(X)	<sup>b</sup> 3,714,337	(X)	3,568,210
3353143301	U.S. Coast Guard, Navy, and Marine auxiliary controls and accessories . . . . .	21	<sup>a</sup> 77,704	<sup>b</sup> 156,039	62,807	137,411
3353143104	Metal mill controls and accessories (all voltages) . . . . .	8	(D)	(D)	(D)	(D)
3353143307	Crane and hoist controls, constant and adjustable voltage, including operators' desks and stations . . . . .	18	<sup>a</sup> 40,257	137,635	36,472	131,630

See footnotes at end of table.

**Table 5. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335314	Relays and industrial controls—Con.					
335143	Specific-purpose industrial controls—Con.					
3353143311	Definite-purpose contactors and starters (600 volts and less) .....	18	11,708,724	<sup>b</sup> 138,449	10,789,899	135,262
	Machine tool applications (motion controllers):					
	Stand-alone controls for numerically controlled machine tools:					
3353143313	Computer numerical controls (CNC); positioning (point-to-point) .....	11	9,266	19,892	9,523	23,097
3353143316	Computer numerical controls (CNC); continuous path (contouring) .....	11	<sup>b</sup> 35,389	<sup>b</sup> 292,891	46,732	<sup>r</sup> 351,460
3353143319	Robotic controls .....	3	(D)	(D)	(D)	(D)
3353143322	Other stand-alone motion controls .....	16	94,580	<sup>a</sup> 97,663	<sup>r</sup> 73,946	<sup>r</sup> 110,537
3353143325	Subordinate motion controls .....	12	(S)	<sup>c</sup> 15,911	(S)	<sup>a</sup> <sup>r</sup> 14,053
3353143228	Programmable controller, sold separately .....	58	(S)	<sup>a</sup> 1,497,301	(S)	1,222,620
3353143331	Other specific- or special-purpose ac and dc controllers, other definite-purpose devices .....	150	(X)	<sup>a</sup> 1,276,587	(X)	<sup>a</sup> 1,348,732
3353145	General-purpose industrial controls and power circuit devices .....	257	(X)	<sup>b</sup> 4,417,753	(X)	4,362,741
	General purpose controls:					
3353145001	Ac full voltage noncombination magnetic starters (1,000 volts or less) .....	27	<sup>b</sup> 942,880	<sup>a</sup> 159,249	<sup>b</sup> 968,714	155,910
	Ac full voltage combination magnetic starters (1,000 volts or less):					
3353145004	Combination starters (less pumping panels) .....	23	103,153	75,598	106,476	69,106
3353145007	Pumping panels .....	18	61,919	38,639	62,505	36,411
3353145011	Disconnect switches (600 volts or less) .....	20	2,395,614	116,049	2,519,221	55,758
	Ac full voltage manual controllers, 1,000 volts or less:					
3353145013	Designed and rated to U.S. National Standards (NEMA) .....	12	1,155,747	48,072	1,285,192	48,515
3353145016	Designed and rated to International Standards (IEC) .....	5	(D)	(D)	(D)	(D)
	Ac contactors, 1,000 volts or less, excluding controls for packaged adjustable speed drives and synchronous motor controls:					
3353145019	Designed and rated to U.S. National Standards (NEMA) .....	12	593,680	84,789	577,622	82,837
3353145022	Designed and rated to International Standards (IEC) .....	16	(D)	(D)	(D)	(D)
3353145025	Ac reduced voltage controls, 1,000 volts or less, excluding synchronous motor starters .....	20	<sup>b</sup> 78,525	<sup>b</sup> 56,740	<sup>a</sup> 87,398	<sup>a</sup> 61,967
3353145028	Synchronous motor starters, 1,000 volts or less, including both full and reduced voltage .....	4	(D)	(D)	(D)	(D)
3353145031	Motor control centers, 1,000 volts or less .....	40	(X)	445,395	(X)	437,942
3353145034	Starters and contactors for squirrel cage and wound rotor and synchronous and nonsynchronous motors, over 1,000 to 7,200 volts, air break, vacuum, and oil immersed .....	8	(S)	76,628	43,844	77,887
3353145037	Brakes and clutches .....	19	(S)	70,615	1,474,894	70,047
3353145041	Digital readout system, including dial or plugboard type .....	21	<sup>c</sup> 7,663	<sup>b</sup> 6,275	<sup>r</sup> 7,177	<sup>a</sup> 4,677
	Presence sensors and motion measurement devices:					
	Limit switches (positioning sensors):					
3353145043	Electromechanical positioning sensors .....	29	(X)	137,673	(X)	135,698
3353145046	Movement sensors .....	20	(X)	38,528	(X)	37,892
	Solid-state positioning sensors:					
3353145049	Nonoptical proximity sensors .....	19	(X)	82,369	(X)	90,302
3353145052	Optical proximity sensors .....	17	(X)	175,992	(X)	152,990
3353145055	All other pilot circuit devices, excluding relays and limit switches .....	10	(X)	<sup>c</sup> 10,607	(X)	<sup>c</sup> 15,780
3353145058	Dc power circuit devices (all voltages) .....	11	(X)	<sup>b</sup> 24,714	(X)	<sup>a</sup> <sup>r</sup> 25,093
3353145061	Other control sensors (all voltages) .....	18	(X)	107,019	(X)	104,253
	Pushbuttons and pushbutton stations, excluding operators' desks and stations:					
3353145064	Pushbuttons, 18 mm and smaller .....	12	(X)	7,267	(X)	7,581
3353145067	Pushbuttons, 19 mm to 29 mm .....	20	(X)	64,140	(X)	62,319
3353145071	Pushbuttons, 30 mm and larger .....	24	(X)	220,502	(X)	211,561
3353145073	Rheostats and resistors (except for electronic applications) sold separately, n.e.c. ....	13	(X)	26,046	(X)	24,215

See footnotes at end of table.



**Table 5. Shipments of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335314	Relays and industrial controls—Con.					
3353145	General-purpose industrial controls and power circuit devices—Con.					
	Presence sensors and motion measurement devices—Con.					
	Controls for adjustable speed drives, including electronic and nonelectric and operators' desks and stations:					
3353145076	Controls for ac packaged drives .....	41	<sup>a</sup> 585,727	<sup>a</sup> 490,103	<sup>f</sup> 621,078	<sup>a</sup> <sup>f</sup> 436,291
3353145079	Controls for dc packaged drives .....	27	<sup>a</sup> 125,949	70,126	<sup>f</sup> 230,743	102,456
3353145082	Ac drive systems .....	38	<sup>c</sup> 59,496	<sup>a</sup> 205,262	<sup>c</sup> 70,912	<sup>a</sup> <sup>f</sup> 220,568
3353145085	Dc drive systems .....	26	(S)	107,357	347,035	<sup>f</sup> 96,827
3353145088	Solid-state motor controllers (all voltages) .....	48	<sup>b</sup> 1,318,870	<sup>b</sup> 245,539	1,715,272	249,627
3353145091	All other general industry devices and systems .....	96	(X)	<sup>a</sup> 1,138,356	(X)	<sup>f</sup> 1,199,884
3353147	Motor controller accessories and parts for industrial controls .....	122	(X)	<sup>a</sup> 503,927	(X)	564,796
3353147001	Motor controller accessories, including those items that are sold separately, but become part of a motor controller. Includes overload relays, auxiliary contacts, heater elements, mechanical interlocks, control transformers, kits to add pushbuttons, selector switches, pilot lights, separate controller enclosure fittings, reset mechanisms, etc., excluding motor circuit switches, sold separately .....	38	(X)	<sup>a</sup> 168,182	(X)	184,389
3353147004	Parts for industrial controls .....	104	(X)	<sup>a</sup> 335,745	(X)	370,407

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. <sup>f</sup>Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

<sup>1</sup>Product codes 3353131004 and 3353131011 are combined to avoid disclosing data for individual companies.

<sup>2</sup>Product codes 3353131013, 3353131016 and 3353131019 are combined to avoid disclosing data for individual companies.

<sup>3</sup>Product codes 3353135001 and 3353135007 are combined to avoid disclosing data for individual companies.

<sup>4</sup>Product codes 3353137007 and 3353137011 are combined to avoid disclosing data for individual companies.

<sup>5</sup>Product codes 3353137013, 3353137022, 3353137025 and 3353137028 are combined to avoid disclosing data for individual companies.

<sup>6</sup>Product codes 3353137016 and 3353137019 are combined to avoid disclosing data for individual companies.

<sup>7</sup>Product codes 3353139001 and 3353139004 are combined to avoid disclosing data for individual companies.

<sup>8</sup>Product codes 335313A322 and 335313A325 are combined to avoid disclosing data for individual companies.

<sup>9</sup>Product codes 335313A331 and 335313A337 are combined to avoid disclosing data for individual companies.

<sup>10</sup>Product codes 3353141004, 3353141007 and 3353141011 are combined to avoid disclosing data for individual companies.

<sup>11</sup>Product codes 3353141016 and 3353141019 are combined to avoid disclosing data for individual companies.

<sup>12</sup>Product codes 3353141022 and 3353141025 are combined to avoid disclosing data for individual companies.

<sup>13</sup>Product codes 3353141034 and 3353141037 are combined to avoid disclosing data for individual companies.

<sup>14</sup>Product codes 3353141052 and 3353141055 are combined to avoid disclosing data for individual companies.

<sup>15</sup>Product codes 3353141058 and 3353141061 are combined to avoid disclosing data for individual companies.

<sup>16</sup>Product codes 3353141064, 3353141067 and 3353141071 are combined to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 6. Shipments, Exports, Imports, and Apparent Consumption of Switchgear, Switchboard Apparatus, Relays, and Industrial Controls: 1998**

[Value in thousands of dollars]

Product code	Product description	Manufacturer's shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption <sup>2</sup>
<b>1998</b>				
3353131001, 07, 13, 19	Power circuit breakers .....	416,614	137,686	85,306
3353133104, 201, 207, 211, 213	Low voltage panelboards and distribution boards .....	1,181,191	124,711	325,628
3353133216, 219	Knife switches .....	263,067	3,634	10,113
3353133228, 234	Grouped metering panels, including accessory components and other low voltage switchgear apparatus .....	332,087	34,144	28,331
3353135001, 04, 07, 11	Fuses and fuse equipment, under 2,300 volts .....	602,551	194,584	87,681
3353137001, 04, 07, 11, 13, 16, 19, 22, 25, 28	Molded case circuit breakers, 1,000 volts and under .....	1,366,936	114,661	349,852
3353139001, 04	Duct, including plug-in units and accessories .....	278,125	34,808	11,062
335313A101, 204, 307, 311, 313, 316, 319, 334, 337	Switchgear and switchgear assemblies <sup>3</sup> .....	(D)	(D)	(D)
335313A322	Power fuses and fuse links, 2,300 volts and over <sup>3</sup> .....	(D)	(D)	(D)
335313A325, 28, 31	Power and ground connectors and transmission and distribution connectors <sup>3</sup> .....	1,875,311	220,659	105,398
3353141001, 04, 07, 11, 13, 16, 19, 22, 25, 28, 41, 43, 46, 49, 52, 55, 58, 61, 64, 67, 71, 76, 79, 82	Relays .....	780,152	468,956	718,457
3353143313, 16	Controls for numerically controlled machine tools .....	312,783	38,240	46,662
3353143228	Programmable controllers .....	1,497,301	136,068	389,680
3353145001, 04, 07, 28	Motor starters .....	274,401	51,289	44,952
3353145031	Motor control centers, 1,000 volts or less .....	445,395	62,347	39,734
3353145037	Brakes and clutches .....	70,615	39,501	82,108
3353145073	Rheostats and resistors .....	26,046	7,678	10,679

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Source: Census Bureau report, EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report, IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Data for "Switchgear and switchgear assemblies" and "Power fuses and fuse links" are combined with "Power and ground connectors and transmission and distribution connectors" to avoid disclosing data for individual companies.

**HISTORICAL NOTE**

Data on switchgear, switchboard apparatus, relays, and industrial controls have been collected by the Census Bureau since 1971. Historical data may be obtained from Current Industrial Reports available at your local Federal

Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Tempie Whittington, 301-457-4800.

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## FLUORESCENT LAMP BALLASTS MQ335C (FORMERLY MQ36C)

### INTRODUCTION

These data cover all companies engaged in the manufacture of fluorescent lamp ballasts. The statistics were collected by mail on Census Bureau quarterly Form MQ36C, Fluorescent Lamp Ballasts. The survey panel includes all known producers of this product, approximately 14 companies.

### SUMMARY OF FINDINGS

The value of manufacturers' shipments of fluorescent lamp ballasts amounted to \$914 million in 1998, an increase of less than 1 percent over shipments of \$906 million in 1997. The quantity of fluorescent lamp ballasts shipped was unchanged at 103 million units in 1998. Magnetic type accounted for 62 percent of the quantity, but only 44 percent of the value of shipments; whereas, electronic type made up 38 percent of the quantity, but comprised 56 percent of the value, compared to only 5 percent of the value 10 years ago.

Magnetic corrected power-factor types accounted for 41 percent of the quantity and 37 percent of the value of shipments of all fluorescent lamp ballasts during 1998. For the third year in a row, the quantity of shipments for magnetic corrected power-factor type was unchanged at 42.5 million units. Magnetic uncorrected power-factor type dropped to 21 million units after remaining at 24 million for 3 years. The dollar value of shipments of the corrected type showed a 1.4 percent decrease, its fourth straight year, while the dollar value of the uncorrected type decreased 9.2 percent, dropping to \$62 million.

The value of shipments of electronic ballasts increased almost 4 percent in 1998 to \$512.8 million, setting a new record, compared to \$494 million in 1997. This is a full 2,000 percent higher than 1988. Quantity of ballasts increased 9 percent to 39.8 million units, from the 36 million level in 1997. This was 39 times more units than 10 years ago. Electronic type continued its upward growth, while it decreased unit value for the ninth straight year.

### EXPLANATION OF TERMS

#### Magnetic Type:

*Uncorrected power-factor ballasts.* Any ballast with a power factor less than 85 percent.

*Corrected power-factor ballasts.* Any ballast with a power factor of 85 percent or above.

#### Electronic Type:

*Uncorrected power factor.* Less than 90 percent power factor.

*Corrected power factor.* Ballast with a 90 percent power factor or above.

**Rapid start.** Includes ballasts of all voltage and frequency ratings for operation of all lamps designed for cathode preheating without the use of starters.

**Preheat start.** Includes ballasts of all voltage and frequency ratings for operation of all lamps of the switch start type, except ballasts with preheat windings.

**Slimline and instant start.** Includes ballasts of all voltage and frequency ratings for operation of all hot cathode lamps that do not utilize preheating of cathodes.

**All other.** Includes ballasts of all voltage and frequency ratings not classified above. Specifically, includes ballasts with preheat windings for fast starting of standard switch start lamps (trigger start, quick start, etc.), ballasts for dc operation, and cold cathode ballasts.

#### Electronic Fluorescent Ballast

Includes ballasts serving preheat or rapid start lamps, including those ballasts operating lamps less than 20 watts up to 40 watts, driving one, two, three or four lamps, and ballasts for 800mA lamps and above, and miscellaneous applications for powering fluorescent lamps not reported elsewhere. Also includes ballasts for single-pin slimline, instant start lamps, including ballasts driving two 96-inch lamps, and all other slimline lamp ballasts.

**Table 7. Quantity and Value of Shipments of Uncorrected and Corrected Power-Factor Type Fluorescent Ballasts: 1987 to 1998**

[Quantity in thousands of ballasts. Value in thousands of dollars]

Year	Total		Magnetic type				Electronic type	
			Uncorrected power-factor type		Corrected power-factor type			
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1998.....	103,724	914,265	21,298	62,207	42,584	339,230	39,842	512,828
1997.....	103,947	906,477	24,517	68,528	42,887	343,928	36,543	494,021
1996.....	97,355	909,178	24,172	67,884	42,841	389,877	30,342	451,417
1995.....	105,314	1,002,243	24,764	68,165	47,648	427,062	32,902	507,016
1994.....	108,114	940,746	27,517	75,013	55,991	474,958	24,606	390,775
1993.....	107,428	969,542	28,150	65,820	54,790	457,222	24,488	446,500
1992.....	97,034	812,287	28,363	68,771	55,379	468,940	13,292	274,576
1991.....	88,729	718,317	24,919	61,413	55,467	476,867	8,343	180,037
1990.....	81,364	615,569	22,556	54,403	55,807	491,878	3,001	69,288
1989.....	77,702	521,301	18,011	41,667	58,265	439,818	1,426	39,816
1988.....	75,676	476,375	17,813	40,916	56,799	409,954	1,064	25,505
1987.....	74,948	436,045	19,542	42,814	54,754	378,113	652	15,118

**Table 8. Shipments, Exports, Imports, and Apparent Consumption of Fluorescent Lamp Ballasts: 1998 and 1997**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Imports for consumption <sup>3</sup>	
		Quantity	Value f.o.b. plant	Quantity <sup>2</sup>	Value at port <sup>2</sup>	Quantity <sup>2</sup>	Value <sup>2 4</sup>
36124	Fluorescent lamp ballasts .....	103,724	914,265	14,265	138,415	95,495	601,293
	.....1998 . .						
	.....1997 . .	103,947	906,477	22,982	128,119	98,010	588,552

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*. Schedule B export number is 8504.10.0000.

<sup>2</sup>Export/imports are over stated due to the inclusion of specialty transformers classified in product class 36123.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*. The HTSUSA import number is 8504.10.0000.

<sup>4</sup>This value represents c.i.f. plus U.S. import duties.

**Table 9. Quantity and Value of Shipments by Type of Ballast: 1998 and 1997**

[Quantity in thousands of ballasts. Value in thousands of dollars]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	<b>1998</b>										
36124	Fluorescent lamp ballasts . . . . .	103,724	914,265	26,342	229,981	26,582	237,966	25,721	228,727	25,079	217,591
	Magnetic type . . . . .	63,882	401,437	17,053	105,694	15,977	100,169	15,023	94,889	15,829	100,685
	Uncorrected power-factor type (less than 85 percent power factor) . . . . .	21,298	62,207	5,619	16,037	5,238	15,124	5,100	15,476	5,341	15,570
	Preheat start . . . . .	14,291	30,633	3,765	8,137	3,597	7,606	3,473	7,491	3,456	7,399
36124 58	Single-ended compact lamps <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 62	20 watt and less . . . . .	7,570	14,968	1,987	4,088	1,907	3,681	1,848	3,585	1,828	3,614
36124 64	21 watt and over <sup>1</sup> . . . . .	6,721	15,665	1,778	4,049	1,690	3,925	1,625	3,906	1,628	3,785
36124 59	All other uncorrected power-factor type, including rapid start . . . . .	7,007	31,574	1,854	7,900	1,641	7,518	1,627	7,985	1,885	8,171
	Corrected power-factor type (85 percent power factor or above) . . . . .	42,584	339,230	11,434	89,657	10,739	85,045	9,923	79,413	10,488	85,115
	Slimline and instant start . . .	7,270	76,013	2,035	21,439	1,884	18,883	1,561	15,777	1,790	19,914
36124 67	Two-lamp 96T12 and 72T12 . . . . .	6,608	68,894	1,873	19,612	1,684	16,823	1,413	14,217	1,638	18,242
36124 68	Other slimline and instant start . . . . .	662	7,119	162	1,827	200	2,060	148	1,560	152	1,672
	Rapid start . . . . .	33,664	250,938	8,955	64,937	8,427	63,176	7,968	60,497	8,314	62,328
36124 69	One-lamp, 40 watt 48T12/RS <sup>2</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 71	Two-lamp, 40 watt 48T12/RS . . . . .	27,109	156,714	7,163	40,798	6,788	39,397	6,477	37,955	6,681	38,564
36124 75	Two-lamp, 32 watt 48T8/RS <sup>2</sup> . . . . .	1,918	13,403	533	3,759	506	3,647	433	2,981	446	3,016
	All other rapid start . . . . .	4,637	80,821	1,259	20,380	1,133	20,132	1,058	19,561	1,187	20,748
36124 72	800 to 1,000 mA . . . . .	3,171	62,855	865	15,641	784	15,843	705	15,279	817	16,092
36124 73	1,500 mA . . . . .	178	6,189	55	1,847	41	1,391	39	1,377	43	1,574
36124 74	Other rapid start . . . . .	1,288	11,777	339	2,892	308	2,898	314	2,905	327	3,082
	Preheat start <sup>3</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 77	Single-ended compact lamps <sup>3</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 78	Linear and circline lamps <sup>3</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 98	All other magnetic corrected power-factor type <sup>3</sup> . . . . .	1,650	12,279	444	3,281	428	2,986	394	3,139	384	2,873
	Electronic type . . . . .	39,842	512,828	9,289	124,287	10,605	137,797	10,698	133,838	9,250	116,906
	Uncorrected power-factor type (less than 90 percent power factor):										
36124 91	Single-ended compact lamps . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 92	All other electronic uncorrected power-factor type . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Corrected power-factor type (90 percent power factor or above):										
	Instant start:										
36124 93	One- and two-lamp, 32 watt 48T8 . . . . .	16,704	186,294	3,833	45,063	4,346	48,468	4,608	50,076	3,917	42,687
36124 94	Three- and four-lamp, 32 watt 48T8 . . . . .	14,179	183,592	3,191	43,429	3,864	50,428	3,838	48,178	3,286	41,557
36124 95	Two-lamp, 59 watt 96T8 . . . . .	959	16,461	219	3,847	248	4,216	278	4,673	214	3,725
36124 96	Two-lamp, 75 watt 96T12/IS <sup>4</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 97	All other instant start <sup>4</sup> . . . . .	1,177	17,735	349	5,425	362	5,414	282	4,176	184	2,720

See footnotes at end of table.

**Table 9. Quantity and Value of Shipments by Type of Ballast: 1998 and 1997—Con.**

[Quantity in thousands of ballasts. Value in thousands of dollars]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	<b>1998—Con.</b>										
36124	Fluorescent lamp ballasts—Con. Electronic type—Con. Corrected power-factor type (less than 90 percent power factor)—Con. Rapid start:										
36124 82	All 32 watt 48T8.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 84	All other T8, 4 foot and less.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 86	Two-lamp, 40 watt 48T12/RS.....	609	9,142	166	2,569	152	2,356	162	2,301	129	1,916
36124 88	800 mA.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 89	All other rapid start.....	1,056	18,044	288	4,730	282	4,907	243	4,061	243	4,346
36124 99	All other corrected power...	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	<b>1997</b>										
36124	Fluorescent lamp ballasts.....	103,947	906,477	25,343	228,100	25,799	228,016	25,522	214,297	27,283	236,064
	Magnetic type.....	67,404	412,456	16,940	109,841	16,734	103,692	16,156	90,718	17,574	108,205
	Uncorrected power-factor type (less than 85 percent power factor).....	24,517	68,528	5,919	17,114	6,490	18,016	6,037	16,179	6,071	17,219
	Preheat start.....	17,237	37,075	4,082	8,956	4,873	10,716	4,222	8,648	4,060	8,755
36124 58	Single-ended compact lamps <sup>1</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 62	20 watt and less.....	8,371	16,506	2,089	4,052	2,265	4,598	2,064	3,961	1,953	3,895
36124 64	21 watt and over <sup>1</sup> .....	8,866	20,569	1,993	4,904	2,608	6,118	2,158	4,687	2,107	4,860
36124 59	All other uncorrected power-factor type, including rapid start.....	7,280	31,453	1,837	8,158	1,617	7,300	1,815	7,531	2,011	8,464
	Corrected power-factor type (85 percent power factor or above).....	42,887	343,928	11,021	92,727	10,244	85,676	10,119	74,539	11,503	90,986
	Slimline and instant start ...	6,836	74,020	1,902	21,410	1,614	18,274	1,441	15,085	1,879	19,251
36124 67	Two-lamp 96T12 and 72T12.....	6,268	67,426	1,750	19,667	1,470	16,585	1,321	13,710	1,727	17,464
36124 68	Other slimline and instant start.....	568	6,594	152	1,743	144	1,689	120	1,375	152	1,787
	Rapid start.....	34,188	255,900	8,642	67,635	8,158	63,791	8,248	56,251	9,140	68,223
36124 69	One-lamp, 40 watt 48T12/RS <sup>2</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 71	Two-lamp, 40 watt 48T12/RS.....	26,559	156,211	6,632	40,173	6,167	37,514	6,544	36,074	7,216	42,450
36124 75	Two-lamp, 32 watt 48T8/RS <sup>2</sup> .....	2,265	16,618	567	4,249	595	4,527	509	3,496	594	4,346
	All other rapid start.....	5,364	83,071	1,443	23,213	1,396	21,750	1,195	16,681	1,330	21,427
36124 72	800 to 1,000 mA <sup>5</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 73	1,500 mA.....	198	6,784	56	2,033	47	1,599	40	1,303	55	1,849
36124 74	Other rapid start <sup>5</sup> .....	5,166	76,287	1,387	21,180	1,349	20,151	1,155	15,378	1,275	19,578
	Preheat start <sup>3</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 77	Single-ended compact lamps <sup>3</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 78	Linear and circline lamps <sup>3</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 98	All other magnetic corrected power-factor type <sup>3</sup> .....	1,863	14,008	477	3,682	472	3,611	430	3,203	484	3,512
	Electronic type.....	36,543	494,021	8,403	118,259	9,065	124,324	9,366	123,579	9,709	127,859
	Uncorrected power-factor type (less than 90 percent power factor):										
36124 91	Single-ended compact lamps.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 92	All other electronic uncorrected power-factor type.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.

**Table 9. Quantity and Value of Shipments by Type of Ballast: 1998 and 1997—Con.**

[Quantity in thousands of ballasts. Value in thousands of dollars]

Product code	Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
36124 —	<b>1997—Con.</b> Fluorescent lamp ballasts—Con. Electronic type—Con. Corrected power-factor type (90 percent power factor or above):										
	Instant start:										
36124 93	One- and two-lamp, 32 watt 48T8.....	15,438	183,781	3,538	43,977	3,696	44,444	4,011	46,763	4,193	48,597
36124 94	Three- and four-lamp, 32 watt 48T8.....	12,594	173,266	2,850	41,277	3,248	45,372	3,213	42,838	3,283	43,779
36124 95	Two-lamp, 59 watt 96T8..	961	18,363	186	3,693	268	5,186	264	5,055	243	4,429
36124 96	Two-lamp, 75 watt 96T12/IS <sup>4</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 97	All other instant start <sup>4</sup> ....	1,141	17,399	268	4,111	261	3,918	265	3,915	347	5,455
	Rapid start:										
36124 82	All 32 watt 48T8.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 84	All other T8, 4 foot and less.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 86	Two-lamp, 40 watt 48T12/RS.....	668	10,462	196	3,023	153	2,627	149	2,286	170	2,526
36124 88	800 mA.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
36124 89	All other rapid start.....	800	13,693	169	3,045	183	3,145	229	3,914	219	3,589
36124 99	All other corrected power...	(D)	(D)	-	-	-	-	(D)	(D)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. mA Milliampere. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Product code 36124 58 is combined with product code 36124 64 to avoid disclosing data for individual companies.

<sup>2</sup>Product code 36124 69 is combined with product code 36124 75 to avoid disclosing data for individual companies.

<sup>3</sup>"Preheat start" and product codes 36124 77 and 36124 78 are combined with product code 36124 98 to avoid disclosing data for individual companies.

<sup>4</sup>Product code 36124 96 is combined with product code 36124 97 to avoid disclosing data for individual companies.

<sup>5</sup>Product code 36124 72 is combined with product code 36124 74 to avoid disclosing data for individual companies.

**Table 10. Quantity and Value of Shipments of Fluorescent Lamp Ballasts by Distribution Channel: 1998**

[Quantity in thousands of ballasts. Value in thousands of dollars]

Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Fluorescent lamp ballasts.....	103,724	914,265	26,342	229,981	26,582	237,966	25,721	228,727	25,079	217,591
Shipments to original equipment manufacturers (OEM).....	76,957	599,443	18,503	139,073	19,627	157,067	19,330	153,533	19,497	149,770
Shipments to distribution.....	26,767	314,822	7,839	90,908	6,955	80,899	6,391	75,194	5,582	67,821
Magnetic type.....	63,882	401,437	17,053	105,694	15,977	100,169	15,023	94,889	15,829	100,685
Shipments to original equipment manufacturers (OEM).....	48,780	247,267	12,671	63,334	12,073	60,616	11,436	57,776	12,600	65,541
Shipments to distribution.....	15,102	154,170	4,382	42,360	3,904	39,553	3,587	37,113	3,229	35,144
Magnetic uncorrected power-factor type..	21,298	62,207	5,619	16,037	5,238	15,124	5,100	15,476	5,341	15,570
Shipments to original equipment manufacturers (OEM).....	19,257	54,078	4,970	13,612	4,707	13,061	4,628	13,382	4,952	14,023
Shipments to distribution.....	2,041	8,129	649	2,425	531	2,063	472	2,094	389	1,547
Magnetic corrected power-factor type....	42,584	339,230	11,434	89,657	10,739	85,045	9,923	79,413	10,488	85,115
Shipments to original equipment manufacturers (OEM).....	29,523	193,189	7,701	49,722	7,366	47,555	6,808	44,394	7,648	51,518
Shipments to distribution.....	13,061	146,041	3,733	39,935	3,373	37,490	3,115	35,019	2,840	33,597

See footnotes at end of table.

Table 10. **Quantity and Value of Shipments of Fluorescent Lamp Ballasts by Distribution Channel: 1998—Con.**

[Quantity in thousands of ballasts. Value in thousands of dollars]

Product description	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Electronic type . . . . .	39,842	512,828	9,289	124,287	10,605	137,797	10,698	133,838	9,250	116,906
Shipments to original equipment manufacturers (OEM) . . . . .	28,176	352,176	5,832	75,739	7,554	96,451	7,893	95,757	6,897	84,229
Shipments to distribution . . . . .	11,666	160,652	3,457	48,548	3,051	41,346	2,805	38,081	2,353	32,677
Electronic uncorrected power-factor type . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Shipments to original equipment manufacturers (OEM) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Shipments to distribution . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Electronic corrected power-factor type . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Shipments to original equipment manufacturers (OEM) . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Shipments to distribution . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies.

**HISTORICAL NOTE**

Data on fluorescent lamp ballasts have been collected by the Census Bureau since 1955. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact the Census Bureau, Customer Services, 301-457-4100.

**FUNDING**

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**CONTACT FOR DATA USERS**

For additional information about these data, contact Chris Blackburn, 301-457-4817.



## WIRING DEVICES AND SUPPLIES—MA335K (FORMERLY MA36K)

### INTRODUCTION

These data cover firms engaged in the manufacture of current-carrying wiring devices and noncurrent-carrying devices in the United States. Very small firms (generally fewer than five employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies are excluded. The statistics were collected by mail on Census Bureau annual Form MA335K, Wiring Devices and Supplies. The survey panel includes all known manufacturers of wiring devices and supplies, except the very small firms excluded from the scope of the survey. Approximately 398 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

During 1998, manufacturers' shipment of wiring devices and supplies totaled \$9.9 billion, an increase of 1.9 percent from \$9.7 billion in 1997. Current-carrying wiring devices accounted for \$5.4 billion, an increase of 2.8 percent from \$5.3 billion in 1997, while the noncurrent-carrying wiring devices accounted for \$4.5 billion, an increase of 0.9 percent, from \$4.4 billion in 1997.

The 1998 shipments included lampholders, valued at \$193.9 million, down 0.17 percent from \$194.3 million in 1997; convenience and power outlets, valued at \$460.7 million, up 5.7 percent from \$435.8 million in 1997; switches, valued at \$1.8 billion, unchanged from 1997; metal contacts, valued at \$226 million, an increase of 5.4 percent from \$214.4 million in 1997; wire connectors, valued at \$1.45 billion, down 0.84 percent from \$1.46 billion in 1997; other current-carrying wiring devices, valued at \$1.3 billion, up 4.7 percent from \$1.2 billion in 1997; pole line and transmission hardware, valued at \$852.4 million, down 0.4 percent from \$855.7 million in 1997; electrical conduit and conduit fittings, valued at \$2.1 billion, down 2.6 percent from \$2.2 billion in 1997; and other noncurrent-carrying devices, valued at \$1.5 billion, up 7.3 percent from \$1.4 billion in 1997.

### EXPLANATION OF TERMS

**Products covered.** The instruction manual for this survey, which is available on request, provides representative descriptions of products included in most product code classifications.

**Table 11. Value of Shipments of Wiring Devices and Supplies by Class of Product: 1989 to 1998**

[Millions of current dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
335931	Current-carrying wiring devices .....	5,448	5,300	4,836	4,772	4,422	4,087	4,154	3,939	3,858	4,031
3359311	Lampholders .....	194	194	193	201	211	210	197	215	230	240
3359313	Convenience and power outlets, both general- and special-purpose, excluding pin and sleeve type .....	461	<sup>†</sup> 436	375	364	341	314	332	309	287	301
3359315	Switches for electrical circuitry .....	1,840	<sup>†</sup> 1,775	1,612	1,623	1,526	1,474	1,424	1,310	1,349	1,377
3359317	Metal contacts precious and other .....	226	214	239	259	245	208	240	332	317	375
3359319	Wire connectors for electrical circuitry .....	1,450	1,462	1,235	1,194	1,082	976	1,007	916	844	857
335931A	Other current-carrying wiring devices, including attachment plug caps, connector bodies, lightning arrestors, and pin and sleeve convenience power outlets .....	1,277	1,219	1,182	1,130	1,018	904	953	858	830	884
335932	Noncurrent-carrying wiring devices .....	4,464	4,424	3,938	3,915	3,622	3,251	3,140	2,930	3,096	3,115
3359321	Pole line and transmission hardware .....	852	<sup>†</sup> 856	704	673	641	618	542	494	517	526
3359323	Electrical conduit and conduit fittings .....	2,126	2,184	1,960	2,050	1,866	1,634	1,601	1,497	1,658	1,665
335932	Other noncurrent-carrying wiring devices and supplies .....	1,485	1,384	1,274	1,192	1,116	999	998	940	922	925

<sup>†</sup>Revised by 5 percent or more from previously published data.

**Table 12. Quantity and Value of Shipments of Wiring Devices and Supplies: 1998 and 1997**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
	Wiring devices and supplies .....	(X)	(X)	9,912,153	(X)	9,725,466
335931	Current-carrying wiring devices .....	(X)	(X)	5,448,024	(X)	5,301,420
3359311	Lampholders .....	27	519,136	193,960	507,153	194,296
	Incandescent:					
3359311004	Outlet box, threaded, medium base only, pull and keyless types .....	4	17,496	19,278	18,281	19,934
3359311002	Push through and pull types, all materials, threaded, medium base only, excluding outlet box type and socket interiors <sup>1</sup> .....	5	(D)	(D)	(D)	(D)
3359311006	Weatherproof, threaded, medium base only .....	6	3,655	3,929	3,578	3,839
3359311008	Candelabra base, all types .....	10	<sup>a</sup> 17,615	<sup>b</sup> 6,426	18,469	6,433
3359311011	Sign and fixture, medium base only .....	6	19,844	19,647	20,076	18,905
3359311012	All other incandescent, medium, admedium, intermediate, lumiline, miniature, including but not limited to pin-type, cleat, hasp, and socket interiors sold separately, all bases <sup>1</sup> .....	14	132,621	77,307	153,132	83,726
	Fluorescent:					
3359311014	Bi-pin .....	8	<sup>a</sup> 273,501	<sup>a</sup> 36,180	244,568	32,758
3359311016	Slimline <sup>2</sup> .....	4	(D)	(D)	(D)	(D)
3359311018	Recessed double contact <sup>2</sup> .....	4	(D)	(D)	(D)	(D)
3359311021	All other fluorescent, including but not limited to circline, panelescent, and starter holders <sup>2</sup> .....	5	48,286	24,196	42,998	21,398
3359311022	All other lampholders, including cold cathode neon, and bases for quartz lamps .....	6	<sup>b</sup> 6,118	<sup>a</sup> 6,997	6,051	7,303
3359313	Convenience and power outlets, both general- and special-purpose, excluding pin and sleeve type .....	13	286,168	460,683	<sup>r</sup> 270,128	<sup>r</sup> 435,830
3359313002	Receptacles with GFIC (all types, all amperages) .....	5	<sup>a</sup> 30,120	183,152	<sup>r</sup> 29,085	<sup>r</sup> 175,564
3359313004	Receptacles without GFIC:					
	2-pole, 2-wire (flush, all types) <sup>3</sup> .....	5	(D)	(D)	(D)	(D)
	2-pole, 3-wire and up (flush):					
3359313006	Locking, 15 amperes and under <sup>4</sup> .....	4	(D)	(D)	(D)	(D)
3359313008	Locking, 20 amperes and over <sup>4</sup> .....	6	89,373	69,799	89,643	64,319
3359313011	Nonlocking, 15 amperes and under .....	5	93,759	69,804	82,991	61,824
3359313012	Nonlocking, 20 amperes and over .....	7	28,760	54,272	<sup>r</sup> 26,250	<sup>r</sup> 49,060
3359313014	Appliance and special applications all amperages, all types .....	5	<sup>c</sup> 26,363	<sup>b</sup> 7,648	24,865	6,840
3359313016	All other types, including dust and explosion proof, surface and 2-pole/2-wire <sup>3</sup> .....	8	<sup>b</sup> 17,793	<sup>a</sup> 76,008	<sup>r</sup> 17,294	<sup>r</sup> 78,223
3359315	Switches for electrical circuitry .....	78	942,317	1,840,447	<sup>r</sup> 960,391	<sup>r</sup> 1,775,214
	General use flush-mounted switches, designed for mounting in switch or outlet boxes (except dimmers):					
	Ac (except mercury):					
3359315102	Single pole, 15 amperes and under ...	9	86,097	67,386	84,173	63,879
3359315104	Single pole, over 15 amperes .....	6	10,424	27,337	9,354	24,673
3359315106	Other than single pole, including but not limited to double pole 3-way, 4-way .....	7	<sup>a</sup> 51,537	87,120	<sup>a</sup> 47,345	80,291
3359315108	Ac-dc (except mercury) <sup>5</sup> .....	3	(D)	(D)	(D)	(D)
3359315111	All other general-use switches, including surface-mounted, mercury, etc. <sup>5</sup> .....	8	<sup>b</sup> 18,580	<sup>b</sup> 21,402	16,578	23,926

See footnotes at end of table.

**Table 12. Quantity and Value of Shipments of Wiring Devices and Supplies: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335931	Wiring devices and supplies—Con.					
3359315	Current-carrying wiring devices—Con.					
3359315312	Switches for electrical circuitry—Con. Special-purpose switches: Appliance and fixture, including pendant and canopy types and variable speed controls . . . . .	18	<sup>b</sup> 102,118	<sup>a</sup> 155,892	95,335	144,250
3359315314	Precision (1/8-inch gap or less) snap-acting switches, excluding limit switches . . . . .	8	<sup>a</sup> 89,655	<sup>b</sup> 62,127	78,929	53,395
3359315616	Aircraft types <sup>5</sup> . . . . .	9	(D)	(D)	(D)	(D)
3359315218	Automotive types . . . . .	34	366,735	870,220	<sup>r</sup> 423,831	<sup>r</sup> 877,856
3359315321	All other special-purpose switches, including foot actuated, light sensing, and signal actuated <sup>6</sup> . . . . .	29	<sup>b</sup> 206,568	<sup>a</sup> 429,749	<sup>a</sup> 196,164	419,075
	Dimmers:					
	Incandescent:					
3359315422	Infinitely variable, 600 watts or less . . . . .	9	<sup>b</sup> 7,934	<sup>a</sup> 50,590	<sup>b</sup> 6,697	<sup>a</sup> 38,453
3359315424	Infinitely variable, over 600 watts . . . . .	8	<sup>a</sup> 278	14,687	<sup>a</sup> 263	<sup>a</sup> 11,817
3359315426	All other types, including but not limited to portable lamps and high-low switches . . . . .	8	<sup>a</sup> 2,391	<sup>b</sup> 53,937	<sup>a</sup> 1,722	<sup>b</sup> 37,599
3359317	Metal contacts, precious and other . . . . .	14	(S)	<sup>a</sup> 225,953	(S)	214,431
3359319	Wire connectors, including connectors used under national electrical application . . . . .	64	44,117,075	1,450,003	<sup>r</sup> 41,527,386	<sup>r</sup> 1,462,218
3359319002	Pressure connectors, where pressure is applied by screw, cone, or other mechanical device . . . . .	26	1,469,535	<sup>a</sup> 193,079	1,362,303	<sup>r</sup> 188,955
3359319004	Compression connectors, uninsulated terminals and splicers, tool installed . . . . .	26	<sup>b</sup> 4,611,750	<sup>b</sup> 194,193	<sup>r</sup> 4,448,323	<sup>r</sup> 192,525
3359319006	Preinsulated terminals and splicers, tool installed . . . . .	18	2,212,230	210,383	<sup>b</sup> 2,327,648	<sup>r</sup> 221,260
3359319008	Banded or strip terminals and splicers, machine installed . . . . .	12	6,027,351	<sup>a</sup> 126,601	<sup>r</sup> 7,865,038	<sup>a</sup> <sup>r</sup> 164,377
3359319011	Pigtail connectors, including wire nuts <sup>7</sup> . . . . .	13	(D)	(D)	(D)	(D)
3359319012	Blade or pin type, separable terminations and splicers <sup>7</sup> . . . . .	11	(D)	(D)	(D)	(D)
3359319014	Other wire connectors, n.e.c., including solder type <sup>7</sup> . . . . .	31	29,796,209	725,747	<sup>r</sup> 25,524,074	<sup>r</sup> 695,101
335931A	Other current-carrying wiring devices, including attachment plug caps, connector bodies, lightning arresters, pin and sleeve convenience power outlets, etc. . . . .	120	(X)	1,276,978	(X)	1,219,431
	Attachment plug caps and flanged outlets, including motor bases, all types; including fused, fuseless, switch, and switchless:					
335931A002	2-pole, 2-wire, all types, general use locking and nonlocking, all amperages . . . . .	13	<sup>a</sup> 25,255	23,629	(S)	12,499
	2-pole, 3-wire and up:					
335931A004	Locking, 15 amperes and under . . . . .	8	1,859	6,238	<sup>r</sup> 1,822	6,361
335931A006	Locking, 20 amperes and over . . . . .	7	2,287	20,236	2,203	18,543
335931A008	Nonlocking, 15 amperes and under <sup>8</sup> . . . . .	10	(D)	(D)	(D)	(D)
335931A011	Nonlocking, 20 amperes and over <sup>8</sup> . . . . .	10	(D)	(D)	(D)	(D)
335931A012	All other types (except pin and sleeve), including dust and explosion-proof, appliance, and other special application <sup>8</sup> . . . . .	8	54,451	104,624	<sup>r</sup> 47,910	<sup>r</sup> 95,744
	Connector bodies and flanged outlets, all types:					
335931A014	2-pole, 2-wire, all types, all amperages . . . . .	6	<sup>b</sup> 1,487	<sup>a</sup> 1,439	<sup>b</sup> <sup>r</sup> 1,742	<sup>a</sup> <sup>r</sup> 1,666
	2-pole, 3-wire and up:					
335931A016	Locking, 15 amperes and under . . . . .	9	2,499	20,528	2,480	20,483
335931A018	Locking, 20 amperes and over . . . . .	9	1,208	17,309	1,154	16,794
335931A021	Nonlocking, 15 amperes and under . . . . .	10	5,336	20,014	<sup>r</sup> 5,049	19,740
335931A022	Nonlocking, 20 amperes and over <sup>9</sup> . . . . .	8	(D)	(D)	(D)	(D)

See footnotes at end of table.

Table 12. **Quantity and Value of Shipments of Wiring Devices and Supplies: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335931	Wiring devices and supplies—Con.					
335931A	Current-carrying wiring devices—Con.					
	Other current-carrying wiring devices, including attachment plug cups, connector bodies, lightning arresters, pin and sleeve convenience power outlets, etc.—Con.					
335931A024	Connector bodies and flanged outlets, all types—Con.					
	All other types, excluding pin and sleeve, including dust and explosion-proof, appliance, and other special application <sup>9</sup> .....	7	36,172	41,866	35,910	39,209
	Pin and sleeve convenience and power outlets, attachment plug caps, and connector bodies:					
	Pin and sleeve, general-purpose (120 volts and over, 20 amperes and over):					
335931A026	Convenience and power outlets <sup>10</sup> .....	9	(D)	(D)	(D)	(D)
335931A028	Attachment plug caps.....	8	227	19,763	245	19,548
335931A031	Connector bodies.....	7	497	26,352	449	23,922
335931A032	All other pin and sleeve, including dust and explosion-proof, 20-					
	ampere types, etc. <sup>10</sup> .....	6	<sup>b</sup> 1,115	40,892	1,366	38,756
335931A034	Fluorescent starters.....	7	<sup>c</sup> 8,915	<sup>c</sup> 2,683	8,347	2,016
335931A036	Terminal blocks.....	21	<sup>a</sup> 118,201	<sup>a</sup> 130,209	124,480	123,021
335931A038	Lightning arresters for alternating current power transmission systems and substations; U.S. designation, station and intermediate, I.E.C. designation 10 kA and 5 kA Series A.....	6	(X)	30,885	(X)	29,372
335931A041	Lightning arresters for alternating current power distribution systems and substations; U.S. designation, distribution and secondary I.E.C. designation 5 kA Series B, 2.5 kA and 1.5 kA.....	4	(X)	129,803	(X)	139,953
335931A042	Surge suppressors, designed for equipment operating on 110/120 volt circuits.....	13	(X)	<sup>c</sup> 123,622	(X)	122,716
335931A044	Lightning rods.....	13	(X)	<sup>a</sup> 50,713	(X)	<sup>a</sup> 50,929
335931A046	Electric harnesses and assemblies, excluding engine harnesses (from purchased wire).....	20	(X)	174,255	(X)	<sup>r</sup> 151,998
335931A051	Miscellaneous, including combination devices, adaptors, current taps, surface extensions, rosettes, choke coils, rail bonds, and overhead trolley line materials <sup>11</sup> .....	37	(X)	<sup>a</sup> 291,918	(X)	286,161
335931A048	All other wiring devices with integral ground fault circuit interrupting capabilities, excluding circuit breakers <sup>11</sup> .....	5	(D)	(D)	(D)	(D)
335932	Noncurrent-carrying wiring devices.....	(X)	(X)	4,464,129	(X)	4,424,046
3359321	Pole and transmission line hardware.....	35	(X)	852,352	(X)	<sup>r</sup> 855,675
3359321002	Pole and transmission line construction materials, also known as overhead and underground line hardware for electric transmission, distribution, and communication lines.....	27	(X)	714,178	(X)	699,680
3359321004	Pole and transmission line anchors.....	5	(X)	16,231	(X)	17,078
3359321006	All other pole and transmission line hardware.....	12	(X)	121,943	(X)	<sup>r</sup> 138,917
3359323	Electrical conduit and conduit fittings.....	66	(X)	2,126,330	(X)	2,184,081
	Rigid metal conduit, excluding couplings, nipples, bends, and elbows:					
3359323102	Standard weights (steel) (short tons) <sup>12</sup> ...	6	(D)	(D)	(D)	(D)
3359323104	Other metallic conduit (short tons) <sup>12</sup> .....	2	281,102	269,667	280,126	279,613
3359323106	Nonmetallic conduit (1,000 pounds).....	5	755,764	263,729	<sup>a</sup> 710,415	<sup>a</sup> 306,322

See footnotes at end of table.

**Table 12. Quantity and Value of Shipments of Wiring Devices and Supplies: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335932	Wiring devices and supplies—Con.					
3359323	Noncurrent-carrying wiring devices—Con.					
3359323108	Electrical conduit and conduit fittings—Con.					
3359323111	Electrical metallic tubing (short tons) . . . . .	5	458,529	386,389	441,735	383,180
3359323112	Flexible steel and aluminum conduit (1,000 feet) . . . . .	10	<sup>b</sup> 262,885	<sup>b</sup> 77,066	273,970	<sup>a</sup> 80,666
3359323114	Flexible nonmetallic conduit (1,000 pounds) . . . . .	10	<sup>b</sup> 52,383	47,035	52,083	44,369
3359323116	Raceways and wire ways, including fittings, metal . . . . .	10	(X)	194,248	(X)	198,848
3359323118	Ventilated cable tray and accessories. . . . .	6	(X)	61,301	(X)	68,280
3359323221	Cast conduit bodies, covers, and gaskets . . . . .	8	(X)	133,193	(X)	124,957
3359323222	Rigid conduit fittings, including couplings, nipples, bends, and elbows:					
3359323224	Couplings, connectors, and unions . . . . .	16	(X)	<sup>b</sup> 158,079	(X)	<sup>b</sup> 156,867
3359323226	Locknuts and bushings . . . . .	9	(X)	<sup>b</sup> 16,434	(X)	<sup>b</sup> 15,556
3359323228	All other rigid conduit fittings. . . . .	7	(X)	<sup>b</sup> 48,466	(X)	<sup>b</sup> 53,106
3359323231	Nonmetallic conduit fittings . . . . .	11	(X)	72,838	(X)	70,976
3359323232	EMT fittings (couplings and connectors):					
3359323233	Gland type . . . . .	10	(X)	<sup>b</sup> 33,004	(X)	<sup>a</sup> 34,614
3359323234	Set-screw type . . . . .	8	(X)	<sup>b</sup> 30,637	(X)	30,554
3359323235	All others. . . . .	8	(X)	<sup>b</sup> 12,032	(X)	<sup>b</sup> 11,264
3359323236	Service entrance caps, ells, and connectors . . . . .	10	(X)	<sup>a</sup> 9,158	(X)	9,798
3359323238	Cable, cord, and flexible conduit fittings:					
3359323241	Armored cable, metallic sheathed cable, and flexible conduit fittings . . . . .	14	(X)	<sup>a</sup> 186,088	(X)	184,769
3359323242	Liquid-tight flexible conduit fittings. . . . .	10	(X)	<sup>c</sup> 52,850	(X)	55,758
3359325	Nonmetallic sheathed cable and cord fittings . . . . .	12	(X)	<sup>b</sup> 29,420	(X)	<sup>a</sup> 29,219
3359325102	Other electric conduit fittings . . . . .	14	(X)	<sup>a</sup> 44,696	(X)	<sup>a</sup> 45,365
3359325104	Other noncurrent-carrying wiring devices and supplies. . . . .	72	(X)	1,485,447	(X)	1,384,290
3359325106	Stamped metal boxes, covers, and accessories, including stamped conduit boxes:					
3359325108	Switch and receptacle boxes . . . . .	12	(X)	415,136	(X)	424,458
3359325110	Outlet boxes. . . . .	7	(X)	<sup>b</sup> 117,607	(X)	110,364
3359325112	Covers. . . . .	9	(X)	<sup>b</sup> 56,965	(X)	55,335
3359325114	Supports, bar hangers, and other accessories . . . . .	12	(X)	<sup>b</sup> 66,351	(X)	65,094
3359325116	Cast metal boxes, covers, gaskets, and accessories:					
3359325118	FS and FD switch and receptacle type. . . . .	9	(X)	26,936	(X)	27,509
3359325120	Outlet type . . . . .	6	(X)	50,742	(X)	49,124
3359325122	Junction type . . . . .	17	(X)	87,379	(X)	81,786
3359325124	Switch, outlet, FM/TV, and telephone wall plates:					
3359325126	Metallic . . . . .	8	54,147	26,677	45,155	23,266
3359325128	Nonmetallic. . . . .	9	295,627	71,610	275,899	65,791
3359325130	Plastics boxes and covers. . . . .	15	(X)	<sup>a</sup> 156,451	(X)	133,431
3359325132	Floor boxes and covers. . . . .	7	(X)	<sup>b</sup> 38,450	(X)	37,903
3359325134	Other noncurrent-carrying wiring devices and supplies. . . . .	32	(X)	371,143	(X)	310,229

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. <sup>f</sup>Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

<sup>1</sup>Product code 3359311002 is combined with product code 3359311012 to avoid disclosing data for individual companies.

<sup>2</sup>Product code 3359311016 and 3359311018 are combined with product code 3359311021 to avoid disclosing data for individual companies.

<sup>3</sup>Product code 3359313004 is combined with product code 3359313016 to avoid disclosing data for individual companies.

<sup>4</sup>Product code 3359313006 is combined with product code 3359313008 to avoid disclosing data for individual companies.

<sup>5</sup>Product code 3359315108 is combined with product code 3359315111 to avoid disclosing data for individual companies.

<sup>6</sup>Product code 3359315616 is combined with product code 3359315321 to avoid disclosing data for individual companies.

<sup>7</sup>Product codes 3359319011 and 3359319012 are combined with product codes 3359319014 to avoid disclosing data for individual companies.

<sup>8</sup>Product codes 335931A008 and 335931A011 are combined with product code 335931A012 to avoid disclosing data for individual companies.

<sup>9</sup>Product code 335931A022 is combined with product code 335931A924 to avoid disclosing data for individual companies.

Table 12. **Quantity and Value of Shipments of Wiring Devices and Supplies: 1998 and 1997—Con.**

<sup>10</sup>Product code 335931A026 is combined with product code 335931A032 to avoid disclosing data for individual companies.

<sup>11</sup>Product code 335931A048 is combined with product code 335931A051 to avoid disclosing data for individual companies.

<sup>12</sup>Product code 3359323102 is combined with product code 3359323104 to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

Table 13. **Value of Shipments, Exports, and Imports of Selected Wiring Devices: 1998 and 1997**

[Millions of dollars]

Product description	Manufacturers' shipments f.o.b. plant <sup>1</sup>	Exports of domestic merchandise at port <sup>1 2</sup>	Imports for consumption <sup>1 3</sup>
<b>1998</b>			
Lampholders . . . . .	194.0	29.8	65.7
Metal contacts . . . . .	226.0	132.4	65.8
<b>1997</b>			
Lampholders . . . . .	193.3	18.3	65.7
Metal contacts . . . . .	211.5	111.1	63.2

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

**HISTORICAL NOTE**

Data on wiring devices and supplies have been collected by the Census Bureau since 1960. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Vance Davis, 301-457-4790.

## ELECTRIC LIGHTING FIXTURES—MA335L (FORMERLY MA36L)

### INTRODUCTION

These data cover companies engaged in the manufacture of specified types of electric lighting fixtures, except very small firms (generally fewer than 10 employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies.

The statistics were collected by mail on Census Bureau annual Form MA335L, Electric Lighting Fixtures. The survey panel includes all known producers of the specified types of electric lighting fixtures, except the very small firms excluded from the scope of the survey. Approximately 320 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

During 1998, the total value of shipments of electric lighting fixtures was \$6,710.6 million. This represents a 1-percent decrease from the 1997 total value of \$6,775.9 million. The 1998 data includes residential type fixtures, \$1,031.8 million, a decrease of 2.6 percent from 1997; commercial and institutional type fixtures, \$3,175.0 million, an increase of 3.1 percent from 1997; industrial type fixtures, \$727.8 million, a decrease of 7.5 percent from 1997; and outdoor lighting equipment, \$1,776.0 million, a decrease of 4 percent from 1997. Vehicular lighting equipment data were discontinued in 1992.

### EXPLANATION OF TERMS

See Introduction for an explanation of terms.

**Table 14. Value of Shipments of Electric Fixtures: 1989 to 1998**

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
3351211000	Electric lighting fixtures <sup>1</sup> . . . . .	6,710.6	6,775.9	6,207.2	5,930.4	5,548.0	5,115.0	4,720.1	4,426.0	4,798.2	4,738.0
3351221000	Residential type . . . . .	1,031.8	1,058.8	1,036.2	983.8	1,025.1	996.5	898.2	760.9	827.6	858.5
3351222000	Commercial and institutional type (except spot-light) . . . . .	3,175.0	3,080.0	2,903.1	2,797.3	2,633.7	2,390.8	2,221.2	2,164.8	2,379.7	2,316.7
3351291000	Industrial type . . . . .	727.8	787.1	682.2	676.3	554.9	493.4	442.1	446.4	529.4	504.6
	Outdoor lighting equipment . . . . .	1,776.0	1,850.0	1,585.7	1,473.0	1,334.2	1,234.2	1,158.6	1,053.9	1,061.5	1,058.2

<sup>1</sup>Excludes "Vehicular lighting equipment" which is not available after 1991.

**Table 15. Quantity and Value of Shipments of Electric Lighting Fixtures: 1998 and 1997**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335121	Electric lighting fixtures, residential type . . . . .	107	(X)	<sup>b</sup> 1,031,828	(X)	<sup>a</sup> <sup>r</sup> 1,058,779
	Incandescent, excluding PAR lampholders and floodlights:					
	Interior, including bath or kitchen:					
3351211102	Ceiling or pendant . . . . .	67	<sup>b</sup> 17,273	<sup>b</sup> 300,188	<sup>a</sup> 15,633	<sup>a</sup> <sup>r</sup> 275,352
3351211104	Wall or bracket . . . . .	54	<sup>b</sup> 2,810	<sup>c</sup> 68,579	<sup>b</sup> 2,945	<sup>b</sup> <sup>r</sup> 69,883
	Track lighting:					
3351211206	Single circuit track lengths and accessories <sup>1</sup> . . . . .	3	(X)	(D)	(X)	(D)
3351211208	Multiple circuit track lengths and accessories <sup>1</sup> . . . . .	3	(X)	(D)	(X)	(D)
3351211211	Line voltage heads <sup>1</sup> . . . . .	1	(D)	(D)	(D)	(D)
3351211212	Low voltage heads <sup>1</sup> . . . . .	1	(D)	(D)	(D)	(D)
3351211214	Track lengths and heads sold together (kits) <sup>1</sup> . . . . .	2	(X)	10,784	(X)	22,975
3351211216	Recessed IC (direct contact with ceiling insulation) <sup>2</sup> . . . . .	6	(D)	(D)	(D)	(D)
3351211218	Recessed non-IC (3-inch minimum clearance from ceiling insulation) <sup>2</sup> . . . . .	6	18,802	179,227	16,619	169,511
	Outdoor:					
3351211221	Designed for attachment to house . . . . .	39	<sup>b</sup> 3,171	<sup>b</sup> 42,133	3,050	<sup>a</sup> <sup>r</sup> 42,120
3351211222	Custom lighting (lanterns, etc.) . . . . .	7	(D)	(D)	(D)	(D)
3351211224	Not designed for attachment to house (garden, patio, and yard) . . . . .	29	13,737	<sup>a</sup> 144,680	13,539	133,347
	Fluorescent:					
	Wraparounds:					
3351211321	4 foot, 2 lamp <sup>3</sup> . . . . .	5	(D)	(D)	(D)	(D)
3351211322	4 foot, 4 lamp <sup>3</sup> . . . . .	7	(D)	(D)	(D)	(D)
3351211324	All other residential wraparounds <sup>3</sup> . . . . .	10	<sup>c</sup> 4,867	<sup>c</sup> 67,849	<sup>c</sup> 5,557	<sup>c</sup> <sup>r</sup> 78,579
3351211328	Ceiling mounted decorative . . . . .	26	<sup>b</sup> 4,713	<sup>a</sup> 75,625	<sup>b</sup> 4,545	<sup>a</sup> <sup>r</sup> 80,996
3351211331	Ceiling mounted general-purpose . . . . .	16	<sup>c</sup> 6,719	<sup>b</sup> 73,631	<sup>b</sup> 7,418	<sup>b</sup> 94,825
3351211332	Pendant . . . . .	6	(D)	(D)	(D)	(D)
3351211334	Recessed IC (direct contact with ceiling insulation) <sup>4</sup> . . . . .	2	(D)	(D)	(D)	(D)
3351211336	Recessed non-IC (3-inch minimum clearance from ceiling insulation) <sup>4</sup> . . . . .	1	121	6,952	427	15,396
3351211338	Wall or bracket . . . . .	23	<sup>c</sup> 1,652	<sup>b</sup> 21,641	<sup>c</sup> 1,208	<sup>a</sup> 17,713
3351211341	Components and renewal parts for residential type, sold separately . . . . .	29	(X)	<sup>c</sup> 34,624	(X)	<sup>b</sup> 52,988
3351221	Electric lighting fixtures, commercial, and institutional type (except portable and spotlight) . . . . .	169	(X)	<sup>a</sup> 3,174,995	(X)	<sup>a</sup> 3,079,948
	Incandescent fixtures:					
	Utilitarian and ornamental types (primarily for public buildings, banks, stores, office buildings, schools, auditoriums, churches, theaters, etc.):					
3351221102	Surface or pendant . . . . .	56	<sup>b</sup> 935	<sup>b</sup> 78,145	<sup>a</sup> 871	<sup>r</sup> 66,204
	Recessed:					
3351221104	IC (direct contact with ceiling insulation) . . . . .	14	<sup>b</sup> 6,633	<sup>c</sup> 58,737	6,463	59,160
3351221106	Non-IC (3-inch minimum clearance from ceiling insulation) . . . . .	17	<sup>c</sup> 8,773	<sup>c</sup> 120,361	<sup>r</sup> 8,048	<sup>r</sup> 109,726
	Track lighting:					
3351221108	Single circuit track lengths and accessories . . . . .	6	(X)	<sup>b</sup> 82,346	(X)	83,461
3351221111	Multiple circuit track lengths and accessories . . . . .	6	(X)	<sup>b</sup> 5,582	(X)	<sup>r</sup> 5,842
3351221112	Line voltage heads . . . . .	8	(S)	<sup>b</sup> 23,697	(S)	<sup>r</sup> 26,279
3351221114	Low voltage heads . . . . .	10	(S)	<sup>c</sup> 23,797	(S)	25,427
3351221116	Track lengths and heads sold together (kits) . . . . .	5	<sup>a</sup> 137	<sup>a</sup> 2,550	184	<sup>a</sup> <sup>r</sup> 2,757
3351221118	Specialized custom lighting fixtures, chandeliers, church lighting, etc. . . . .	36	(X)	<sup>b</sup> 72,815	(X)	<sup>a</sup> 67,667
3351221121	Other incandescent fixtures such as interior display and PAR lampholders . . . . .	21	(X)	<sup>c</sup> 34,167	(X)	<sup>b</sup> 36,003
	High intensity discharge types:					
3351221222	Surface or pendant <sup>5</sup> . . . . .	33	(D)	(D)	(D)	(D)
3351221224	Indirect lighting <sup>5</sup> . . . . .	10	214	52,919	281	53,752
	Recessed non-IC (3-inch minimum clearance from ceiling insulation):					
3351221226	Open reflector . . . . .	15	<sup>c</sup> 339	<sup>b</sup> 37,725	<sup>r</sup> 342	37,510
3351221228	Enclosed . . . . .	16	<sup>b</sup> 109	<sup>b</sup> 16,963	<sup>r</sup> 141	<sup>r</sup> 20,169
	Recessed IC (direct contact with ceiling insulation):					
3351221231	Open reflector <sup>6</sup> . . . . .	2	(D)	(D)	(D)	(D)
3351221232	Enclosed <sup>6</sup> . . . . .	6	<sup>c</sup> 4	460	<sup>a</sup> <sup>r</sup> 7	518

See footnotes at end of table.



**Table 15. Quantity and Value of Shipments of Electric Lighting Fixtures: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335121	Electric lighting fixtures, commercial, and institutional type (except portable and spotlight)—Con. Fluorescent:					
	Recessed troffers, airhandling, including heat extraction versions:					
	Lensed:					
3351221333	2 feet X 4 feet, 4 lamp	14	231	10,582	241	13,667
3351221334	2 feet X 4 feet, 3 lamp	8	96	5,323	185	10,475
3351221335	2 feet X 4 feet, 2 lamp	11	188	9,520	100	5,267
3351221336	All other lensed, airhandling	14	149	10,738	146	10,348
	Metal louvered:					
3351221337	2 feet X 4 feet, 4 lamp	8	155	10,373	216	15,370
3351221338	2 feet X 4 feet, 3 lamp	9	694	43,935	888	62,313
3351221339	2 feet X 4 feet, 2 lamp	9	168	11,474	167	11,842
3351221340	All other metal louvered, airhandling	12	2,227	134,792	2,082	136,714
	Nonmetal louvered:					
3351221341	2 feet X 4 feet, 4 lamp <sup>7</sup>	2	(D)	(D)	(D)	(D)
3351221342	2 feet X 4 feet, 3 lamp <sup>7</sup>	3	(D)	(D)	(D)	(D)
3351221343	2 feet X 4 feet, 2 lamp <sup>7</sup>	2	(D)	(D)	(D)	(D)
3351221344	All other nonmetal louvered, airhandling <sup>7</sup>	6	118	9,261	59	5,884
	Recessed troffers, nonairhandling, including heat extraction versions:					
	Lensed:					
3351221401	2 feet X 4 feet, 4 lamp	23	4,183	166,171	4,397	176,686
3351221402	2 feet X 4 feet, 3 lamp	17	1,731	82,436	1,542	74,339
3351221403	2 feet X 4 feet, 2 lamp	16	878	39,380	896	41,499
3351221404	All other lensed, nonairhandling	25	4,437	179,996	4,512	188,056
	Metal louvered:					
3351221405	2 feet X 4 feet, 4 lamp	11	589	29,380	301	18,962
3351221406	2 feet X 4 feet, 3 lamp	11	1,498	93,964	1,351	76,759
3351221407	2 feet X 4 feet, 2 lamp	11	196	12,213	163	10,381
3351221408	All other metal louvered, airhandling	13	<sup>a</sup> 850	<sup>a</sup> 51,738	<sup>a</sup> 594	<sup>a</sup> 38,260
	Nonmetal louvered:					
3351221409	2 feet X 4 feet, 4 lamp	7	<sup>a</sup> 72	<sup>a</sup> 3,638	<sup>r</sup> 86	4,280
3351221411	2 feet X 4 feet, 3 lamp	6	<sup>b</sup> 45	<sup>b</sup> 2,366	<sup>r</sup> 51	2,932
3351221412	2 feet X 4 feet, 2 lamp	6	<sup>a</sup> 12	<sup>a</sup> 754	39	2,054
3351221413	All other nonmetal louvered, nonairhandling	9	<sup>c</sup> 108	<sup>c</sup> 3,426	<sup>b</sup> 160	<sup>b</sup> 5,839
3351221546	Striplights (surface)	51	<sup>a</sup> 9,785	<sup>a</sup> 228,539	9,756	229,608
3351221548	Striplights (recessed)	10	292	10,032	340	11,429
3351221751	Ceiling systems, including luminous ceilings	16	(X)	<sup>b</sup> 43,985	(X)	<sup>b</sup> 35,527
	Plastics wraparounds:					
3351221601	4 foot, 2 lamp	27	2,144	58,708	<sup>r</sup> 1,815	<sup>r</sup> 57,901
3351221602	4 foot, 4 lamp	22	957	31,445	654	29,170
3351221603	All other plastics commercial and institutional wraparounds	24	<sup>a</sup> 1,813	<sup>b</sup> 63,173	<sup>a</sup> 1,674	<sup>a</sup> 61,248
3351221754	Wall mounted fixtures	55	<sup>b</sup> 1,105	<sup>b</sup> 81,808	<sup>a</sup> 1,438	<sup>a</sup> 88,398
3351221756	Under cabinet mount task light	38	<sup>a</sup> 2,749	93,991	<sup>a</sup> 2,615	89,678
	Surface and pendant, all other:					
3351221758	Lensed	50	<sup>c</sup> 4,769	<sup>b</sup> 139,850	<sup>c</sup> <sup>r</sup> 4,515	<sup>a</sup> <sup>r</sup> 144,039
3351221761	Louvered	25	<sup>a</sup> 343	<sup>a</sup> 49,054	<sup>a</sup> <sup>r</sup> 257	<sup>r</sup> 27,392
	Compact fluorescent downlights:					
3351221762	Recessed IC (direct contact with ceiling insulation)	11	<sup>b</sup> 651	<sup>b</sup> 30,819	566	<sup>r</sup> 28,961
3351221764	Recessed non-IC (3-inch minimum clearance from ceiling insulation)	14	<sup>b</sup> 1,781	<sup>a</sup> 121,779	<sup>r</sup> 1,485	<sup>r</sup> 97,024
	Specific function lighting, all sources (incandescent, HID, and fluorescent):					
3351221766	Enclosed and gasketed (clean room fixtures)	37	<sup>a</sup> 683	<sup>b</sup> 56,838	<sup>a</sup> <sup>r</sup> 653	<sup>a</sup> 56,802
3351221768	Indirect lighting, furniture mount <sup>b</sup>	8	(D)	(D)	(D)	(D)
3351221771	Indirect lighting, pendant mount <sup>b</sup>	11	725	37,201	<sup>r</sup> 571	<sup>r</sup> 29,061
3351221772	Indoor signs, including electroluminescence (exit, directional, etc.)	30	<sup>a</sup> 2,652	<sup>a</sup> 182,117	<sup>a</sup> 2,412	<sup>b</sup> 172,383
3351221774	Indoor emergency lighting (automatic self-powered)	19	<sup>a</sup> 1,993	<sup>a</sup> 100,419	1,680	85,824
3351221776	Vandal resistant (specialty products designed for this application)	18	<sup>b</sup> 556	<sup>b</sup> 40,806	<sup>r</sup> 497	<sup>r</sup> 36,049
3351221778	All other	39	(X)	<sup>c</sup> 142,638	(X)	<sup>b</sup> <sup>r</sup> 151,420
3351221881	Components and renewal parts for commercial and institutional type, sold separately	39	(X)	<sup>b</sup> 140,069	(X)	<sup>r</sup> 141,632

See footnotes at end of table.

**Table 15. Quantity and Value of Shipments of Electric Lighting Fixtures: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3351222	Electric lighting fixtures, industrial type .....	68	(X)	<sup>a</sup> 727,818	(X)	<sup>r</sup> 787,117
	General lighting (except portable):					
3351222102	Incandescent .....	19	<sup>b</sup> 844	<sup>b</sup> 18,253	<sup>r</sup> 819	<sup>r</sup> 17,291
3351222104	Fluorescent .....	41	<sup>a</sup> 3,350	<sup>a</sup> 133,358	<sup>r</sup> 3,053	<sup>a</sup> <sup>r</sup> 129,810
	High intensity discharge types, including integrally mounted and remote ballasts:					
3351222106	Open reflector .....	17	<sup>a</sup> 2,016	<sup>a</sup> 179,124	<sup>r</sup> 2,319	<sup>r</sup> 201,983
3351222108	Enclosed .....	16	<sup>a</sup> 1,405	<sup>b</sup> 170,664	<sup>r</sup> 1,724	<sup>r</sup> 201,896
3351222111	Parking garage lighting (fixtures designed specifically for this application) .....	8	<sup>b</sup> 130	<sup>c</sup> 13,394	<sup>r</sup> 151	<sup>a</sup> <sup>r</sup> 17,009
	Hazardous lighting—UL listed, class, division, group:					
3351222112	Incandescent, including portable .....	9	(X)	<sup>b</sup> 20,242	(X)	<sup>r</sup> 17,870
3351222114	Fluorescent, including portable .....	16	(X)	<sup>c</sup> 19,105	(X)	<sup>b</sup> <sup>r</sup> 18,874
3351222116	High intensity discharge types, including integrally mounted and remote ballasts .....	12	(X)	<sup>b</sup> 76,030	(X)	<sup>r</sup> 78,487
3351222218	Components and renewal parts for industrial type, sold separately .....	23	(X)	<sup>c</sup> 97,648	(X)	<sup>r</sup> 103,897
335129	Outdoor lighting equipment, excluding lamps .....	101	(X)	<sup>a</sup> 1,775,965	(X)	<sup>r</sup> 1,849,992
	Street and highway lighting luminaries, including bridge and tunnel lighting:					
3351291002	Incandescent (filament and quartz iodine) .....	6	(D)	(D)	(D)	(D)
	High intensity discharge types, including low pressure sodium and integrally mounted and remote ballasts:					
3351291004	Open .....	4	<sup>c</sup> 593	<sup>c</sup> 22,596	<sup>a</sup> <sup>r</sup> 605	<sup>r</sup> 22,198
3351291006	Enclosed .....	13	<sup>c</sup> 904	<sup>b</sup> 102,026	<sup>r</sup> 1,382	<sup>r</sup> 129,456
3351291008	Fluorescent .....	4	<sup>c</sup> 9	<sup>c</sup> 1,992	<sup>c</sup> 9	<sup>c</sup> <sup>r</sup> 1,903
3351291011	Special-purpose luminaries for highmast, sign lighting, and expressway fixtures, excluding value of poles .....	5	(D)	(D)	(D)	(D)
	Floodlighting, area, and site lighting luminaries:					
	General-purpose floodlighting:					
3351291012	Incandescent filament .....	9	<sup>c</sup> 158	<sup>b</sup> 13,320	<sup>b</sup> <sup>r</sup> 164	<sup>a</sup> 13,183
3351291014	Incandescent quartz iodine .....	16	<sup>c</sup> 513	<sup>c</sup> 10,345	<sup>c</sup> <sup>r</sup> 553	<sup>r</sup> 11,082
3351291016	High intensity discharge types, general, including low pressure sodium and integrally mounted and remote ballasts .....	28	<sup>b</sup> 1,340	<sup>b</sup> 215,245	1,596	253,348
3351291018	Fluorescent .....	12	(D)	(D)	(D)	(D)
3351291021	HID sportslighting (fixtures designed specifically for this application) .....	11	<sup>b</sup> 246	<sup>b</sup> 38,905	231	36,412
	HID area and site lighting:					
3351291022	Site lighting (under 20-foot mounting) .....	25	<sup>b</sup> 2,137	<sup>c</sup> 137,053	<sup>r</sup> 2,103	<sup>a</sup> <sup>r</sup> 141,606
3351291024	Bollards .....	15	<sup>b</sup> 77	<sup>b</sup> 22,066	81	<sup>a</sup> 21,889
3351291026	Post-top .....	14	139	23,636	145	22,783
3351291028	Large area lighting (20- to 60-foot mounting) .....	20	<sup>c</sup> 782	<sup>c</sup> 230,276	<sup>a</sup> <sup>r</sup> 829	<sup>a</sup> <sup>r</sup> 234,902
3351291031	Wall packs (such as high intensity discharge, incandescent, and quartz) .....	25	<sup>b</sup> 1,344	<sup>b</sup> 138,816	<sup>r</sup> 1,391	<sup>r</sup> 142,162
3351291032	Outdoor PAR lampholders .....	15	<sup>b</sup> 756	<sup>b</sup> 11,348	905	<sup>a</sup> 10,723
	Other floodlighting and area lighting equipment:					
3351291034	Spotlights, including indoor and stage and excluding vehicular .....	9	<sup>c</sup> 355	<sup>a</sup> 94,333	287	67,867
3351291036	All other outdoor lighting equipment (such as underwater fountain and pool lighting) .....	25	(X)	<sup>b</sup> 122,756	(X)	<sup>r</sup> 139,760
	Aviation ground lighting equipment (for fixed-based airports):					
3351291038	Runway approach lighting, including fixtures, regulators, insulating transformers, isolating lamp transformers, beacons, wind tees, and cones ..	5	(X)	<sup>b</sup> 12,928	(X)	12,486
3351291041	Runway (except runway approach), taxiway, and ramp light, including fixtures, regulators, and isolating lamp transformers .....	5	(X)	<sup>a</sup> 41,751	(X)	<sup>r</sup> 42,172
3351291042	Components and renewal parts for outdoor lighting equipment, sold separately .....	25	(X)	<sup>b</sup> 53,146	(X)	<sup>a</sup> <sup>r</sup> 57,198
	Poles, standards, newels, brackets, and accessories:					
	For street and highway lighting, including traffic signal standards:					
3351291044	Steel and cast iron poles .....	12	(X)	<sup>c</sup> 93,455	(X)	<sup>r</sup> 92,520
3351291046	Aluminum poles .....	10	(X)	36,960	(X)	<sup>a</sup> <sup>r</sup> 46,652
3351291048	Concrete poles <sup>9</sup> .....	1	(X)	(D)	(X)	(D)
3351291051	All other (fiberglass, wood, etc.) <sup>9</sup> .....	2	(X)	<sup>c</sup> 39,440	(X)	<sup>r</sup> 38,790

See footnotes at end of table.

**Table 15. Quantity and Value of Shipments of Electric Lighting Fixtures: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335129	Outdoor lighting equipment, excluding lamps—Con. Poles, standards, newels, brackets, and accessories—Con. For area lighting, sports and other off-street use:					
3351291052	Steel and cast iron poles (60-foot and over) . . . . .	5	(X)	<sup>c</sup> 14,121	(X)	<sup>r</sup> 13,204
3351291054	Steel and cast iron poles (under 60-foot) . . . . .	20	(X)	<sup>c</sup> 132,272	(X)	126,580
3351291056	Aluminum poles . . . . .	20	(X)	<sup>b</sup> 48,218	(X)	<sup>a</sup> 71,598
3351291058	All other (concrete, wood, etc.) . . . . .	6	(X)	(D)	(X)	(D)

D Withheld to avoid disclosing data for individual companies. <sup>r</sup>Revised by 5 percent or more from previously published data.  
S Did not meet publication standards. X Not applicable.

<sup>1</sup>Product code 3351211214 is combined with product code 3351211206, 3351211208, 3351211211, and 3351211212 to avoid disclosing data for individual companies.

<sup>2</sup>Product code 3351211216 is combined with product code 3351211218 to avoid disclosing data for individual companies.

<sup>3</sup>Product code 3351211324 is combined with product codes 3351211321 and 3351211322 to avoid disclosing data for individual companies.

<sup>4</sup>Product code 3351211334 is combined with product code 3351211336 to avoid disclosing data for individual companies.

<sup>5</sup>Product code 33512211222 is combined with product code 3351221224 to avoid disclosing data for individual companies.

<sup>6</sup>Product code 3351221231 is combined with product code 3351221232 to avoid disclosing data for individual companies.

<sup>7</sup>Product code 3351221344 is combined with product codes 3351221341, 3351221342, and 3351221343 to avoid disclosing data for individual companies.

<sup>8</sup>Product code 3351221768 is combined with product code 3351221771 to avoid disclosing data for individual companies.

<sup>9</sup>Product code 3351291048 is combined with product code 3351291051 to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 16. Shipments, Exports, and Imports of Electric Lighting Fixtures: 1998**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments f.o.b. plant (value)	Exports of domestic merchandise <sup>1</sup>		Imports for consumption <sup>1</sup>	
		Quantity	Value at port <sup>2</sup>	Quantity	Value in foreign country <sup>3</sup>
Electric lighting fixtures, residential type (except portable), excluding components and renewal parts . . .	1,031,828	1,444,177	36,060	81,768,386	692,949
Electric lighting fixtures, commercial, institutional and industrial types, excluding components and renewal parts . . . . .	3,174,995	2,937,411	103,121	10,113,945	131,427
Other electric lighting fixtures . . . . .	2,503,783	11,546,317	212,395	144,984,864	935,030

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

**HISTORICAL NOTE**

Data on electric lighting fixtures have been collected by the Census Bureau since 1962. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**FUNDING**

The MA335L survey is funded by the National Electric Manufacturers Association.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Vance Davis, 301-457-4790.

## COMMUNICATION EQUIPMENT—MA334P (FORMERLY MA36P)

### INTRODUCTION

These data cover all significant manufacturers of communication equipment, including telephone, telegraph, and other electronic systems. The mailing panel included all establishments with 20 employees or more for industries 334210, 334220, 334290, 333319, and 335999.

The statistics were collected by mail on Census Bureau annual Form MA334P, Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment. The survey panel includes all known manufacturers of telephone and telegraph apparatus, communications systems and equipment, and electronic equipment, except the firms excluded from the scope of the survey. Approximately 1,040 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

During 1998, the total value of shipments of communication equipment totaled \$77.2 billion, an increase of 4.9 percent from the 1997 value of \$73.6 billion. Shipments of telephone switching equipment totaled \$12.3 billion, an

increase of 1.9 percent from the \$10.3 billion shipped in 1997. Shipments of carrier line equipment and nonconsumer modems increased 9 percent, from \$7.3 billion in 1997 to \$8 billion in 1998. Other telephone and telegraph equipment shipped in 1998 totaled \$18.2 billion, an increase of 10.2 percent from the \$16.5 billion shipped in 1997.

Communication systems and equipment decreased 2.5 percent, from \$29.4 billion shipped in 1997 to \$28.7 billion in 1998.

Shipments of broadcast, studio, and related electronic equipment increased 2.1 percent, from \$3.4 billion shipped in 1997 to \$3.5 billion shipped in 1998. Alarm systems totaled \$2 billion in 1998, an increase of 5.5 percent from the \$1.9 billion in 1997.

### EXPLANATION OF TERMS

**Research and development.** Dollar shipments reflect income from development, design, and engineering services in connection with the manufacture of the products shipped.

Table 17. **Value of Shipments of Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment by Class of Product: 1993 to 1998**

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993
	Communication equipment, including telephone, telegraph, and other electronic systems and equipment ..	77,170.1	73,587.8	65,608.6	56,362.0	49,598.1	42,113.8
3342101	Telephone switching and switchboard equipment . . .	12,317.0	10,302.2	9,617.7	8,178.4	8,067.6	7,240.9
3342104	Carrier line equipment and modems <sup>1</sup> . . . . .	7,968.3	7,278.1	7,544.6	5,868.6	5,114.0	4,993.3
3342107	Other telephone and telegraph equipment and components . . . . .	18,170.4	16,488.1	14,030.9	10,510.0	8,479.5	7,026.4
3342201	Communication systems and equipment (except broadcast) . . . . .	28,686.2	29,416.0	25,332.5	23,031.9	19,977.5	16,196.7
3342203	Broadcast, studio, and related electronic equipment .	3,451.5	3,360.5	3,000.2	2,844.7	2,469.5	2,077.5
3342903	Intercommunications systems, including inductive paging systems (selective calling) . . . . .	268.3	256.4	277.8	296.0	283.7	241.7
3342901	Alarm systems . . . . .	2,039.8	1,926.5	1,802.8	1,662.1	1,550.5	1,532.4
3342902	Vehicular and pedestrian traffic control equipment and electrical railway signals and attachments . . . .	904.8	963.7	762.0	710.7	669.9	573.4
3333197	Electronic teaching machines, teaching aids, trainers, and simulators . . . . .	750.2	872.0	865.7	913.3	838.5	847.7
3359997	Laser sources <sup>2</sup> . . . . .	928.6	991.8	843.8	787.5	726.4	(NA)
335999A	Ultrasonic equipment . . . . .	204.1	212.9	184.3	172.3	137.5	127.3
335999C	Other electronic systems and equipment, n.e.c. . . . .	1,480.8	1,519.7	1,346.3	1,386.5	1,283.5	1,256.5

NA Not available. n.e.c. Not elsewhere classified. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Total for product code 3342104 does not include product codes 3344184001 and 3344184003.

<sup>2</sup>Beginning in 1994, data for "Laser equipment, instrumentation, and components" have been eliminated from this survey. Only "Laser sources" are being collected.

Table 18. **Quantity and Value of Shipments of Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment by Product Code: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3342101	Telephone switching and switchboard equipment.....	(NA)	(X)	12,317,020	(X)	10,302,187
	Central office switching equipment:					
3342101001	Local switching <sup>1</sup> .....	12	(X)	4,563,684	(X)	(D)
3342101003	Toll switching <sup>1</sup> .....	11	(X)	<sup>b</sup> 1,384,068	(X)	(D)
	Private branch exchange switching equipment:					
3342101011	Up to 99 lines.....	7	(X)	<sup>a</sup> 488,159	(X)	409,477
3342101013	100-399 lines.....	9	(X)	361,658	(X)	296,441
3342101015	400-1,000 lines.....	5	(X)	143,839	(X)	153,130
3342101017	Over 1,000 lines.....	6	(X)	<sup>a</sup> 118,614	(X)	104,255
3342101021	Cellular mobile telephone switching equipment <sup>2</sup> .....	11	(X)	(D)	(X)	(D)
3342101023	Packet switching equipment <sup>2</sup> .....	9	(X)	(D)	(X)	(D)
3342101025	Other telephone switching and switchboard equipment.....	30	(X)	<sup>a</sup> 1,328,544	(X)	2,063,384
3342101099	Parts, components, and subassemblies for telephone switching equipment.....	24	(X)	396,746	(X)	<sup>r</sup> 376,616
3342104	Carrier line equipment and modems <sup>3</sup> .....	(NA)	(X)	7,968,285	(X)	<sup>r</sup> 7,278,101
	Carrier line equipment:					
	Repeaters and line transceivers:					
3342104001	Analog <sup>4</sup> .....	3	(X)	(D)	(X)	(D)
3342104003	Digital, all copper wire <sup>4</sup> .....	13	(X)	(D)	(X)	(D)
3342104005	Digital, optical input or output <sup>4</sup> .....	3	(X)	(D)	(X)	(D)
	Multiplex equipment, including channel banks:					
3342104011	Analog.....	6	(X)	<sup>a</sup> 25,038	(X)	<sup>a</sup> 31,649
3342104013	Digital, all copper wire <sup>6</sup> .....	26	(X)	(D)	(X)	(D)
3342104015	Digital, optical input or output <sup>6</sup> .....	8	(X)	(D)	(X)	(D)
	Other subscriber loop carrier terminal and line equipment:					
3342104021	Analog <sup>7</sup> .....	4	(X)	<sup>a</sup> 20,455	(X)	(D)
3342104023	Digital, all copper wire <sup>7</sup> .....	20	(X)	<sup>a</sup> 974,569	(X)	(D)
3342104025	Digital, optical input or output.....	6	(X)	<sup>c</sup> 1,387,002	(X)	<sup>a</sup> <sup>r</sup> 1,370,021
	Other carrier line equipment:					
3342104031	Analog <sup>4</sup> .....	4	(X)	(D)	(X)	(D)
	Digital:					
3342104033	Meeting or exceeding T1 standard (1.5 mbps) <sup>4</sup> .....	13	(X)	(D)	(X)	(D)
3342104035	Other.....	12	(X)	1,069,616	(X)	827,975
	Modems.....	(NA)		4,744,779	<sup>r</sup> 5,033,441	<sup>r</sup> 1,115,045
	Up through 10,000 bps.....	(NA)		969,777	(D)	(D)
3344184001	Consumer.....	16		<sup>b</sup> 640,227	<sup>b</sup> 618,490	<sup>b</sup> 101,107
3342104041	Nonconsumer <sup>9</sup> .....	5	(D)	(D)	(D)	(D)
	Over 10,000 bps.....	(NA)		(D)	(D)	(D)
3344184003	Consumer.....	20		<sup>c</sup> 3,582,528	<sup>c</sup> 679,697	<sup>r</sup> 798,585
3342104043	Nonconsumer <sup>9</sup> .....	5	(D)	(D)	(D)	(D)
3342107	Other telephone and telegraph equipment and components.....	(NA)	(X)	18,170,384	(X)	18,709,706
	Telephone sets:					
3342107001	Single line and ISDN sets.....	11		1,050,991	<sup>a</sup> 1,816,060	135,122
3342107003	Key sets.....	8		<sup>b</sup> 522,958	<sup>c</sup> 103,776	<sup>b</sup> 477,125
3342107005	Public pay telephone equipment.....	7		532,738	<sup>a</sup> 132,320	<sup>a</sup> <sup>r</sup> 106,420
3342107007	Cordless handsets <sup>10</sup> .....	1	(D)	(D)	(D)	(D)
3342107009	Other telephone sets and accessories (e.g., handsets) <sup>10</sup> .....	14	(X)	(D)	(X)	(D)
	Other data communications equipment:					
3342107021	Routers and gateways.....	26	(X)	<sup>c</sup> 9,302,989	(X)	8,999,155
3342107023	Bridges.....	10	(X)	<sup>a</sup> 111,787	(X)	<sup>a</sup> 104,098
3342107025	Terminal servers <sup>11</sup> .....	6	(X)	(D)	(X)	(D)
3342107027	Concentrators <sup>11</sup> .....	7	(X)	(D)	(X)	(D)
3342107029	Other data communications equipment (front end processors, translators, etc.).....	43	(X)	<sup>c</sup> 1,657,386	(X)	<sup>b</sup> <sup>r</sup> 1,260,091
3342107051	Voice frequency equipment.....	12	(X)	<sup>a</sup> 42,694	(X)	41,680
3342107055	Telephone key systems equipment <sup>12</sup> .....	6	(X)	(D)	(X)	(D)
3342107059	Video teleconferencing equipment (video CODECS and other systems equipment) <sup>12</sup> .....	12	(X)	(D)	(X)	(D)
	Voice/call message processing equipment, including answering devices:					
3342107061	Voice mail equipment.....	8	(X)	<sup>c</sup> 503,221	(X)	<sup>b</sup> 460,743
3342107063	Voice response equipment <sup>13</sup> .....	12	(X)	(D)	(X)	(D)
3342107065	Automated attendance equipment <sup>13</sup> .....	4	(X)	(D)	(X)	(D)
3342107067	Automatic call distributors <sup>13</sup> .....	3	(X)	(D)	(X)	(D)
3342107069	Other voice or call processing equipment.....	23	(X)	<sup>b</sup> 311,518	(X)	<sup>b</sup> <sup>r</sup> 293,764

See footnotes at end of table.

Table 18. **Quantity and Value of Shipments of Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment by Product Code: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
	Other telephone and telegraph equipment and components—Con.					
3342107091	Facsimile communication equipment (complete) <sup>14</sup> . . . . .	5	(X)	(D)	(X)	(D)
3344160090	Telephone transformers . . . . .	-	(X)	-	(X)	-
3342107097	Other telephone/telegraph equipment <sup>14</sup> . . . . .	47	(X)	(D)	(X)	(D)
3342107099	Parts, components, and subassemblies for other telephone equipment . . . . .	29	(X)	<sup>c</sup> 362,972	(X)	<sup>r</sup> 346,059
3342201	Communications systems and equipment (except broadcast) . . . . .	(NA)	(X)	28,686,231	(X)	29,418,945
	Radio station type <sup>15</sup> . . . . .	(NA)	(X)	18,884,360	(X)	20,347,263
3342201301	Amateur . . . . .	11	(X)	<sup>b</sup> 9,132	(X)	<sup>c</sup> 8,917
3342201303	Broadcast (sound and television) <sup>16</sup> . . . . .	6	(X)	(D)	(X)	(D)
3342201305	Earth exploration <sup>16</sup> . . . . .	1	(X)	(D)	(X)	(D)
3342201307	Meteorological . . . . .	6	(X)	68,614	(X)	<sup>b</sup> 16,592
3342201101	Fixed . . . . .	27	(X)	<sup>b</sup> 2,644,234	(X)	2,574,740
3342201309	Intersatellite <sup>16</sup> . . . . .	15	(X)	(D)	(X)	(D)
3342201311	Telecommand . . . . .	4	(X)	25,315	(X)	19,248
3342201313	Telemetry . . . . .	15	(X)	<sup>b</sup> 81,048	(X)	<sup>c</sup> 79,660
3342201315	Radionavigational and locational . . . . .	10	(X)	<sup>a</sup> 441,426	(X)	536,535
3342201317	Aeronautical communications . . . . .	10	(X)	447,870	(X)	517,100
	Mobile:					
	Cellular system equipment:					
3342201201	Analog <sup>17</sup> . . . . .	9	(X)	(D)	(X)	(D)
3342201204	Digital <sup>17</sup> . . . . .	12	(X)	(D)	(X)	(D)
3342201207	Other conventional and trunked system equipment . . . . .	14	(X)	294,875	(X)	323,312
3342201209	Other mobile . . . . .	13	(X)	<sup>a</sup> 121,088	(X)	<sup>a</sup> 138,242
3342201319	Other . . . . .	16	(X)	96,912	(X)	<sup>r</sup> 138,242
3342201401	Other type . . . . .	(NA)	(X)	9,801,871	(X)	9,071,682
	Checkout, monitoring, evaluation, and other electronic support equipment for communications systems . . . . .	50	(X)	<sup>c</sup> 609,130	(X)	<sup>a</sup> 724,502
	Antenna systems (sold separately):					
3342201405	Below 890 MHz . . . . .	47	(X)	<sup>a</sup> 682,108	(X)	759,155
3342201407	890 MHz and above . . . . .	49	(X)	<sup>b</sup> 454,307	(X)	<sup>r</sup> 438,818
	Fiber optics equipment, excluding connectors, cable, photodiode and laser diode components, microwave equipment, and multiplexers:					
	Equipment meeting SONET standards:					
3342201411	OC-1 equipment <sup>18</sup> . . . . .	5	(X)	(D)	(X)	(D)
3342201412	OC-2 and 3 equipment <sup>18</sup> . . . . .	6	(X)	(D)	(X)	(D)
3342201413	OC-4 through OC-9 equipment <sup>18</sup> . . . . .	2	(X)	(D)	(X)	(D)
3342201414	Greater than OC-9 equipment . . . . .	5	(X)	<sup>c</sup> 361,205	(X)	292,052
3342201419	Equipment not meeting SONET standards . . . . .	19	(X)	<sup>b</sup> 582,054	(X)	<sup>r</sup> 576,267
3342201421	Other carrier equipment, n.e.c. . . . .	20	(X)	262,399	(X)	281,242
3342201425	Other communications systems and equipment . . . . .	170	(X)	<sup>b</sup> 6,608,896	(X)	<sup>r</sup> 5,798,374
3342203	Broadcast, studio, and related electronic equipment . . . . .	(NA)	(X)	3,451,519	(X)	3,329,603
	Audio equipment, excluding consumer and PA types:					
3342203001	Amplifiers and preamplifiers . . . . .	28	<sup>c</sup> 589,855	<sup>b</sup> 327,676	<sup>c</sup> 632,272	<sup>b</sup> 292,591
3342203004	Control consoles and switchers . . . . .	20	<sup>b</sup> 37,214	<sup>b</sup> 96,111	<sup>b</sup> 40,637	<sup>a</sup> 96,578
3342203009	Other (power supplies, terminal equipment, broadcast recorders, etc.) . . . . .	35	(X)	<sup>b</sup> 215,248	(X)	<sup>b</sup> 274,194
	Video equipment, excluding consumer and PA types:					
3342203011	Amplifiers <sup>19</sup> . . . . .	6	(D)	(D)	(D)	(D)
3342203014	Television cameras . . . . .	5	24,482	46,702	31,945	60,713
3342203015	Video tape recorders <sup>19</sup> . . . . .	2	(X)	(D)	(X)	(D)
3342203019	Other (power supplies, synchronization equipment, terminal equipment monitors, telecine chains, control consoles and switchers, film equipment, and television outside vans) . . . . .	20	(X)	478,452	(X)	493,564
3342203021	Transmitters, translators, RF power amplifiers, and related equipment:					
	AM and FM transmitters . . . . .	11	(X)	61,480	(X)	67,792

See footnotes at end of table.

Table 18. **Quantity and Value of Shipments of Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment by Product Code: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3342203	Broadcast, studio, and related electronic equipment—Con.					
	Transmitters, translators, RF power amplifiers, and related equipment —Con.					
3342203024	Television transmitters . . . . .	8	(X)	<sup>b</sup> 163,046	(X)	124,793
3342203027	Other (broadcast transmission line equipment, phasing equipment, television boosters and repeaters (translators), etc.) . . . . .	22	(X)	<sup>a</sup> 701,977	(X)	<sup>r</sup> 671,687
3342203029	Studio transmission links (STL) and remote pickup equipment. . . . .	5	(X)	<sup>c</sup> 51,317	(X)	<sup>r</sup> 46,461
	Cable television (master antennae and CATV equipment):					
3342203032	Head end equipment (antennae baluns, carrier generators, head end control units, single and broadband preamplifiers and strip amplifiers, converters, modulators and demodulators; splitting filters and traps, power supplies, switches, etc.) . . .	21	(X)	<sup>a</sup> 239,843	(X)	<sup>a</sup> <sup>r</sup> 247,998
3342203035	Subscriber converters <sup>20</sup> . . . . .	2	(X)	(D)	(X)	-
3342203038	Subscriber equipment (decoders, switchers; wall outlet taps; distribution amplifiers; power supplies; directional couplers, splitters, alternators, and equalizers) <sup>21</sup> . . . . .	5	(X)	218,870	(X)	(D)
3342203041	Broadcasting transmitting antennae and community antennae systems <sup>21</sup> . . . . .	10	(X)	<sup>c</sup> 69,868	(X)	(D)
3342203044	Closed circuit television systems and equipment, (specially designed cameras, monitors, video recorders, receivers, scan converters and control consoles), excluding broadcast and consumer products . . . . .	23	(X)	478,843	(X)	<sup>a</sup> 389,268
3342203047	Other broadcast, studio, theatre, and commercial sound equipment (sold separately), excluding studio lighting equipment, radiating and supporting towers <sup>20</sup> .	5	(X)	(D)	(X)	<sup>a</sup> 227,812
3342203099	Parts and accessories for broadcast, studio, and related electronic equipment, sold separately . . . . .	16	(X)	<sup>b</sup> 20,609	(X)	<sup>a</sup> <sup>r</sup> 19,210
3342901	Alarm systems . . . . .	(NA)	(X)	2,039,833	(X)	1,926,472
	Intrusion detection:					
3342901101	Local . . . . .	23	(X)	163,923	(X)	144,346
3342901201	Central station . . . . .	17	(X)	528,532	(X)	446,695
3342901601	Direct connect . . . . .	8	(X)	<sup>c</sup> 12,937	(X)	<sup>b</sup> <sup>r</sup> 13,426
3342901603	Hold-up systems (commercial and industrial) <sup>22</sup> . . . . .	4	(X)	(D)	(X)	(D)
3342901605	Automotive . . . . .	7	(X)	<sup>c</sup> 185,317	(X)	<sup>b</sup> 204,065
	Fire detection and prevention:					
	Smoke and heat detection alarms:					
3342901301	Ionization chamber type. . . . .	8	(X)	173,763	(X)	125,479
3342901401	Other, including photo cell type . . . . .	17	(X)	308,145	(X)	356,024
3342901607	Central station . . . . .	10	(X)	131,907	(X)	117,458
3342901501	Direct connect . . . . .	13	(X)	154,731	(X)	<sup>r</sup> 142,501
3342901609	Other intercommunication and alarm systems, including electric sirens, and horns (marine, industrial, and air raid), and security locking systems <sup>22</sup> . . . . .	30	(X)	(D)	(X)	(D)
3342902	Vehicular and pedestrian traffic control equipment, electrical railway signals, and attachments . . . . .	(NA)	(X)	904,803	(X)	<sup>r</sup> 963,673
	Vehicular and pedestrian traffic control equipment:					
3342902101	Signal heads, including parts and accessories . . . . .	11	(X)	<sup>a</sup> 75,104	(X)	<sup>a</sup> 75,770
3342902103	Electronic and electromechanical controllers, detectors, and sensors, including parts and accessories . . . . .	27	(X)	272,494	(X)	312,753
	Railway signals and attachments, electric:					
3342902201	Railway highway grade crossing signals, excluding relays and other control apparatus <sup>23</sup> . . . . .	5	(X)	(D)	(X)	(D)
3342902203	Other railway signal systems and safety control equipment <sup>23</sup> . . . . .	10	(X)	(D)	(X)	(D)

See footnotes at end of table.

**Table 18. Quantity and Value of Shipments of Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment by Product Code: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3342903	Intercommunications systems, including inductive paging systems (selective calling).....	(NA)	(X)	268,277	(X)	<sup>r</sup> 269,092
3342903001	Wired.....	38	(X)	<sup>b</sup> 217,712	(X)	<sup>a</sup> 211,028
3342903003	Nonwired.....	6	(X)	<sup>c</sup> 50,565	(X)	<sup>a</sup> 58,064
3333197	Electronic teaching machines, teaching aids, trainers, and simulators.....	(NA)	(X)	750,241	(X)	<sup>r</sup> 872,042
3333197001	Electronic trainers and simulators.....	35	(X)	<sup>a</sup> 713,198	(X)	<sup>r</sup> 835,262
3333197004	Other electronic teaching machines and teaching aids.....	9	(X)	<sup>b</sup> 37,043	(X)	36,780
3359997	Laser sources.....	(NA)	(X)	928,571	(X)	1,046,962
	Gas lasers:					
3359997001	5 watts or less <sup>24</sup> .....	5	(X)	(D)	(X)	(D)
3359997003	6 watts to 100 watts <sup>24</sup> .....	7	(X)	(D)	(X)	(D)
3359997005	101 watts to 500 watts <sup>24</sup> .....	3	(X)	(D)	(X)	(D)
3359997007	Over 500 watts.....	6	(X)	<sup>a</sup> 266,366	(X)	<sup>a</sup> 41,869
	Solid-state lasers:					
3359997011	100 watts or less.....	16	(X)	<sup>c</sup> 72,323	(X)	<sup>b</sup> 60,147
3359997013	101 watts to 500 watts <sup>25</sup> .....	5	(X)	(D)	(X)	(D)
3359997015	Over 500 watts <sup>25</sup> .....	2	(X)	(D)	(X)	(D)
3359997021	Other lasers, including dye lasers <sup>25</sup> .....	14	(X)	(D)	(X)	(D)
335999A000	Ultrasonic equipment, n.e.c.....	20	(X)	204,103	(X)	<sup>r</sup> 212,919
335999C	Other electronic systems and equipment, n.e.c.....	(NA)	(X)	1,480,784	(X)	<sup>r</sup> 1,585,898
335999C001	Consumer electronic equipment, n.e.c.....	20	(X)	<sup>a</sup> 389,538	(X)	<sup>a</sup> 389,677
335999C005	Scientific electronic equipment, n.e.c.....	19	(X)	<sup>c</sup> 35,272	(X)	<sup>b</sup> 45,304
335999C011	Industrial electronic equipment, n.e.c.....	42	(X)	<sup>a</sup> 190,490	(X)	<sup>a</sup> 187,930
335999C015	All other electronic equipment, n.e.c.....	95	(X)	<sup>b</sup> 865,484	(X)	<sup>r</sup> 962,987

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.

<sup>r</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Product codes 3342101001 and 3342101003 have a combined total of <sup>r</sup>5,786,784 for 1997.

<sup>2</sup>Product codes 3342101021 and 3342101023 have a combined total of <sup>a</sup>3,531,708 for 1998 and <sup>r</sup>1,112,100 for 1997.

<sup>3</sup>Product codes 3344184001 and 3344184003 are not included in the total for 3342104.

<sup>4</sup>Product codes 3342104001, 3342104003, 3342104005, 3342104031, and 3342104033 have a combined total of 2,940,834 for 1998.

<sup>5</sup>Product codes 3342104001, 3342104003, and 3342104005 have a combined total of 1,221,053 for 1997.

<sup>6</sup>Product codes 3342104013 and 3342104015 have a combined total of <sup>a</sup>1,358,976 for 1998 and <sup>r</sup>1,286,210 for 1997.

<sup>7</sup>Product codes 3342104021 and 3342104023 have a combined total of 969,739 for 1997.

<sup>8</sup>Product codes 3342104031 and 3342104033 have a combined total of 1,356,101 for 1997.

<sup>9</sup>Product codes 3342104041 and 3342104043 have a combined total of <sup>b</sup>191,795 for 1998 and <sup>r</sup>215,353 for 1997.

<sup>10</sup>Product codes 3342107007 and 3342107009 have a combined total of <sup>b</sup>232,455 for 1998 and <sup>b</sup>292,430 for 1997.

<sup>11</sup>Product codes 3342107025 and 3342107027 have a combined total of 1,406,233 for 1998 and 2,572,069 for 1997.

<sup>12</sup>Product codes 3342107055 and 3342107059 have a combined total of <sup>b</sup>899,778 for 1998 and 945,833 for 1997.

<sup>13</sup>Product codes 3342107063, 3342107065, and 3342107067 have a combined total of <sup>c</sup>764,440 for 1998 and <sup>c</sup>799,419 for 1997.

<sup>14</sup>Product codes 3342107091 and 3342107097 have a combined total of <sup>a</sup>2,258,705 for 1998 and 2,260,397 for 1997.

<sup>15</sup>Of this total, space based (satellite) accounted for \$4.2 billion in 1998 and <sup>r</sup>\$4.7 billion in 1997; airborne and marine based accounted for \$491 million in 1998 and \$536.8 million in 1997; earth (fixed) based accounted for \$4 billion in 1998 and \$4 billion in 1997; earth (mobile) portable based accounted for \$10.2 billion in 1998 and \$11.2 billion in 1997.

<sup>16</sup>Product codes 3342201303, 3342201305, and 3342201309 have a combined total of 4,304,602 for 1998 and <sup>a</sup>4,726,223 for 1997.

<sup>17</sup>Product codes 3342201201 and 3342201204 have a combined total of 10,349,244 for 1998 and 11,283,546 for 1997.

<sup>18</sup>Product codes 3342201411, 3342201412, and 3342201413 have a combined total of 241,772 for 1998 and <sup>r</sup>213,456 for 1997.

<sup>19</sup>Product codes 3342203011 and 3342203015 have a combined total of 8,832 for 1998 and <sup>r</sup>36,780 for 1997.

<sup>20</sup>Product codes 3342203035 and 3342203047 have a combined total of <sup>b</sup>280,732 for 1998.

<sup>21</sup>Product codes 3342203038 and 3342203041 have a combined total of <sup>r</sup>280,162 for 1997.

<sup>22</sup>Product codes 3342901603 and 3342901609 have a combined total of <sup>b</sup>380,578 for 1998 and <sup>b</sup>376,478 for 1997.

<sup>23</sup>Product codes 3342902201 and 3342902203 have a combined total of 557,205 for 1998 and <sup>r</sup>575,150 for 1997.

<sup>24</sup>Product codes 3359997001, 3359997003, and 3359997005 have a combined total of <sup>a</sup>210,592 for 1998 and <sup>r</sup>245,796 for 1997.

<sup>25</sup>Product codes 3359997013, 3359997015, and 3359997021 have a combined total of <sup>c</sup>609,924 for 1998 and 643,968 for 1997.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item has been estimated. <sup>b</sup>26 to 50 percent of this item has been estimated. <sup>c</sup>Over 50 percent of this item has been estimated.



**Table 19. Shipments, Imports, and Exports of Communications Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment: 1998**

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption (value) <sup>2</sup>
3342101011, 013, 015, 017	Private branch telephonic exchange switching apparatus . . . . .	1,112,270	238,362	68,199
3342101001, 003	Central office telephonic switching apparatus . . . . .	5,947,752	374,981	132,888
3342101021, 023, 025	Telephonic switching apparatus, n.e.c. . . . .	4,860,252	197,482	91,345
3342101099	Parts, components, and subassemblies for telephone switching and switchboard apparatus . . . . .	396,746	914,997	833,154
3342104001, 003, 005	Repeaters and line transceivers, carrier line equipment <sup>3</sup> . . . . .	(D)	30,151	10,333
3342104011, 013, 015, 021, 023, 025, 031, 033, 035	Carrier line equipment, n.e.c. <sup>3</sup> . . . . .	(D)	1,062,450	919,043
3342107001, 003, 005, 007, 009	Telephone sets, including cordless handset telephones . . . . .	548,661	1,859,199	2,151,811
3344184001, 003, 041, 043	Modems, including auxiliary sets . . . . .	969,777	1,025,255	659,424
3342107021, 023, 025, 027, 029, 051, 059, 097	Telephone and telegraphic equipment, n.e.c., including voice frequency equipment <sup>4</sup> . . . . .	(D)	894,033	31,082
3342107055	Telephone key systems <sup>4</sup> . . . . .	(D)	14,762	11,377
3342107061, 063, 065, 067, 069	Telephone answering devices . . . . .	1,579,179	97,482	158,346
3342107091	Facsimile communication equipment (complete) <sup>4</sup> . . . . .	(D)	(NA)	780,271
3342107099	Parts, components, and subassemblies for other telephone equipment . . . . .	362,972	1,450,471	1,186,834
3342203001	Audio amplifiers and preamplifiers (except consumer and PA types) . . . . .	327,676	260,421	339,194
3342203021, 024, 027	Transmitters, translators, RF power amplifiers, and related equipment . . . . .	926,503	683,750	250,744
3342201201, 204, 207, 209	Mobile radio systems and equipment, including transceivers, and portable receivers, transmitter and receiver, hand held . . . . .	10,765,207	6,411,075	3,044,391
3342903001, 003	Intercommunications systems, including inductive paging systems . . . . .	268,277	157,302	54,934
3342203014	Television cameras (except consumer and PA types) . . . . .	46,702	104,442	31,473
3342201405, 407, 3342203041	Antennae systems, including broadcasting, transmitting, and community antennae systems. . . . .	1,206,283	753,284	92,540
3342203032, 035, 038, 044	Cable television and closed circuit television systems and equipment, including AM and FM transmitters. . . . .	(D)	739,147	-
3342901101, 201, 601, 603, 605, 609	Intrusion detection alarm systems . . . . .	1,271,287	69,332	217,983
3342901301	Smoke detection alarms, ionization type. . . . .	173,763	12,493	103,780
3342901401	Smoke detection alarms, n.e.c., including photo cell type. . . . .	308,145	48,981	67,110

See footnotes at end of table.

Table 19. **Shipments, Imports, and Exports of Communications Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment: 1998**—Con.

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption (value) <sup>2</sup>
3342901501, 607	Central station and direct connect fire detection and prevention alarm systems .....	286,638	171,204	119,681
3342902101, 103	Vehicular and pedestrian traffic control equipment .....	347,598	61,854	53,086
3342902201, 203	Railway signals and attachments, electric .....	557,205	20,201	3,778
3333197001	Electronic trainers and simulators .....	713,198	185,107	270,793
335999A000	Ultrasonic equipment, n.e.c. ....	204,103	213,830	1,447

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Data for product codes 3342104001, 3342104003, 3342104005, 3342104011, 3342104013, 3342104015, 3342104021, 3342104023, 3342104025, 3342104031, 3342104033, and 3342104035 have a combined total for "manufacturers' shipments" of 7,776,490 for 1998.

<sup>4</sup>Product codes 3342107021, 3342107023, 3342107025, 3342107027, 3342107029, 3342107051, 3342107055, 3342107059, 3342107091, and 3342107097 have a combined total for "manufacturers' shipments" of 15,679,572 for 1998.

## HISTORICAL NOTE

Data on selected electronic and associated products have been collected by the Census Bureau since 1961 on survey MA36N, Selected Electronics and Associated Products. In 1985, survey MA36N was divided into three annual surveys: MA334P (MA36P), Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment; MA334Q (MA36Q), Semiconductors, Printed Circuit Boards, and Other Electronic

Components; and MA3345 (MA38R), Electromedical Equipment and Irradiation Equipment (Including X-Ray). Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

## CONTACT FOR DATA USERS

For additional information about these data, contact Richard Hough, 301-457-4823.

## SEMICONDUCTORS, PRINTED CIRCUIT BOARDS, AND RELATED EQUIPMENT—MA334Q (FORMERLY MA36Q)

### INTRODUCTION

These data cover all significant manufacturers of semiconductors, printed circuit boards, and other electronic components. The mailing panel included all establishments with 20 employees or more for industries 334411, 334412, 334413, 334414, 334415, 334416, 334417, 334418, and 334419.

The statistics were collected by mail on Census Bureau annual Form MA334Q, Semiconductors, Printed Circuit Boards, and Other Electronic Components. The survey panel includes all known producers of these products, except the firms excluded from the scope of the survey. Approximately 3,480 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

During 1998, the total value of shipments of semiconductors, printed circuit boards, and other electronic components was \$130,163.0 million. This represents a 1.0-percent decrease from the revised 1997 total of \$131,512.4 million. The 1998 data include electron tubes and parts, \$4,141.7 million, a decrease of 2.6 percent

from 1997; printed circuit boards, \$9,423.7 million, an increase of 8.3 percent from 1997; semiconductors and related devices, \$70,405.1 million, an increase of 0.6 percent over the revised total from 1997. Capacitors decreased 2.4 percent to \$2,047.6 million; resistors decreased by 20.5 percent to \$789.7 million; coils and transformers had a 5.2-percent decrease to \$1,351.6 million; electronic connectors decreased to \$5,034.2 million in 1998, compared to \$5,279.1 million in 1997, a decrease of 4.6 percent; and other electronic components decreased to \$36,969.4 million, from a revised 1997 total of \$38,790.2 million, a decrease of 4.7 percent.

### EXPLANATION OF TERMS

**Research and development.** Dollar shipments reflect income development, design, and engineering services performed by the reporting plant in connection with the manufacture of the products shipped, whether included in a single production contract, or contracted for separately, but intended as preparation for the manufacture of the specific products.

Table 20. **Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components by Class of Product: 1993 to 1998**

[Value in million of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993
3344111	Transmittal, industrial, and special-purpose electron tubes (except X-ray) .....	624.5	655.9	611.4	854.9	854.9	677.6
3344114	Receiving type electron tubes and cathode ray picture tubes .....	3,370.1	3,433.6	3,272.0	2,907.0	2,627.1	2,258.6
3344117	Electron tube parts .....	147.1	161.0	153.1	120.2	114.9	160.1
3344120	Printed circuit boards .....	9,423.7	8,702.4	8,216.8	8,367.3	6,812.3	6,273.0
3344131	Integrated microcircuits (semiconductor networks) ..	59,005.1	57,019.4	52,639.3	48,437.9	36,020.4	23,636.1
3344134	Transistors .....	779.0	1,500.2	945.9	942.5	834.6	704.5
3344137	Diodes and rectifiers .....	650.9	1,190.5	861.4	1,066.7	829.5	640.7
334413A	Other semiconductor devices .....	9,970.1	10,262.3	10,976.1	12,639.4	9,915.4	6,908.2
3344140	Capacitors for electronic applications .....	2,047.6	2,098.7	1,653.4	1,785.3	1,512.3	1,294.3
3344150	Resistors .....	789.7	993.4	911.9	953.2	869.5	716.5
3344160	Coils, transformers, reactors, and chokes for electronic applications .....	1,351.6	1,425.7	1,435.6	1,411.8	1,250.7	1,121.4
3344171	Coaxial connectors .....	596.1	581.0	656.9	731.6	642.4	419.0
3344174	Cylindrical connectors .....	584.1	554.9	642.5	552.9	511.3	482.8
3344177	Rack and panel connectors .....	748.7	657.9	530.7	540.5	545.6	427.6
334417A	Printed circuit connectors .....	1,124.8	1,276.5	1,095.3	1,026.4	923.4	859.4
334417D	Other connectors, including parts .....	1,980.5	2,208.8	1,617.1	1,401.9	1,377.2	1,152.8
3344191	Filters (except microwave) and piezoelectric devices .....	802.4	814.7	719.3	729.2	674.1	534.3
3342207	Microwave components and devices .....	1,494.8	1,439.8	1,251.4	1,233.4	1,227.2	1,136.3
3344194	Transducers, electrical/electronic input or output. ...	1,368.6	1,219.6	1,104.8	1,111.3	970.5	832.5
3344197	Switches, mechanical types for electronic circuitry ..	870.0	791.2	738.0	666.3	621.5	572.6
334418A	Printed circuit assemblies .....	25,455.7	27,040.2	24,937.3	24,447.7	17,514.8	15,087.1
334419D	All other electronic components, n.e.c. ....	6,977.9	7,484.7	7,199.1	6,978.1	6,149.7	5,257.6

n.e.c. Not elsewhere classified.

**Table 21. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998 and 1997**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334411	Electron tubes . . . . .	(NA)	(X)	4,141,711	(X)	4,250,531
3344111	Transmittal, industrial, and special-purpose electron tubes (except X-ray) . . . . .	43	(X)	624,472	(X)	655,922
3344111105	Power and special-purpose tubes: High vacuum tubes, including triodes, multigrid external and internal anodes, diodes, and other . . . . .	7	151	67,429	131	66,955
3344111110	Gas and vapor tubes, including ignitrona, gas duplexers, spark gaps, and other . . . . .	11	306	43,215	295	38,477
3344111115	Klystrons, including amplifier, reflex, and other . . . . .	7	278	43,824	483	47,587
3344111120	Magnetrons, including pulsed, fixed, tunable, cross-field, continuous wave, and other . . . . .	8	47	50,808	43	46,083
	Traveling wave tubes (TWT): Forward wave: Continuous wave (CW): Up to and including 10 watts CW power output rating <sup>1</sup> . . . . .	2	(D)	(D)	(D)	(D)
3344111230	Over 10 watts CW power output rating <sup>1</sup> . . . . .	5	2,634	58,797	2,555	80,354
	Pulsed power: Up to and including 1 kW peak power output rating <sup>2</sup> . . . . .	3	(D)	(D)	(D)	(D)
3344111240	Over 1 kW peak power output rating <sup>2</sup> . . . . .	5	1,289	78,471	795	87,364
3344111265	Backward wave <sup>2</sup> . . . . .	1	(D)	(D)	(D)	(D)
	Light sensing tubes: Camera tubes, photo emissive and photo conductive <sup>3</sup> . . . . .	5	(D)	(D)	(D)	(D)
3344111350	Image intensifiers and converters <sup>3</sup> . . . . .	3	(D)	(D)	(D)	(D)
3344111355	Photo multipliers and other <sup>3</sup> . . . . .	4	53	41,955	60	41,860
3344111360	Light emitting devices, including storage tubes all sizes, cathode ray tubes, color and monochrome (industrial and military), special display devices, including alphanumeric readout tubes, figure indicating tubes, and other . . . . .	13	2,656	122,038	3,652	119,748
3344111370	Miscellaneous special-purpose tubes (reference cavities, radiation detection (geiger, neutron counters, etc.), beam deflection, decade counters, orbital beam, vacuum gauges, vacuum capacitors, switches, relays, etc.) . . . . .	10	(X)	102,088	(X)	109,372
3344114	Receiving type electron tubes and cathode ray picture tubes . . . . .	(NA)	(X)	3,370,095	(X)	3,433,621
3344114005	Receiving type electron tubes, all types, including rebuilt . . . . .	9	(D)	(D)	(D)	(D)
	Television tubes, including any defective tube that has been rebuilt: Color having a video display diagonal of: 50 cm and under (20 inches and under) . . . . .	12	10,097	730,940	10,917	816,307
3344114015	Over 50 cm, but not exceeding 63 cm (21 through 25 inches) . . . . .	4	4,597	493,680	4,370	476,634
3344114020	Exceeding 63 cm (26 inches and over) . . . . .	9	10,723	2,078,326	10,495	2,080,908
3344114025	Other, including rebuilt color and new and rebuilt black and white . . . . .	6	(D)	(D)	(D)	(D)
3344117030	Electron tube parts (except glass blanks): bases, getters, cathodes, headers, and guns . . . . .	18	(X)	147,144	(X)	160,988
334412	Printed-circuit (wiring) boards . . . . .	599	(X)	9,423,718	(X)	8,702,365
3344120105	Single-sided glass printed . . . . .	297	(X)	350,065	(X)	307,475
3344120210	Double-sided glass printed . . . . .	405	(X)	1,483,842	(X)	1,427,131
3344120315	Multilayer glass printed . . . . .	392	(X)	5,058,117	(X)	4,533,916
3344120420	Single-sided flex printed . . . . .	48	(X)	201,624	(X)	180,543
3344120425	Double-sided flex printed . . . . .	47	(X)	114,122	(X)	119,793
3344120430	Multilayer flex and rigid/flex printed . . . . .	57	(X)	385,702	(X)	453,732
3344120435	All paper/mat/composite printed boards . . . . .	19	(X)	64,983	(X)	107,028

See footnotes at end of table.

Table 21. **Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334412	Printed-circuit (wiring) boards—Con.					
3344120440	Other substitute printed boards .....	54	(X)	1,188,477	(X)	1,023,115
3344120545	Receipts for contract work on printed circuit boards (etching, dip-soldering, imprinting, etc.) but not printed board assembly .....	86	(X)	576,786	(X)	549,632
334413	Semiconductors and related devices .....	(NA)	(X)	70,405,209	(X)	69,972,455
3344131	Monolithic integrated circuits .....	228	12,812,166	59,005,147	13,514,824	57,019,414
	Monolithic integrated circuits, digital, nonsilicon (e.g., gallium arsenide):					
3344131036	Memory .....	7	(D)	(D)	6,085	133,666
3344131048	Logic and other .....	14	210,933	1,053,538	231,186	1,050,970
	Monolithic integrated circuits, digital, silicon:					
	Bipolar transistors, memory:					
3344131015	Static read-write random access (SRAM) .....	9	(D)	(D)	(D)	(D)
3344131021	Other memory .....	6	(D)	(D)	(D)	(D)
	Other bipolar transistors, including logic:					
3344131024	Transistor-transistor logic (TTL) .....	21	1,010,036	318,339	2,196,707	1,088,126
3344131027	Emitter coupled logic (ECL) .....	13	(D)	(D)	481,283	132,453
3344131030	Other .....	15	555,756	1,220,726	799,117	1,160,681
	Metal oxide semiconductor (MOS) field effect transistors:					
	Volatile memory DRAM (dynamic read-write random access):					
3344131064	Not over 80 k <sup>4</sup> .....	8	(D)	(D)	(D)	(D)
3344131066	Over 80 k but not over 300 k <sup>4</sup> .....	5	(D)	(D)	(D)	(D)
3344131068	Over 300 k but not over 3 MB <sup>4</sup> .....	11	90,104	827,817	87,551	845,677
3344131070	Over 3 MB but not over 15 MB .....	13	76,427	282,460	116,813	433,336
3344131072	Over 15 MB .....	15	442,686	2,617,815	319,329	2,808,330
	Volatile memory SRAM (static read-write random access):					
3344131082	Not over 40 k .....	12	33,980	206,067	28,647	222,205
3344131084	Over 40 k but not over 80 k .....	13	48,058	107,057	42,068	130,108
3344131086	Over 80 k but not over 300 k <sup>5</sup> .....	17	(D)	(D)	(D)	(D)
3344131088	Over 300 k but not over 3 MB <sup>5</sup> .....	14	(D)	(D)	(D)	(D)
3344131090	Over 3 MB <sup>5</sup> .....	8	83,943	685,079	133,407	1,376,615
	Nonvolatile EEPROM's (electrically erasable programmable read-only memory):					
3344131092	Not over 80 k .....	10	462,669	256,604	307,116	268,498
3344131094	Over 80 k but not over 900 k .....	9	99,896	395,096	80,702	270,038
3344131096	Over 900 k .....	6	(D)	(D)	(D)	(D)
	Nonvolatile EPROMs (erasable, except electrically, programmable read-only memory):					
3344131074	Not over 80 k .....	6	14,703	53,347	14,692	61,313
3344131076	Over 80 k but not over 900 k <sup>6</sup> .....	14	(D)	(D)	169,039	637,406
3344131078	Over 900 k <sup>6</sup> .....	7	170,601	572,634	41,279	129,280
3344131080	Other nonvolatile memory .....	12	324,508	1,049,922	288,229	1,279,642
	Other, including microprocessors, controllers, application specific integrated circuits (ASICs), and programmable logic arrays (PLAs):					
3344131054	Microprocessors having an internal data bus of 8 bits or less .....	21	(D)	(D)	1,245,912	3,528,351
3344131057	Microprocessors having an internal data bus of 16 bits .....	21	304,407	1,473,764	139,148	1,559,218
3344131060	Microprocessors having an internal data bus of 32 bits or more .....	17	(D)	(D)	(D)	(D)
3344131033	Other (microcontrollers, ASICs, PLAs, etc.) .....	43	1,722,386	7,444,183	1,666,754	6,501,797
	Other digital, silicon, including bipolar combined with MOS:					
3344131039	Complementary BiMOS (BiCMOS) .....	5	(D)	(D)	(D)	(D)
3344131042	Other complementary (BiCMOS), including logic .....	12	532,192	415,438	(D)	(D)
3344131045	Other digital silicon ICs .....	30	462,877	2,609,584	586,764	1,269,274

See footnotes at end of table.

**Table 21. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334413	Semiconductors and related devices—Con.					
3344131	Monolithic integrated circuits—Con.					
	Nondigital silicon monolithic integrated circuits (e.g., linear and analog):					
3344131062	Radio frequency .....	8	85,797	66,961	80,510	62,528
3344131003	Other, analog .....	27	1,195,818	2,316,843	1,107,893	2,194,715
3344131006	Other, including mixed signal (analog and digital), logic .....	10	(D)	(D)	(D)	(D)
3344131009	Other, including mixed signal (analog and digital), other .....	18	(D)	(D)	(D)	(D)
	Hybrid integrated circuits:					
3344131018	Radio frequency .....	26	86,642	417,533	62,265	397,038
3344131051	Other .....	56	56,429	670,455	72,459	826,374
3344131012	Other .....	57	1,552,862	4,557,032	1,792,691	4,808,041
3344134	Transistors .....	40	(X)	778,988	(X)	1,500,252
3344134005	Signal (less than 1 watt dissipation) .....	22	(X)	177,105	(X)	(D)
3344134010	Power (1 watt or greater dissipation) .....	36	(X)	601,883	(X)	(D)
3344137	Diodes and rectifiers .....	64	4,104,465	650,939	4,394,972	1,190,459
3344137010	Signal diodes and assemblies thereof (maximum current 0.5 amps) .....	25	41,625	17,508	46,480	17,463
3344137015	Semiconductor rectifiers/power diodes and assemblies thereof (current rating greater than 0.5 amps) .....	36	929,062	268,974	1,866,663	482,352
3344137025	Zener diodes (voltage regulator and voltage reference diodes) .....	27	(D)	(D)	1,848,762	345,378
3344137005	Selenium rectifiers .....	5	(D)	(D)	(D)	(D)
3344137020	Microwave diodes (mixers, detectors, varactors, parametric, harmonic generators, etc.) .....	18	474,015	192,860	632,865	343,157
334413A	Other semiconductor devices .....	185	(X)	9,970,135	(X)	10,262,330
	Light-sensitive and light-emitting devices:					
334413A005	Solar cells .....	15	(X)	137,947	(X)	131,457
334413A010	Photovoltaic modules .....	8	(X)	68,190	(X)	56,236
	Light-emitting diodes (LEDs):					
334413A015	Discrete, infrared and laser .....	18	(X)	447,868	(X)	420,528
334413A020	Alpha or numeric displays .....	9	(X)	55,622	(X)	74,609
334413A025	Photodiodes, including infrared detectors .....	19	(X)	114,722	(X)	87,514
334413A030	Optical coupled isolators, including sensors and emitters .....	9	(X)	223,871	(X)	110,467
334413A035	Other light sensitive and light-emitting devices, including photovoltaic devices and photoelectric-magnetic devices .....	11	(X)	177,527	(X)	188,544
	Other semiconductor devices:					
334413A040	Thyristors (SCRs, triacs, PNP diodes) .....	10	(X)	100,296	(X)	172,576
334413A045	Hall effect devices .....	-	(X)	-	(X)	-
334413A050	All other semiconductor devices (tunnel diodes, thermoelectric semiconductor junctions, metal-oxide varistors, solidstate transducers, and special semiconductor devices, n.e.c.) .....	23	(X)	1,427,689	(X)	1,847,071
	Semiconductor parts:					
	Chips and wafers:					
334413A055	For integrated circuits (ICs) .....	51	(X)	4,391,374	(X)	4,397,919
334413A060	For discrete semiconductors .....	42	(X)	1,453,631	(X)	1,376,661
334413A065	All other semiconductor parts (headers, packages, heat sinks, other accessories, etc.) ..	44	(X)	1,371,398	(X)	1,398,748
334414	Capacitors .....	106	(X)	2,047,560	(X)	2,098,750
	Paper, plastics (film), metalized, and dual (film/paper) dielectric capacitors, fixed .....	(NA)	82,759	154,642	85,729	161,468
	Ac types:					
3344140103	Less than 300 volts .....	19	20,942	35,065	16,852	29,416
3344140106	300 volts to 599 volts .....	18	52,772	93,458	56,575	99,030
3344140109	600 volts to 999 volts .....	12	6,034	10,145	8,090	16,204
3344140112	1,000 volts or over .....	10	3,011	15,974	4,212	16,818

See footnotes at end of table.

Table 21. **Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334414	Capacitors—Con. Capacitors having a reactive power handling capacity of 0.5 kVAR or less: Dc types/other:					
3344140215	Axial lead	23	36,021	42,068	38,140	42,343
3344140218	Radial lead	13	82,168	20,578	109,149	24,010
3344140221	Chips and other leaded devices	2	(D)	(D)	(D)	(D)
	Tantalum electrolytic:					
3344140324	Metal case, including foil and wet <sup>7</sup>	11	(D)	(D)	26,596	50,543
3344140327	Dipped <sup>7</sup>	6	(D)	(D)	(D)	(D)
3344140330	Chips <sup>7</sup>	8	(D)	(D)	(D)	(D)
3344140333	Other leaded (molded axial and molded radial) <sup>7</sup>	5	1,900,587	273,333	566,659	182,171
	Aluminum electrolytic:					
3344140436	Less than 18 mm through 35 mm <sup>8</sup>	6	(D)	(D)	(D)	(D)
3344140439	Small can style (over 35 mm through 51 mm) <sup>8</sup>	5	(D)	(D)	(D)	(D)
3344140442	Other can style (over 51 mm)	6	7,003	58,941	7,169	59,086
3344140445	Ac motor start <sup>8</sup>	1	80,148	95,963	80,963	102,253
	Ceramic dielectric, single layer:					
3344140554	Axial and radial <sup>9</sup>	9	(D)	(D)	(D)	(D)
3344140548	Chips <sup>9</sup>	4	138,598	24,922	<sup>†</sup> 156,762	<sup>†</sup> 26,929
	Ceramic dielectric, multilayer:					
3344140551	Axial leads <sup>10</sup>	4	(D)	(D)	(D)	(D)
3344140557	Radial leads <sup>10</sup>	11	4,649,691	173,203	<sup>†</sup> 3,562,775	<sup>†</sup> 170,422
3344140560	Chips	18	45,202,117	693,025	41,320,525	<sup>†</sup> 680,477
	Other:					
3344140663	Mica dielectric	10	12,013	10,454	12,049	11,021
3344140666	All other fixed	21	205,842	92,752	<sup>†</sup> 197,066	<sup>†</sup> 92,586
	Variable:					
3344140769	Mica, ceramic or glass dielectric	4	(D)	(D)	(D)	(D)
3344140772	Other	5	2,041	6,476	1,153	6,749
3344140875	Parts of capacitors, including unfinished chips for further finishing and assembly	14	(X)	(D)	(X)	(D)
334415	Resistors	108	(X)	789,665	(X)	993,445
3344150104	Fixed carbon resistors, composition or film types	13	44,591	14,265	111,535	46,100
	Other fixed resistors (power capacity 20W or less):					
	Surface mounted, having two terminals:					
3344150208	Flat resistor chips	26	378,323	54,542	758,862	62,432
3344150212	Cylindrical leadless resistors, including metal film, metal oxide, and thick cermet film	6	(D)	(D)	(D)	(D)
	Surface mounted, having more than two terminals (resistor networks):					
3344150216	Dual-in-line package	10	109,191	33,820	121,680	38,713
3344150220	Other, including flat packs	13	81,712	38,444	107,214	<sup>†</sup> 45,384
	Resistors, having two leads:					
3344150224	Wirewound	25	130,635	75,778	106,077	70,239
3344150228	Other, including metal film, metal oxide, and thick cermet film	22	725,232	87,354	927,718	99,899
	Resistor networks, having more than two leads:					
3344150232	Single-in-line	19	154,846	48,588	209,484	49,173
3344150236	Dual-in-line	12	28,069	11,671	33,563	13,435
3344150240	Other	13	62,494	51,817	7,272	23,568
	Variable, nonwirewound:					
	Trimmers:					
3344150344	Single-turn, carbon and other film	11	13,160	10,201	16,549	12,861
3344150348	Multiturn, carbon and other film	7	(D)	(D)	(D)	(D)
3344150356	Surface mounted	-	-	-	(D)	(D)
	Potentiometers:					
3344150352	Precision type <sup>11</sup>	16	17,395	77,000	26,393	100,414
3344150360	Panel type <sup>11</sup>	4	(D)	(D)	(D)	(D)
	Variable, wirewound:					
3344150468	Variable wirewound (except potentiometers), including nonprecision and trimmers	4	3,263	4,169	3,488	4,965
3344150464	Potentiometers, precision type <sup>12</sup>	10	2,483	30,624	4,725	35,808
3344150472	Potentiometers, panel type <sup>12</sup>	5	(D)	(D)	(D)	(D)

See footnotes at end of table.

**Table 21. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334415	Resistors—Con.					
	Miscellaneous:					
3344150576	Varistors .....	7	(D)	(D)	(D)	(D)
3344150580	Thermistors, bead type, disc, rod .....	16	209,926	83,634	229,895	103,742
3344150684	Parts for resistors .....	12	(X)	(D)	(X)	(D)
334416	Coils, transformers, reactors, and chokes for electronic applications .....	269	(X)	1,351,645	(X)	1,425,682
3344160020	Audio frequency (AF) transformers .....	96	56,052	143,048	59,712	156,438
3344160025	Low frequency (LF) chokes .....	95	11,651	69,320	8,183	66,308
3344160030	Plate and filament transformers, including autotransformers (except toroidal) .....	68	13,655	117,942	16,641	145,647
3344160035	Pulse transformers, computer, and other types .....	90	35,160	126,143	37,671	129,994
3344160005	Radio frequency (RF) chokes .....	39	85,606	41,618	85,559	32,407
3344160010	Radio frequency (RF) coils .....	43	165,295	84,968	206,570	95,161
3344160015	Intermediate frequency (IF) transformers .....	36	7,961	58,394	6,778	48,104
3344160040	Television transformers and reactors (horizontal output, vertical deflection, focus coils, deflection yokes, etc.) .....	20	19,245	115,421	19,667	123,168
3344160045	Toroidal windings (transformers and reactors) (except complete magnetic amplifiers) .....	120	37,736	180,636	37,225	182,827
3344160050	Other (balun coils, permeability tuning devices, etc.) .....	99	(X)	414,155	(X)	445,628
334417	Electronic connectors .....	(NA)	(X)	5,034,242	(X)	5,279,182
3344171	Coaxial (RF) connectors .....	56	600,216	596,136	529,469	580,973
3344171005	Miniature (BNC, PNC, MHB) .....	26	60,565	80,019	52,197	76,185
3344171010	Subminiature (SMA, SMB, SMC) .....	28	36,381	98,172	35,039	95,132
3344171015	Other standard and precision .....	42	503,270	417,945	442,233	409,656
3344174	Cylindrical connectors .....	42	108,093	584,087	188,623	554,930
3344174005	Heavy duty and standard .....	34	83,476	355,990	83,105	309,897
3344174010	Miniature .....	16	15,005	115,546	12,577	102,390
3344174015	Subminiature .....	10	9,612	112,551	92,941	142,643
3344177	Rack and panel (rectangular) connectors .....	45	2,259,311	748,665	1,804,523	657,898
3344177005	Integral shell, Mil-C-22857 (8434) and similar types .....	27	795,973	188,183	546,400	165,678
	Subminiature:					
3344177010	Ribbon, including planar cable type .....	9	(D)	(D)	(D)	(D)
3344177015	D-Subminiature, including planar cable type .....	22	(D)	(D)	(D)	(D)
3344177020	Microminiatures .....	10	10,127	35,641	7,404	32,106
334417A	Printed circuit connectors .....	65	5,747,059	1,124,802	3,823,928	1,276,526
334417A005	Card insertion types .....	32	405,943	141,895	238,865	141,267
	Two-piece types:					
334417A010	Post, header and receptacle type .....	40	4,014,253	549,533	2,988,630	641,142
334417A015	Other two-piece types .....	29	1,326,863	433,374	596,433	494,117
334417D	Other connectors, including parts .....	114	(X)	1,980,552	(X)	2,208,855
334417D005	Hermetic sealed (except single-contact and coaxial types) .....	25	242,610	133,565	263,008	134,777
334417D010	Plate module types .....	5	9,847	32,938	10,348	32,464
334417D015	Fiber optic connectors .....	11	32,426	222,657	37,941	192,048
334417D030	Other planar cable (flat conductor or ribbon cable), excluding rack and panel (rectangular types) .....	23	280,563	172,174	1,004,808	359,661
334417D020	Miscellaneous special purpose .....	62	2,567,705	1,288,919	2,337,437	1,354,969
334417D025	Parts for connectors (connectors shipped but still requiring further manufacture) .....	22	(X)	130,299	(X)	134,936
334419	Electronic components and subassemblies, n.e.c. ....	(NA)	(X)	36,969,388	(X)	38,790,134
3344191	Filters (except microwave) and piezoelectric devices .....	128	249,383	802,383	215,139	814,666
33441911	Filters (except microwave) .....	(NA)	151,855	290,641	135,761	298,598
3344191105	Mechanical, excluding optical lenses (germanium silicon, fused quartz, rock salt, and other) .....	9	232	17,314	182	18,231

See footnotes at end of table.



**Table 21. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334419	Electronic components and subassemblies, n.e.c.—Con.					
3344191	Filters (except microwave) and piezoelectric devices—Con.					
33441911	Filters (except microwave)—Con. Radio frequency interference/ electromagnetic interference (RFI/EMI) control filters:					
3344191110	Ceramic dielectric . . . . .	16	125,906	104,738	110,911	121,287
3344191115	Combination or other dielectric . . . . .	20	25,161	142,989	24,041	134,982
3344191120	Electronic wave filters (LC band and high pass) . . . . .	21	556	25,600	627	24,098
33441912	Piezoelectric devices . . . . .	(NA)	97,528	511,742	79,378	516,068
	Oscillator crystals:					
3344191225	AT-cut . . . . .	28	11,083	36,166	9,306	40,530
3344191230	Other . . . . .	11	52,188	74,420	41,525	69,836
	Crystal oscillators:					
3344191235	Oven . . . . .	8	138	30,998	159	30,943
3344191240	TCXO/VCXO . . . . .	11	2,326	34,596	424	26,403
3344191245	Hybrid . . . . .	13	3,836	45,743	3,604	44,210
3344191250	Other . . . . .	7	2,666	21,863	2,605	26,925
	Crystal filters:					
3344191255	Monolithic, including filter crystals and/or monolithic filter units not assembled into filters . . . . .	6	803	13,288	979	15,783
3344191260	Packaged AT-cut, including monolithic, tandem monolithic, and resonator filter assemblies . . . . .	10	120	6,034	236	7,774
3344191265	Other . . . . .	5	13,134	80,130	7,763	76,213
	Crystal blanks:					
3344191270	AT-cut . . . . .	6	2,577	5,728	3,049	6,508
3344191275	Other . . . . .	24	8,657	162,776	9,728	170,943
3342207	Microwave components and devices (except antenna), tubes, and semiconductors . . . . .	141	(X)	1,494,772	(X)	1,439,767
3342207005	Ferrite, including yttrium garnets, microwave components (circulators, isolators, phase shifters, attenuators, equalizers, limiters, mixers, etc.) . . . . .	46	(X)	426,002	(X)	342,545
	Microwave devices, other than ferrite and solid state:					
3342207010	Attenuators (dummy loads, high- and low-power terminations, etc.) . . . . .	38	(X)	92,102	(X)	91,951
3342207015	Cavities (amplifier cavities, coaxial tuned cavities, etc.) . . . . .	15	(X)	46,230	(X)	50,533
3342207020	Couplers (directional couplers, hybrid junctions, etc.) . . . . .	29	(X)	61,499	(X)	66,109
3342207025	Reactive microwave components, n.e.c. . . . .	42	(X)	207,266	(X)	189,903
3342207030	Switches, coaxial and waveguide . . . . .	35	(X)	86,409	(X)	74,662
3342207035	Rigid waveguide and fittings (bend and twists, couplings, flanges, other simple waveguide components, n.e.c.) . . . . .	23	(X)	(D)	(X)	(D)
3342207040	Flexible waveguides and fittings . . . . .	13	(X)	(D)	(X)	(D)
3342207045	Other microwave components (except ferrite devices) (coaxial to waveguide and other transitions, duplexers and diplexers, holders and mounts, linear and circular polarizers, magnetron test plumbing, rotary joints and sector scan joints, mixer arrays, shutters, tuners, windows, etc.) . . . . .	44	(X)	203,158	(X)	240,782
3342207050	Microwave subassemblies, including parametric amplifiers and other solid-state assemblies . . . . .	32	(X)	276,224	(X)	285,334
3344194	Transducers, electrical/electronic I/O, n.e.c. . . . .	95	112,127	1,368,574	103,301	1,219,626
3344194005	Electroacoustic (sonar, ultrasonic, vibration*, etc.) . . . . .	17	17,487	133,668	15,995	121,255
	Electromechanical:					
3344194010	Accelerometers* . . . . .	13	6,084	204,440	3,902	126,810

See footnotes at end of table.

**Table 21. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334419	Electronic components and subassemblies, n.e.c.—Con.					
3344194	Transducers, electrical/electronic I/O, n.e.c.—Con. Electromechanical—Con.					
3344194015	Pressure*	39	52,812	541,336	51,893	531,662
3344194020	Strain gauges and other mechanical*	23	1,047	135,555	910	136,640
3344194025	Thermoelectric (pyrometers, thermocouples*, etc.)	9	2,138	62,272	1,993	59,264
3344194030	Other (optical, chemical, magnetic, nuclear*, etc.)	28	32,559	291,303	28,608	243,995
3344197	Switches, mechanical types for electronic circuitry	83	(X)	870,028	(X)	791,230
3344197020	Slide, including rocker, miniature and subminiature*	15	(X)	58,284	(X)	58,872
3344197025	Rotary selector, including lever and jog-lever, miniature, and subminiature*	20	(X)	52,057	(X)	56,543
3344197030	Keyboard*	8	(X)	58,046	(X)	51,884
3344197035	Pushbutton*	26	(X)	99,410	(X)	55,590
3344197040	Snap-action*	11	(X)	22,456	(X)	25,399
3344197045	Thumbwheel*	7	(X)	21,411	(X)	22,920
3344197015	Membrane	17	(X)	77,990	(X)	74,043
3344197005	Toggle standard type	13	(X)	39,421	(X)	43,472
3344197010	Toggle miniature and subminiature	5	(X)	(D)	(X)	(D)
3344197050	DIP	6	(X)	(D)	(X)	(D)
3344197055	Other	30	(X)	385,162	(X)	314,377
334418	Printed circuit assemblies (loaded boards, subassemblies and modules) <sup>13</sup>	792	(X)	25,455,728	(X)	27,040,174
334418A005	Computer and peripheral printed board assemblies <sup>13</sup>	324	(X)	12,209,910	(X)	12,455,073
334418A010	Communications printed board assemblies <sup>13</sup>	246	(X)	5,233,837	(X)	4,625,398
334418A015	Industrial process control board assemblies <sup>13</sup>	220	(X)	787,762	(X)	615,545
334418A020	Instrumentation printed board assemblies (except industrial process) <sup>13</sup>	193	(X)	1,447,171	(X)	3,419,520
334418A025	Search and detection printed board assemblies <sup>13</sup>	47	(X)	54,488	(X)	45,172
334418A030	Consumer electronics, printed board assemblies <sup>13</sup>	135	(X)	466,588	(X)	520,360
334418A035	Other electronics, printed board assemblies, including office equipment and point of sales <sup>13</sup>	320	(X)	5,255,972	(X)	5,359,106
334419D	Electronic components and subassemblies, n.e.c.	595	(X)	6,977,903	(X)	7,484,671
	Antenna systems (except structural towers sold separately):					
334419D108	Home antenna	10		24,735	20,075	258,789
334419D110	Auto antenna	13		22,065	19,762	78,667
334419D115	Antenna accessories, sold separately (pedestals, drives, passive reflectors, rotators, radomes, etc.)	23	(X)	91,059	(X)	85,457
334419D220	Delay lines (distributed constant, lumped constant, magnetostrictive, ultrasonic, etc.)	16	6,049	34,830	6,679	40,922
334419D325	Oscillators (except instrumentation and crystal types)	22	(D)	(D)	6,498	158,447
3342203051	Magnetic recording and reproducing heads, including audio, video, digital, and instrumentation	18	(D)	(D)	30,098	758,062
	Static power supply converters for electronic applications, sold separately:					
334419D530	Regulated	85	58,626	1,341,187	56,716	1,377,891
334419D535	Other (unregulated, variable frequency, ac, dc, converters and inverters, vibrator, etc.)	51	(X)	602,081	(X)	626,834
334419D640	Electronic cable harnesses and cable assemblies	260	(X)	1,790,092	(X)	1,716,994
334419D745	Cryogenic cooling devices (cryostats, etc.) for infrared detectors, masers	6	(X)	20,285	(X)	14,956
334419D850	Liquid crystal displays (LCDs) and other liquid devices	15	(X)	108,511	(X)	104,402
334419D955	Magnetic cores	18	(X)	357,438	(X)	365,411
	Electronic parts, n.e.c. and specialized electronic hardware:					
	Sockets for electronic component insertion:					
334419DA65	Integrated circuit sockets	13	(X)	105,703	(X)	173,124

See footnotes at end of table.

Table 21. **Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
334419	Electronic components and subassemblies, n.e.c.—Con.					
334419D	Electronic components and subassemblies, n.e.c.—Con.					
	Electronic parts, n.e.c. and specialized electronic hardware—Con.					
	Sockets for electronic component insertion—Con.					
334419DA60	Other, including tube, relay, discrete semiconductors, ac and dc converters and inverters, etc. . . . .	12	(X)	93,016	(X)	(D)
336322C119	Electronic control modular chips for motor vehicles** . . . . .	2	(X)	(D)	(X)	(D)
334419D870	All other electronic parts and specialized electronic hardware, n.e.c. . . . .	133	(X)	1,649,816	(X)	1,574,946
	Electronic research, development, testing, and evaluation (receipts or billings, not reported as shipments of specific products):					
99980 42	Systems . . . . .	23	(X)	132,263	(X)	<sup>1</sup> 142,943
99980 43	Equipment and subassemblies. . . . .	41	(X)	237,633	(X)	239,537
99980 44	Component parts. . . . .	34	(X)	177,303	(X)	115,317
99980 46	Basic scientific electronic research . . . . .	23	(X)	72,953	(X)	81,888
99980 47	Design and engineering services. . . . .	65	(X)	458,774	(X)	111,462
99980 48	Software . . . . .	10	(X)	21,801	(X)	(D)
99980 49	Testing. . . . .	7	(X)	5,053	(X)	10,506
99980 50	Supplies and accessories sold with components . . .	9	(X)	1,175	(X)	2,111

\*Similar products are collected on Current Industrial Report forms (formerly MA35A) "Switchgear, Switchgear Apparatus, Relays, and Industrial Controls" and (MA335K formerly MA36K), "Wiring Devices and Supplies." \*\*New item for 1997. - Represents zero. D Withheld to avoid disclosing data for individual companies.

NA Not available. n.e.c. Not elsewhere classified. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

- <sup>1</sup>Product code 3344111225 and 3344111265 are combined with product code 3344111230 to avoid disclosing data for individual companies.
- <sup>2</sup>Product codes 3344111235 and 3344111265 are combined with product code 3344111240 to avoid disclosing data for individual companies.
- <sup>3</sup>Product codes 3344111345 and 3344111350 are combined with product code 3344111355 to avoid disclosing data for individual companies.
- <sup>4</sup>Product codes 3344131064 and 3344131066 are combined with product code 3344131068 to avoid disclosing data for individual companies.
- <sup>5</sup>Product codes 3344131086 and 3344131088 are combined with product code 3344131090 to avoid disclosing data for individual companies.
- <sup>6</sup>Product code 3344131076 is combined with product code 3344131078 to avoid disclosing data for individual companies.
- <sup>7</sup>Product codes 3344140324, 3344140327, and 3344140330 are combined with product code 3344140333 to avoid disclosing data for individual companies.
- <sup>8</sup>Product codes 3344140436 and 3344140439 are combined with product code 3344140445 to avoid disclosing data for individual companies.
- <sup>9</sup>Product code 3344140554 is combined with product code 3344140548 to avoid disclosing data for individual companies.
- <sup>10</sup>Product code 3344140551 is combined with product code 3344140557 to avoid disclosing data for individual companies.
- <sup>11</sup>Product code 3344150352 is combined with product code 3344150360 to avoid disclosing data for individual companies.
- <sup>12</sup>Product code 3344150464 is combined with product code 3344150472 to avoid disclosing data for individual companies.
- <sup>13</sup>These data are collected on two Current Industrial Report forms, MA334R (formerly MA35R), "Computer and Office and Accounting Machines," and MA334Q (formerly MA36Q), "Semiconductors, Printed Circuit Boards, and Other Electronic Components."

**Table 22. Shipments, Imports, and Exports of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998**

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption <sup>2</sup>
3344111105	High vacuum tubes .....	67,429	40,292	17,069
3344111110	Gas and vapor tubes .....	43,215	9,849	1,321
3344111115	Klystrons, including amplifiers, reflex, and other .....	43,824	40,331	94,426
3344111120	Magnetrons, including pulsed, fixed, tunable, cross-field, continuous wave and other .....	50,808	6,966	42,468
3344111345, 350	Light sensing tubes, including camera tubes, photo emissive and photo conductive, and image intensifiers and converters .....	(D)	291,215	32,268
3344111355	Light sensing tubes, n.e.c., including photo multipliers .....	(D)	22,689	23,327
3344114005	Receiving type electron tubes, including rebuilt .....	(D)	6,609	6,706
3344114010, 015, 020, 025	Television tubes, color and black and white, new and rebuilt .....	(D)	1,756,443	173,723
3344117030	Electron tube parts (except glass blanks) .....	147,144	107,993	391,426
3344120105, 210, 315, 420, 425, 430, 435, 440	Printed circuit boards .....	8,846,932	2,178,189	2,134,396
3344131048	Monolithic integrated circuits, digital (except memory and silicon) .....	1,053,538	935,789	99,359
3344131036	Monolithic integrated circuits, digital, memory (except silicon) .....	(D)	229,244	313,338
3344131015	Monolithic integrated circuits, digital, silicon, bipolar transistors, memory, static random access memory (SRAM) .....	(D)	28,084	4,913
3344131021	Monolithic integrated circuits, digital, silicon, bipolar transistors, memory (except static random access memory (SRAM)) .....	(D)	14,962	20,494
3344131027	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, emitter logic (ECL)) .....	(D)	19,351	69,034
3344131024	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, transistor-transistor logic (TTL)) .....	(D)	29,507	168,789
3344131030	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, n.e.c.) .....	1,220,726	67,435	125,169
3344131064, 066	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors: With volatile memory DRAM, not over 300 k <sup>3</sup> .....	(D)	83,300	57,110
3344131068, 070, 072	With volatile memory DRAM, over 300 k <sup>3</sup> .....	3,728,092	1,222,877	4,585,301
3344131082, 084, 086	With volatile memory SRAM, not over 300 k .....	(D)	89,965	301,906
3344131088, 090	With volatile memory SRAM, over 300 k .....	(D)	76,321	758,686
3344131092, 094, 096	Except volatile memory, electrically (EEPROM) .....	(D)	397,821	1,779,319
3344131074, 076, 078	Except volatile memory (except electrically (EEPROM)) .....	625,981	149,619	538,554
3344131080	Except volatile memory, n.e.c. ....	1,049,922	558,833	1,081,652
3344131054	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except memory type): Microprocessors 8 bits or less .....	(D)	211,889	1,348,111
3344131057	Microprocessors 16 bits .....	1,473,764	126,108	659,558
3344131060	Microprocessors 32 bits or more .....	(D)	1,230,757	2,212,331
3344131033	Other (microcontrollers, ASICs, PLAs, etc.) .....	7,444,183	1,611,049	7,615,892
3344131039	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, complementary BiMOS, memory type. ....	(D)	42,776	192,247
3344131042	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, complementary BiMOS (except memory type) .....	(D)	66,920	238,314
3344131045	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, complementary BiMOS, n.e.c., including logic type (except memory types) .....	2,609,584	306,170	143,440
3344131062, 003, 006, 009	Monolithic integrated circuits, nondigital, silicon, including linear, analog, radio frequency, etc. ....	(D)	1,723,668	4,525,530
3344131018, 051	Hybrid integrated circuits .....	1,087,988	680,107	722,260
3344140324	Capacitors, fixed, tantalum electrolytic, metal case, including foil and wet <sup>4</sup> .....	(D)	14,256	11,480
3344140327	Capacitors, fixed, tantalum electrolytic, dipped <sup>4</sup> .....	(D)	12,235	36,937
3344140330	Capacitors, fixed, tantalum electrolytic, chips <sup>4</sup> .....	(D)	130,576	296,709
3344140333	Capacitors, fixed, tantalum electrolytic, n.e.c., including leaded <sup>4</sup> ..	273,333	33,448	29,437
3344140436	Capacitors, fixed, aluminum electrolytic, not exceeding 35 mm. ....	(D)	52,586	260,114

See footnotes at end of table.

**Table 22. Shipments, Imports, and Exports of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998—Con.**

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption <sup>2</sup>
3344140439, 442, 445	Capacitors, fixed, aluminum electrolytic, over 35 mm .....	(D)	12,488	20,665
3344140548	Capacitors, fixed, ceramic dielectric, single layer, chips <sup>5</sup> .....	24,922	18,521	5,563
3344140554	Capacitors, fixed, ceramic dielectric, single layer, axial and radial <sup>5</sup> .....	(D)	14,149	32,154
3344140551	Capacitors, fixed, ceramic dielectric, multilayer, axial leads <sup>6</sup> .....	(D)	47,278	36,648
3344140557	Capacitors, fixed, ceramic dielectric, multilayer, radial leads <sup>6</sup> .....	173,203	28,332	43,915
3344140560	Capacitors, fixed, ceramic dielectric, multilayer, chips .....	693,025	343,881	345,447
3344140663	Capacitors, fixed, mica dielectric .....	10,454	1,435	4,022
3344140666	Capacitors, fixed, n.e.c. ....	92,752	407,418	56,888
3344140769	Capacitors, variable, mica/ceramic/glass dielectric .....	(D)	10,995	10,246
3344140772	Capacitors, variable, n.e.c. ....	6,476	41,236	14,929
3344140875	Capacitors, parts, including unfinished chips for further finishing. .	(D)	271,504	37,972
3344140103	Capacitors, fixed, ac type, less than 300 volts .....	35,065	7,005	43,721
3344140106	Capacitors, fixed, ac type, 300-599 volts .....	93,458	8,372	30,819
3344140109	Capacitors, fixed, ac type, 600-999 volts .....	10,145	258	2,957
3344140112	Capacitors, fixed, ac type, 1,000 volts or more .....	15,974	7,730	728
3344140215	Capacitors, fixed, dc type, axial .....	42,068	1,301	3,977
3344140218	Capacitors, fixed, dc type, radial .....	20,578	998	50,207
3344140221	Capacitors, fixed, dc type, chips and other leaded .....	(D)	7,077	22,128
3344134005	Transistors, signal, less than 1 watt dissipation .....	177,105	97,616	351,537
3344134010	Transistors, power, 1 watt or greater dissipation .....	601,883	196,005	688,301
3344137010	Signal diodes and assemblies .....	17,508	15,590	67,286
3344137025	Zener diodes .....	(D)	31,938	101,151
3344137015, 005	Diodes and rectifiers, n.e.c. ....	(D)	249,755	529,592
3344137020	Microwave diodes .....	192,860	37,409	24,415
334413A005	Solar cell .....	137,947	122,266	59,740
334413A015, 020	Light emitting diodes .....	503,490	121,730	477,845
334413A030	Optical coupled isolators .....	223,871	23,330	123,931
334413A035	Other light-sensitive and light-emitting devices .....	177,527	78,935	171,432
334413A040	Thyristors, SCRs, triacs, and PNP diodes .....	100,296	33,153	170,275
334413A055	Chips and wafers for integrated circuits .....	4,391,374	14,702,251	1,681,292
334413A060	Chips and wafers for discreet semiconductors .....	1,453,631	1,664,586	214,033
334413A065	Other semiconductor parts .....	1,371,398	178,009	152,393
3344150104	Carbon resistors, fixed, composition or film types, designed for surface mounting (SMD) by contact, having two terminals, cylindrical leadless having two leads, carbon composition and carbon film. ....	14,265	24,289	41,866
3344150208, 212	Carbon resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having two terminals, flat resistor chips, and cylindrical leadless resistors. ....	(D)	46,738	92,014
3344150216, 220	Carbon resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having more than two terminals, resistor, and resistor-capacitor networks .....	72,264	11,109	21,425
3344150224	Resistors, fixed, with a power capacity of 20 watts or less, wirewound, having two leads .....	75,778	19,187	28,384
3344150228	Resistors, fixed, with a power capacity of 20 watts or less, other than wirewound, having two leads .....	87,354	37,178	68,772
3344150232, 236, 240	Resistors, fixed, with a power capacity of 20 watts or less, resistor networks, having more than two leads .....	112,076	52,848	60,862
3344150468, 464, 472	Resistors, variable, wirewound, including rheostats and potentiometers, for a power handling capacity not exceeding 20 watts .....	34,793	4,367	25,508
3344150344, 348, 352, 356, 360, 576, 580	Resistors, variable, n.e.c. ....	(D)	88,915	177,432
3344150684	Resistors, parts .....	(D)	163,176	26,654
3344191225, 230, 235, 240, 245, 250, 255, 260, 265	Piezoelectric devices (except crystal blanks) .....	343,238	167,295	546,340
3344191270, 275	Piezoelectric devices, crystal blanks .....	168,504	24,280	12,472

See footnotes at end of table.

Table 22. **Shipments, Imports, and Exports of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 1998—Con.**

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption <sup>2</sup>
3344160040	Television transformers and reactors . . . . .	115,421	18,286	131,280
3344160020, 030, 035, 010, 015, 045, 050	Coils, transformers, reactors, and chokes for electronic applications, n.e.c. . . . .	1,125,286	318,686	718,929
3344171000	Connectors, coaxial . . . . .	596,136	104,801	155,888
3344174000	Connectors, cylindrical . . . . .	584,087	32,189	94,427
3344177000	Connectors, rack and panel . . . . .	748,665	20,403	24,895
334417A000	Connectors, printed circuit . . . . .	1,124,802	234,005	318,953
334419D108, 110, 115	Antenna systems (except structural towers, sold separately) . . . . .	450,836	51,273	42,296
3342203051	Magnetic recording and reproducing heads . . . . .	(D)	10,806.0	23,612
3344197025	Switches, rotary selector . . . . .	52,057	27,562	26,149
3344197035	Switches, pushbutton . . . . .	99,410	70,632	143,924
3344197020	Switches, slide, including rocker, miniature and subminiature . . . . .	58,284	3,438	15,150
3344197040	Switches, snap-action . . . . .	22,456	25,530	80,905
3344197030, 045, 015, 005, 010, 050, 055	Switches, other . . . . .	637,821	644,898	997,055

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *General Imports for Consumption*.

<sup>3</sup>Manufacturers' shipments for "Volatile memory, DRAM, not over 300 k" and "Volatile memory, DRAM, over 300 k" are combined to avoid disclosing data for individual companies.

<sup>4</sup>Manufacturers' shipments for "Capacitors, fixed, tantalum electrolytic, metal case, including foil and wet," "Capacitors, fixed, tantalum electrolytic, dipped," and "Capacitors, fixed, tantalum electrolytic, chips," are combined with "Capacitors, fixed, tantalum electrolytic, n.e.c., including leaded" to avoid disclosing data for individual companies.

<sup>5</sup>Manufacturers' shipments for "Capacitors, fixed, ceramic dielectric, single layer, chips" and "Capacitors, fixed, ceramic dielectric, single layer, axial and radial" are combined to avoid disclosing data for individual companies.

<sup>6</sup>Manufacturers' shipments for "Capacitors, fixed, ceramic dielectric, multilayer, axial" and "Capacitors, fixed, ceramic dielectric, multilayer, radial" are combined to avoid disclosing data for individual companies.

**HISTORICAL NOTE**

Data on selected electronic and associated products have been collected by the Census Bureau since 1961 on survey MA36N, Selected Electronics and Associated Products. In 1985, survey MA36N was divided into three annual surveys: MA334P (MA36P), Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment; MA334Q (MA36Q), Semiconductors, Printed Circuit Boards, and Other Electronic Components; and MA334S (MA38R), Electromedical

Equipment and Irradiation Equipment (Including X-ray). Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Philippe Morris, 301-457-4819.

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## SELECTED INSTRUMENTS AND RELATED PRODUCTS—MA334B (FORMERLY MA38B)

### INTRODUCTION

These data cover firms engaged in the manufacture of instruments and related products.

The statistics were collected by mail on Census Bureau annual Form MA334B, Selected Instruments and Related Products. The survey panel includes all known producers of these products, except the very small firms excluded from the scope of the survey. Approximately 2,196 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

During 1998, the total value of shipments of selected instruments and related products totaled \$72 billion, down slightly from the 1997 value of \$72.9 billion. The 1998 figure includes automatic regulating, control, and solenoid valves, \$2.5 billion, down 2.2 percent from 1997; search, detection, navigation, guidance, aeronautical, and nautical systems, instruments, and equipment, \$28.5 billion, a decrease of 2 percent from 1997; laboratory apparatus and furniture, \$1.8 billion, down 2.3 percent from 1997; controls for monitoring residential and commercial environments, and appliance regulating controls, \$2.8 billion, up 2 percent from 1997; process control instruments, \$6.7 billion, down 6 percent; fluid meters and counting devices including motor vehicle instruments, \$3.9 billion, up 3.8 percent from 1997; test equipment and instruments to measure electricity, \$12.7 billion, an increase of 1 percent from 1997; analytical and scientific instruments (except optical), \$5.8 billion, a decrease of 4.2 percent from 1997; optical instruments and lenses, \$2.6 billion,

unchanged from 1997; test equipment, instruments, and measuring and controlling devices, not elsewhere classified (n.e.c.), \$4.7 billion, an increase of 2 percent from 1997.

### EXPLANATION OF TERMS

**Electronic systems—unified architecture.** Includes system-type control, display, and computing instruments actuated from standardized electrical transmission signals in which control and signal conditioning are integral with the display/operator interface.

**Electronic systems—nonunified architecture.** Includes system-type instruments and related equipment actuated from standardized electrical transmission signals in which control and signal conditioning are separated from the display/operator interface. Equipment includes single-loop and multiloop controllers, dedicated operator stations, shared CRT-based operator work stations, process I/O equipment, communication equipment, and other related miscellaneous equipment such as power supplies, racks, panels, cables, console furniture, printers, tape drives, mounting hardware, shelves, nests, calibrators, and testors. Does not include multifunction process computers reported in product code 3345130111.

**Industrial multifunction process computers.** Includes the hardware and standard software of the CPU and all peripheral equipment of the computers that provide centralized processing intelligence for two or more of the following functions: data manipulation and reporting, supervisory control and data acquisition, calculations using control algorithms, database management, use of a high-level programming language, and operator interface.

**Table 23. Value of Shipments of Selected Instruments and Related Products by Product Code: 1993 to 1998**

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993
332911F	Automatic regulating and control valves.....	2,056.9	2,097.2	1,892.6	1,860.4	1,807.1	1,647.5
332911H	Solenoid-operated valves (except nuclear and fluid power transfer).....	523.4	541.1	521.8	463.8	452.3	406.0
3345111	Aeronautical, nautical, and navigational instruments.....	2,487.5	2,531.0	2,274.3	2,124.5	1,858.9	2,121.2
3345113	Search and detection, navigation and guidance systems and equipment.....	26,001.3	26,584.1	26,093.9	24,697.4	25,566.7	28,604.4
3391110	Laboratory apparatus and laboratory furniture.....	1,844.6	1,887.5	1,799.3	1,836.9	1,811.1	1,597.8
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls.....	2,787.4	2,717.4	2,647.5	2,533.4	2,520.9	2,309.9
3345130	Process control instruments.....	6,657.6	7,073.1	6,745.1	6,438.5	6,240.0	5,934.9
3345141	Integrating and totalizing meters for gas and liquids.....	1,133.4	1,078.7	962.8	915.2	859.1	777.0
3345143	Counting devices.....	404.3	434.5	367.0	363.8	354.9	285.4
3345145	Motor vehicle instruments.....	2,363.7	2,245.1	2,218.8	2,193.1	2,092.0	1,768.1
3345151	Integrating instruments, electrical.....	465.8	457.3	458.0	445.0	440.3	461.0
3345153	Test equipment for testing electrical, radio and communication circuits, and motors ..	11,797.7	<sup>1</sup> 11,638.6	10,389.5	9,255.0	7,582.0	6,571.6
3345155	Instruments to measure electricity.....	411.0	<sup>1</sup> 455.9	499.8	554.9	554.4	525.8
3345160	Analytical and scientific instruments (except optical).....	5,803.1	6,058.6	5,478.4	5,737.2	5,534.0	4,766.1
3333141	Sighting, tracking, and fire control equipment, optical type.....	512.0	574.9	612.9	655.4	652.1	768.6
3333143	Optical instruments and lenses.....	2,060.1	2,005.0	1,748.9	1,579.1	1,596.7	1,455.8
3345191	Aircraft engine instruments (except flight) ..	642.5	<sup>1</sup> 520.6	529.7	429.7	430.4	551.6
3345193	Physical properties and kinematic testing equipment.....	1,689.9	1,522.8	1,368.9	1,374.4	1,199.3	1,174.7
3345195	Nuclear radiation detection and monitoring instruments.....	568.6	<sup>1</sup> 529.6	496.5	501.2	489.1	519.4
3345197	Commercial, geophysical, meteorological, and general-purpose instruments.....	1,424.0	1,676.7	1,451.6	1,373.2	1,344.0	1,271.4
3345199	Surveying and drafting instruments.....	371.9	359.8	364.8	355.9	324.3	301.4

<sup>1</sup>Revised by 5 percent or more from previously published data.



**Table 24. Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
332911F	Automatic valves (regulating and control type, except nuclear) . . .	140	(X)	<sup>b</sup> 2,056,894	(X)	2,097,228
	Automated control valves:					
	Pneumatic actuated . . . . .	(NA)	(X)	600,801	(X)	603,135
	Sliding stem valves . . . . .	(NA)	(S)	304,864	(S)	306,987
332911F001	Globe body . . . . .	24	<sup>b</sup> 164,892	<sup>b</sup> 208,191	138,853	203,624
332911F003	All other types . . . . .	20	(S)	<sup>b</sup> 96,673	(S)	<sup>a</sup> 103,363
	Rotary valves . . . . .	(NA)	(S)	131,845	(S)	129,658
332911F005	Ball . . . . .	12	(S)	<sup>b</sup> 68,838	(S)	78,012
332911F007	Butterfly . . . . .	12	31,736	39,986	21,326	25,152
332911F009	All other rotary valves, including eccentric disk . . . . .	10	<sup>b</sup> 15,210	<sup>b</sup> 23,021	<sup>b</sup> 17,341	26,494
332911F011	All other pneumatic power-operated control valves . . . . .	17	(S)	<sup>b</sup> 35,577	(S)	<sup>b</sup> 45,197
332911F013	Parts for pneumatic-actuated valves, sold separately . . . . .	25	(X)	<sup>b</sup> 128,515	(X)	121,293
	All other actuation, including electric-actuated and electrohydraulic-actuated . . . . .	(NA)	(X)	354,713	(X)	<sup>r</sup> 342,675
	Sliding stem valves . . . . .	(NA)	(S)	89,589	(S)	<sup>r</sup> 91,509
332911F015	Globe body . . . . .	9	(S)	<sup>a</sup> 4,693	<sup>a</sup> 12,992	<sup>r</sup> 13,994
332911F017	All other types . . . . .	14	(S)	84,896	(S)	<sup>r</sup> 77,515
	Rotary valves . . . . .	(NA)	(S)	75,773	(S)	61,393
332911F019	Ball <sup>1</sup> . . . . .	12	(D)	(D)	(D)	(D)
332911F021	Butterfly <sup>1</sup> . . . . .	7	(D)	(D)	(D)	(D)
332911F023	All other rotary valves, including eccentric disk <sup>1</sup> . . . . .	8	(S)	75,773	(S)	61,393
332911F025	All other power-operated (except pneumatic) control valves <sup>2</sup> . . . . .	18	4,365	165,041	4,250	163,940
332911F027	Parts for all other power-operated (except pneumatic) control valves . . . . .	15	(X)	24,310	(X)	25,833
332911F029	Valve actuators, sold separately . . . . .	22	<sup>a</sup> 177,322	<sup>a</sup> 124,209	192,571	118,658
	Regulator valves:					
332911F031	Remote-sensing direct-actuated temperature regulators <sup>2</sup> . . . . .	20	(S)	70,372	(S)	81,476
332911F033	Self-contained direct-actuated pressure regulators (except instrument type and safety relief valves) <sup>2</sup> . . . . .	34	5,058	231,467	7,158	255,903
332911F035	Pilot (internal and external)-actuated pressure regulators <sup>2</sup> . . . . .	31	203	78,143	219	<sup>r</sup> 78,837
332911F037	Self-contained direct-acting precision and instrument-type pneumatic (air and gas) pressure regulators <sup>2</sup> . . . . .	13	<sup>a</sup> 496	<sup>a</sup> 45,537	<sup>b</sup> 535	<sup>b</sup> 59,526
332911F039	Flow regulators for gas, vapors, or liquids <sup>2</sup> . . . . .	42	<sup>b</sup> 18,007	<sup>a</sup> 183,598	16,997	213,535
332911F041	Other regulator valves <sup>2</sup> . . . . .	29	(X)	<sup>b</sup> 303,084	(X)	283,552
332911F043	Parts for regulator valves, sold separately . . . . .	35	(X)	64,970	(X)	59,931
332911H	Solenoid-operated valves (except nuclear and fluid power transfer) . . . . .	45	(X)	523,403	(X)	541,067
	Solenoid-operated valves (except power transfer valves):					
	Commercial/industrial types:					
332911H001	Two-way <sup>2</sup> . . . . .	33	5,144	217,405	6,497	257,103
332911H003	Three-way <sup>2</sup> . . . . .	17	514	32,632	1,247	35,826
332911H005	Other <sup>2 3</sup> . . . . .	16	(D)	(D)	(D)	(D)
332911H007	Household appliance type <sup>2 3</sup> . . . . .	2	17,086	220,346	16,244	195,306
332911H009	Parts, components, and operators for solenoid-operated valves (except nuclear and fluid power transfer valves, sold separately) . . . . .	22	(X)	53,020	(X)	<sup>r</sup> 52,832
3345111	Aeronautical, nautical, and navigational instruments (except aircraft engine instruments) . . . . .	84	(X)	<sup>b</sup> 2,487,484	(X)	2,531,017
	Flight and navigation sensors, transmitters, and displays:					
334511101	Compasses (all types) . . . . .	15	(X)	<sup>a</sup> 312,228	(X)	242,052
334511103	Altimeters (except radio and radar altimeters) . . . . .	9	(X)	<sup>a</sup> 20,806	(X)	23,978
334511105	Airspeed indicators, including machmeters and air data computers . . . . .	17	(X)	467,765	(X)	294,661
334511107	Acceleration indicators and systems components <sup>4</sup> . . . . .	8	(D)	(D)	(D)	(D)
334511109	Rate-of-climb indicators <sup>5</sup> . . . . .	5	(D)	(D)	(D)	(D)
334511111	Angle-of-attack indicators <sup>5</sup> . . . . .	8	(S)	30,018	(S)	22,639

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345111	Aeronautical, nautical, and navigational instruments (except aircraft engine instruments)—Con. Flight and navigation sensors, transmitters, and displays—Con.					
3345111113	Artificial horizon flight instruments <sup>4</sup> . . . . .	4	(S)	(D)	<sup>b</sup> 6,707	14,704
3345111115	Other aerospace and navigational instruments <sup>4</sup> . . . . .	31	(X)	<sup>a</sup> 616,236	(X)	662,779
	Gyroscopes, sold separately:					
3345111217	Vertical . . . . .	5	<sup>b</sup> 849	<sup>b</sup> 8,594	<sup>b</sup> 2,089	<sup>b</sup> 10,491
3345111219	Directional . . . . .	5	(S)	<sup>b</sup> 3,378	(S)	6,850
3345111221	Free, torqued and untorqued <sup>6</sup> . . . . .	1	(X)	(D)	(X)	(D)
3345111223	Rate, inertial grade <sup>6</sup> . . . . .	2	(X)	61,976	(X)	<sup>r</sup> 100,467
3345111225	Rate, noninertial grade . . . . .	5	(X)	59,111	(X)	53,381
	Airframe equipment instruments:					
3345111227	Position indicators (mechanical, as for landing gear, cowl flaps, stabilizers, etc.) . . . . .	12	(X)	32,129	(X)	23,890
3345111229	Hydraulic system (both electrical and mechanical measuring means, as for liquid level and temperature and pressure indicators) . . . . .	12	(X)	<sup>a</sup> 41,187	(X)	<sup>a</sup> 34,893
3345111231	Cabin environmental measuring and control instruments (air-conditioning and heating, cabin pressure, oxygen, etc.) . . . . .	11	(X)	69,800	(X)	<sup>a</sup> 65,403
3345111233	Other aerospace flight instruments . . . . .	22	(X)	568,745	(X)	770,357
3345111335	Nautical instruments (all types, including temperature, speed, pitch, and roll instruments and system components, etc.) . . . . .	11	<sup>b</sup> 183,993	<sup>b</sup> 58,944	<sup>b</sup> 262,886	<sup>a</sup> 68,485
3345111437	Parts and components for aeronautical, nautical, and navigational instruments (except aircraft engine instruments, sold separately) . . . . .	22	(X)	136,567	(X)	135,987
33451113	Search and detection systems and navigation and guidance systems and equipment . . . . .	202	(X)	<sup>a</sup> 26,001,306	(X)	26,584,091
3345113101	Light reconnaissance and surveillance electronic systems and equipment (infrared, ultraviolet, and visible light) . . . . .	36	(X)	2,055,942	(X)	2,442,811
3345113103	IFF equipment . . . . .	11	(X)	163,229	(X)	185,349
3345113105	Proximity fuses . . . . .	4	(X)	(D)	(X)	(D)
	Radar systems and equipment:					
	Search, detection, and acquisition radar systems and equipment (BMEWS, airborne and other early warning radar, air traffic control radar, air defense and fighter control radar, ship radar, harbor control radar, meteorological radar, etc.):					
3345113207	Airborne and missile/space radar . . . . .	16	(X)	2,338,409	(X)	1,942,536
3345113209	Ship (marine) radar <sup>7</sup> . . . . .	14	(X)	(D)	(X)	(D)
3345113211	Ground radar <sup>7</sup> . . . . .	16	(X)	1,311,251	(X)	1,264,096
	Tracking radar systems and equipment (fire control, bombing, bombing navigational radar, aircraft, and missile tracking radar, etc.):					
3345113313	Airborne and missile/space radar . . . . .	9	(X)	(D)	(X)	(D)
3345113315	Ship (marine) radar . . . . .	9	(X)	(D)	(X)	(D)
3345113317	Ground radar . . . . .	18	(X)	288,082	(X)	432,159
	Instrumentation radar systems and equipment (altimeters, highway speed control radar, missile and space satellite tracking range radar, GCA and other precision approach radar, etc.):					
3345113319	Airborne, missile/space, and ship (marine) radar . . . . .	7	(X)	83,318	(X)	90,380
3345113321	Ground radar . . . . .	8	(X)	<sup>a</sup> 91,355	(X)	85,748
3345113323	Electronic checkout, monitoring, evaluation, and other electronic support equipment for radar systems . . . . .	12	(X)	92,050	(X)	161,845

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345113	Search and detection systems and navigation and guidance systems and equipment—Con.					
	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone communication equipment, depth finding, fire control, fusing, guidance, hydrophones, mapping, sonabuys, navigation, sonar fish finders, sonar range instrumentation, and other):					
3345113425	Surface ship applications (destroyers, destroyer escort, etc.) . . . . .	22	(X)	<sup>a</sup> 303,421	(X)	340,525
3345113427	Submarine applications . . . . .	17	(X)	516,116	(X)	509,549
3345113429	Airborne . . . . .	13	(X)	<sup>a</sup> 226,423	(X)	169,365
3345113431	Electronic checkout, monitoring, evaluation, and other electronic support equipment for sonar systems and submerged fixed systems . . . . .	8	(X)	<sup>a</sup> 146,380	(X)	156,812
3345113433	Specialized command and control data processing and display equipment, sold separately from complete systems . . . . .	20	(X)	<sup>b</sup> 1,050,835	(X)	946,036
3345113435	Search, detection, identification, and tracking systems and equipment, n.e.c. . . . .	27	(X)	1,299,405	(X)	(D)
	Electronic warfare systems and equipment:					
	Countermeasures equipment:					
3345113437	Jamming equipment, communications, and radar . . . . .	19	(X)	1,320,016	(X)	1,085,199
3345113439	Underwater countermeasures equipment . . . . .	6	(X)	<sup>a</sup> 78,992	(X)	74,875
3345113441	Other active countermeasures equipment, excluding passive materials such as chaff, window, needles, and rope . . . . .	10	(X)	<sup>a</sup> 95,892	(X)	236,337
3345113443	Specialized electronic and communication intelligence equipment, including specially designed DF equipment, signal reduction and processing equipment, and signal analyzers and display equipment . . . . .	29	(X)	<sup>a</sup> 2,091,913	(X)	2,143,950
	Missile and space vehicle systems and equipment (beam riders, command guidance, inertial systems, infrared homing systems, radar systems, stellar trackers, television systems, combination systems, etc.):					
3345113545	Missile-borne and space-vehicle-borne equipment . . . . .	35	(X)	4,010,064	(X)	4,385,769
3345113547	Nonmissile and space vehicle guidance equipment (ground, ship, or airborne command guidance systems, etc.) . . . . .	11	(X)	457,929	(X)	554,550
3345113549	Electronic checkout, launching, and other missile and space vehicle support systems (ground, ship, and air) . . . . .	16	(X)	547,634	(X)	450,151
	Navigation systems and equipment, navigational aids for aircraft, ship, and ground navigation (autopilots, beacons, transponders, collision warning devices, DECCA, DME, ILS, Doppler navigation systems, inertial navigation systems, optical/laser LORAN, radio compasses and direction finders, SHORAN, TACAN, VOR, VORTAC equipment, etc.):					
	Airborne navigational systems:					
3345113651	Radio navigation receivers and displays, including OMNI, radio magnetic, glide slope/localizer, and DME . . . . .	21	(X)	<sup>a</sup> 847,058	(X)	<sup>a</sup> 570,044
3345113653	Airborne integrated data systems/flight recorders . . . . .	8	(X)	151,824	(X)	126,283
3345113655	Distance measuring equipment (DME) . . . . .	4	(X)	(D)	(X)	(D)
3345113657	Flight directors/situation display . . . . .	6	(X)	(D)	(X)	(D)
3345113659	Heads-up display (HUD) systems . . . . .	8	(X)	190,783	(X)	140,244
3345113661	Inertial navigation systems . . . . .	7	(X)	545,766	(X)	<sup>c</sup> 340,753
3345113663	Proximity warning/collision avoidance equipment . . . . .	5	(X)	225,512	(X)	195,294
3345113665	Complete automatic pilots . . . . .	5	(X)	299,034	(X)	282,820
3345113667	Other airborne navigational systems . . . . .	25	(X)	<sup>a</sup> 1,308,807	(X)	963,508
3345113669	Surface (ship and ground) navigational systems . . . . .	37	(X)	484,715	(X)	<sup>b</sup> 363,016
3345113671	Underwater navigational systems . . . . .	4	(X)	(D)	(X)	(D)
3345113673	Electronic checkout, monitoring, evaluation, and other electronic evaluation, and other electronic systems and equipment . . . . .	35	(X)	<sup>a</sup> 799,333	(X)	642,537

See footnotes at end of table.

**Table 24. Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3391110	Laboratory apparatus and laboratory furniture . . . . .	146	(X)	<sup>a</sup> 1,844,642	(X)	<sup>a</sup> 1,887,468
	Laboratory balances and scales:					
3391110111	Sensitivity of 5 centigrams or better <sup>8</sup> . . . . .	8	(D)	(D)	(D)	(D)
3391110113	Sensitivity of less than 5 centigrams <sup>8</sup> . . . . .	6	<sup>b</sup> 126,192	<sup>b</sup> 54,723	<sup>b</sup> <sup>r</sup> 126,725	<sup>r</sup> 55,188
3391110115	Laboratory furnaces and ovens . . . . .	17	(X)	<sup>a</sup> 30,771	(X)	<sup>a</sup> 32,907
	Laboratory centrifuges:					
3391110117	Table-top type <sup>9</sup> . . . . .	16	(D)	(D)	(D)	(D)
3391110119	Floor type <sup>9</sup> . . . . .	6	32,305	103,792	28,622	150,562
3391110121	Laboratory distillation apparatus and rectifying apparatus <sup>10</sup> . . . . .	4	(X)	(D)	(X)	(D)
3391110123	Laboratory vacuum pumps <sup>10</sup> . . . . .	2	(S)	7,628	(S)	<sup>r</sup> 8,166
3391110125	Laboratory sterilizers and autoclaves . . . . .	11	(X)	<sup>a</sup> 186,981	(X)	<sup>r</sup> 142,620
3391110127	Laboratory filtering or purifying apparatus <sup>11</sup> . . . . .	3	(X)	(D)	(X)	(D)
3391110129	Laboratory burners and hotplates . . . . .	10	(X)	7,876	(X)	<sup>a</sup> 7,635
3391110131	Laboratory heat exchangers . . . . .	-	(X)	-	(X)	-
3391110133	Laboratory granulators, mills, and other particle size reduction apparatus . . . . .	7	(X)	1,945	(X)	1,686
3391110135	Laboratory drying and evaporation apparatus . . . . .	11	(X)	25,091	(X)	<sup>r</sup> 25,615
3391110137	Laboratory blenders, mixers, shakers, dispensers, fraction collectors, and other liquid sample preparation apparatus . . . . .	27	(X)	<sup>b</sup> 131,564	(X)	<sup>b</sup> 122,215
3391110139	Laboratory incubators . . . . .	12	<sup>b</sup> 31,727	<sup>a</sup> 54,672	<sup>a</sup> 31,763	<sup>a</sup> 56,217
3391110141	Environmental test chambers . . . . .	18	(S)	<sup>a</sup> 143,360	(S)	<sup>a</sup> 137,742
3391110143	Laboratory freezers . . . . .	8	<sup>b</sup> 10,695	49,157	<sup>a</sup> 9,902	46,648
3391110145	Microtomes <sup>11</sup> . . . . .	2	(D)	(D)	(D)	(D)
3391110231	Laboratory furniture, including cabinets, cases, benches, tables, stools, and reagent shelves <sup>12</sup> . . . . .	20	(X)	<sup>a</sup> 287,429	(X)	<sup>a</sup> 265,934
3391110233	Parts and components for laboratory furniture, sold separately <sup>12</sup> . . . . .	4	(X)	(D)	(X)	(D)
3391110151	All other laboratory apparatus, n.e.c. <sup>11</sup> . . . . .	78	(X)	634,711	(X)	<sup>a</sup> 651,211
3391110155	Components, parts and accessories for laboratory and scientific apparatus, sold separately . . . . .	53	(X)	124,942	(X)	183,122
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls . . . . .	102	(X)	<sup>a</sup> 2,787,363	(X)	2,717,360
	Automatic controls of the type principally used as components of air-conditioning, refrigeration, and comfort heating, including pneumatic controls:					
	Temperature responsive (thermostats):					
3345120101	Electric <sup>2 13</sup> . . . . .	34	<sup>a</sup> 52,510	399,462	45,876	418,692
3345120103	Pneumatic <sup>2 13</sup> . . . . .	4	(D)	(D)	(D)	(D)
3345120105	Pressure responsive (pressurestats) <sup>2</sup> . . . . .	10	2,547	<sup>a</sup> 27,886	<sup>a</sup> 2,476	<sup>a</sup> 34,831
3345120107	Hydronic responsive <sup>2</sup> . . . . .	5	2,085	43,943	2,242	49,124
3345120109	Humidity responsive (humidistats) <sup>2 14</sup> . . . . .	6	(D)	(D)	(D)	(D)
3345120111	Light responsive <sup>2 14</sup> . . . . .	2	5,437	36,446	<sup>b</sup> 6,135	<sup>a</sup> 25,084
3345120113	Liquid level <sup>2</sup> . . . . .	9	(S)	<sup>b</sup> 40,625	(S)	<sup>b</sup> <sup>r</sup> 23,674
3345120115	Igniters <sup>2 15</sup> . . . . .	8	(D)	(D)	(D)	(D)
3345120117	Inherent motor protectors <sup>2 15</sup> . . . . .	4	167,078	319,586	<sup>b</sup> <sup>r</sup> 180,229	362,775
3345120219	Microprocessor-based load programmers for buildings energy control <sup>2</sup> . . . . .	11	(S)	<sup>b</sup> 54,537	(S)	<sup>a</sup> 51,618
3345120221	Computerized energy control systems for buildings . . . . .	10	(S)	453,509	(S)	443,609
3345120223	Other . . . . .	21	(X)	621,585	(X)	547,640
	Controls for major appliances such as domestic laundry and cooking appliances, refrigerators and freezers, vending machines, and air-conditioners:					
3345120225	Temperature responsive <sup>2</sup> . . . . .	17	111,567	319,881	<sup>r</sup> 137,868	310,934
3345120227	All other controls for appliances <sup>2</sup> . . . . .	15	28,914	284,508	(S)	276,763
3345120229	Parts and components for controls monitoring residential and commercial environments and for appliance regulating controls, sold separately . . . . .	25	(X)	<sup>a</sup> 185,395	(X)	<sup>a</sup> 172,616

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345130	Process control instruments. . . . .	515	(X)	6,657,574	(X)	7,073,117
	General-purpose control system instruments (commonly called receiver-type), operating from standardized transmission signals (electrical types ac or dc milliampere, millivolt, or telemetering signals; pneumatic types, 3 to 15 and 3 to 27 p.s.i. signals):					
	Electronic systems—unified architecture type:					
3345130101	Controllers (recording, indicating, or blind) . . . . .	37	<sup>b</sup> 188,041	<sup>b</sup> 166,935	<sup>b</sup> 212,296	<sup>a</sup> 167,768
3345130103	Recorders, with or without self-contained set-point stations. . . . .	19	(S)	105,275	(S)	98,879
3345130105	Indicators, with or without self-contained set-point stations. . . . .	26	<sup>b</sup> 120,167	41,496	<sup>b</sup> <sup>r</sup> 114,613	<sup>r</sup> 44,954
3345130107	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, and integrators . . . . .	13	(S)	<sup>a</sup> 67,339	(S)	<sup>a</sup> 75,209
3345130109	Electronic systems—nonunified architecture type . . . . .	67	(X)	1,225,204	(X)	1,427,733
3345130111	Industrial multifunction process computers . . . . .	61	(X)	<sup>a</sup> 693,190	(X)	<sup>r</sup> 685,827
	Pneumatic systems, including all system-type control, display, and computing instruments actuated from standardized pneumatic transmission signals:					
3345130113	Controllers (recording, indicating, or blind) . . . . .	13	126,635	47,816	<sup>a</sup> 125,851	60,784
3345130115	Recorders, with or without self-contained set-point stations <sup>16</sup> . . . . .	5	(D)	(D)	(D)	(D)
3345130117	Indicators, with or without self-contained set-point stations <sup>16</sup> . . . . .	6	(S)	11,250	(S)	<sup>r</sup> 10,054
3345130119	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, and integrators . . . . .	4	<sup>b</sup> 49,578	<sup>b</sup> 7,048	53,921	8,565
3345130121	Receiver-type gauges, analog and digital . . . . .	9	(S)	9,118	(S)	8,482
3345130123	Annunciators, industrial; electromechanical and solid-state types . . . . .	7	<sup>a</sup> 27,894	<sup>a</sup> 24,324	<sup>a</sup> 23,720	<sup>a</sup> 20,633
	Temperature measuring instruments, excluding general-purpose, receiver-type instruments:					
	Electrical and electronic measuring types (thermocouple, resistance temperature detector, radiation, optical, thermistor, and other electrical sensors):					
3345130225	Direct-deflecting types (controllers for all types of electrical temperature sensors) . . . . .	6	(S)	<sup>a</sup> 7,464	(S)	<sup>a</sup> 7,535
3345130227	Direct-deflecting types (indicators and recorders for all types of electrical temperature sensors) . . . . .	9	(S)	<sup>a</sup> 5,917	(S)	<sup>b</sup> 5,867
3345130229	Electromechanical self-balancing types (electric or pneumatic controllers for all types of electrical temperature sensors) <sup>17</sup> . . . . .	2	(D)	(D)	(D)	(D)
3345130231	Electromechanical self-balancing types (indicators, recorders, and integrators for all types of electrical temperature sensors) <sup>17</sup> . . . . .	3	(S)	6,044	(S)	6,796
3345130233	Electronic controllers for all types of electrical temperature sensors . . . . .	24	<sup>a</sup> 411,268	120,418	<sup>a</sup> 413,219	<sup>r</sup> 125,665
3345130235	Digital indicators for all types of electrical temperature sensors, excluding data loggers. . . . .	32	<sup>b</sup> 61,051	<sup>b</sup> 21,642	<sup>b</sup> 73,690	<sup>a</sup> 28,845
	Transmitters, producing standardized electric or pneumatic analog transmission signals for all types of electrical temperature sensors:					
3345130237	Electric . . . . .	22	<sup>b</sup> 140,338	40,859	<sup>b</sup> <sup>r</sup> 166,172	<sup>r</sup> 47,207
3345130239	Pneumatic . . . . .	4	436	588	<sup>b</sup> 523	902
	Mechanical measuring types, filled systems (liquid filled, vapor pressure, gas filled, and mercury filled types):					
3345130241	Indicating or recording controllers. . . . .	9	(S)	<sup>a</sup> 20,120	(S)	17,160
3345130243	Recorders, noncontrol. . . . .	10	(S)	13,740	(S)	<sup>a</sup> 15,960
3345130245	Indicators only, excluding indoor-outdoor and other household or appliance type thermometers . . . . .	15	<sup>a</sup> 460,839	<sup>b</sup> 12,995	<sup>a</sup> 487,358	<sup>a</sup> 14,779
3345130247	Transmitters producing standardized electric or pneumatic analog transmission signals. . . . .	11	<sup>b</sup> 32,780	<sup>b</sup> 13,350	<sup>b</sup> 47,009	<sup>b</sup> 15,109

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345130	Process control instruments—Con.					
3345130249	Primary temperature sensors, excluding aircraft types:					
3345130251	Thermocouples and thermocouple lead wire . . . . .	65	(X)	<sup>a</sup> 235,138	(X)	226,789
	All other types (resistance temperature detectors, radiation and optical sensors, thermistors, etc.) . . . . .	46	(X)	<sup>a</sup> 127,016	(X)	<sup>a</sup> 103,992
	Pressure (gauge, absolute vacuum) and draft measuring instruments, excluding general-purpose, receiver-type instruments:					
3345130253	Indicating or recording controllers. . . . .	15		<sup>b</sup> 134,810	<sup>b</sup> <sup>r</sup> 147,142	<sup>a</sup> 51,164
3345130255	Recorders, noncontrol. . . . .	8		<sup>b</sup> 12,223	<sup>b</sup> 13,799	5,604
	Indicators only, excluding receiver-type gauges:					
3345130257	3-inch diameter and over <sup>2</sup> . . . . .	20		<sup>a</sup> 3,781	<sup>a</sup> 3,828	128,143
3345130259	Under 3-inch diameter <sup>2</sup> . . . . .	19		29,385	28,300	<sup>a</sup> 114,316
	Transmitters producing standardized analog transmission signals:					
3345130261	Transmitters producing standardized electronic analog transmission signals <sup>2</sup> . . . . .	32	(S)	<sup>a</sup> 169,682	(S)	208,493
3345130263	Transmitters producing standardized pneumatic analog transmission signals. . . . .	6	(S)	<sup>a</sup> 3,309	(S)	<sup>a</sup> 3,839
	Flow and liquid level measuring instruments, excluding general-purpose, receiver-type instruments:					
	Differential pressure types:					
3345130265	Indicating or recording controllers. . . . .	10		120,912	<sup>r</sup> 106,928	27,728
3345130267	Recorders, noncontrol; and indicators, noncontrol . . . . .	14		<sup>b</sup> 56,306	<sup>b</sup> 31,152	28,506
	Transmitters producing standardized analog transmission signals:					
3345130269	Transmitters producing standardized electronic analog transmission signals. . . . .	22		<sup>b</sup> 253,873	<sup>b</sup> 293,804	315,831
3345130271	Transmitters producing standardized pneumatic analog transmission signals. . . . .	10		<sup>b</sup> 17,455	<sup>b</sup> 10,107	<sup>a</sup> 12,004
3345130273	Primary pressure sensors (load cells, strain gauges, etc.) . . . . .	10		<sup>b</sup> 68,853	<sup>b</sup> 27,142	69,411
3345130275	Primary flow elements, including orifice plates, venturi tubes, flow tubes, flow nozzles, and pitot tubes . . . . .	16		<sup>b</sup> 374,701	<sup>b</sup> 55,808	<sup>b</sup> 392,435
	Electromagnetic flowmeters:					
3345130277	Primary device (magnetic flow tube) . . . . .	13		<sup>b</sup> 60,015	<sup>b</sup> 100,911	<sup>b</sup> 62,696
3345130279	Secondary device (magnetic transmitter, recorder, indicator, or controller that receives signal directly from primary device) . . . . .	13		<sup>b</sup> 41,044	<sup>a</sup> 29,602	<sup>b</sup> 46,464
3345130281	Capacitance, ultrasonic, and other electronic types, including magnetic resonance, vortex-precession, and vortex-shedding type elements . . . . .	40		<sup>b</sup> 191,557	<sup>b</sup> 168,020	<sup>b</sup> 212,188
3345130283	Variable area-controlling, recording, indicating, and transmitting instruments and associated primary flow elements <sup>2</sup> . . . . .	15		<sup>a</sup> 572	<sup>b</sup> 85,635	<sup>a</sup> 617
3345130285	Float and displacement (controlling, recording, indicating, and transmitting instruments and associated primary flow elements) <sup>2</sup> . . . . .	26		<sup>a</sup> 1,733	<sup>a</sup> 112,498	<sup>a</sup> 1,812
3345130287	Turbine and propeller: controlling, recording, indicating, and transmitting instruments and associated primary flow elements . . . . .	12		<sup>b</sup> 61,542	<sup>b</sup> 29,657	<sup>a</sup> 80,015
3345130289	Mass flow, i.e., controlling, thermal-controlling, recording, indicating, and transmitting instruments and associated primary flow elements. . . . .	15		<sup>a</sup> 54,863	225,773	58,520
3345130291	Other types: controlling, recording, indicating, and transmitting instruments and associated primary flow elements . . . . .	15		<sup>a</sup> 151,436	<sup>b</sup> 54,134	<sup>a</sup> 167,645
3345130293	Humidity instruments (controlling, recording, indicating, and transmitting, and associated primary humidity elements, excluding home and general-purpose type) . . . . .	13	(S)	36,649	(S)	39,831

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345130	Process control instruments—Con. Continuous process instruments for on-stream gas and liquid analysis, including indicators, recorders, controllers, and analysis electrodes and cells; excluding laboratory analysis types:					
3345130295	Chromatographic analyzers . . . . .	13	3,393	74,457	<sup>b</sup> 3,200	77,914
3345130297	Infrared analyzers . . . . .	13	<sup>a</sup> 10,020	61,012	<sup>a</sup> 10,398	66,559
3345130299	Oxygen analyzers . . . . .	16	<sup>b</sup> 22,563	<sup>a</sup> 51,731	<sup>b</sup> 23,974	<sup>a</sup> 62,859
334513021A	Other gas analyzers . . . . .	26	<sup>a</sup> 49,731	108,512	<sup>a</sup> 50,787	110,527
334513021C	Ph analyzers . . . . .	17	<sup>a</sup> 76,672	44,380	<sup>b</sup> 75,875	<sup>a</sup> 44,802
334513021E	Other liquid analyzers . . . . .	24	<sup>a</sup> 86,270	<sup>a</sup> 72,008	<sup>a</sup> 86,520	70,923
	Instruments for all process variables not listed above (speed, weight, position, sequence, density, specific gravity, mechanical load, electrical load, and millivolts):					
	Electrical and electronic measuring types:					
334513011G	Direct-deflecting type controllers, indicators, and recorders . . . . .	4	(S)	<sup>a</sup> 15,654	(S)	<sup>a</sup> 8,996
334513011J	Electromechanical self-balancing electric or pneumatic controllers, indicators, recorders, and integrators . . . . .	4	(S)	<sup>b</sup> 2,139	(S)	<sup>b</sup> 2,352
334513021L	Digital indicators . . . . .	18	<sup>b</sup> 135,921	<sup>b</sup> 38,779	<sup>b</sup> 148,039	<sup>b</sup> 39,641
334513021M	Transmitters producing standardized electric or pneumatic analog transmission signals . . . . .	11	<sup>b</sup> 36,283	15,910	<sup>b</sup> 55,640	32,047
	Mechanical measuring types:					
334513021P	Indicating or recording controllers and recorders, noncontrol . . . . .	4	8,020	2,487	9,661	2,932
334513021R	Indicators only . . . . .	4	(S)	<sup>a</sup> 11,828	(S)	13,038
334513021T	Transmitters producing standardized electric or pneumatic analog transmission signals . . . . .	15	<sup>b</sup> 294,326	51,973	<sup>b</sup> 295,009	55,189
	All other industrial process instruments:					
334513022A	Other temperature instruments <sup>18</sup> . . . . .	29	(X)	(D)	(X)	(D)
334513022C	Other flow and liquid level instruments . . . . .	29	(X)	<sup>a</sup> 136,733	(X)	<sup>a</sup> 175,471
334513022E	Other continuous process instruments . . . . .	36	(X)	<sup>b</sup> 298,117	(X)	<sup>a</sup> 330,217
334513022G	Other industrial type instruments <sup>18</sup> . . . . .	62	(X)	<sup>b</sup> 559,548	(X)	<sup>a</sup> 565,889
	Parts, supplies, accessories, other primary sensors, n.e.c., panelboards, and other equipment associated with process control instrumentation:					
334513032J	Primarily designed for temperature instruments . . . . .	18	(X)	<sup>a</sup> 49,127	(X)	41,429
334513032L	Primarily designed for flow and liquid level instruments . . . . .	30	(X)	<sup>b</sup> 73,730	(X)	<sup>a</sup> 88,664
334513032N	Primarily designed for continuous process instruments . . . . .	28	(X)	138,017	(X)	128,841
334513032P	Primarily designed for industrial type instruments . . . . .	39	(X)	<sup>b</sup> 94,708	(X)	<sup>a</sup> 103,765
3345141	Integrating and totalizing meters for gas and liquids . . . . .	45	(X)	1,133,368	(X)	1,078,725
	Gas meters, consumption registering:					
	Diaphragm type; positive displacements; aluminum, iron, and tin case:					
3345141001	Residential size (up to 400 cu. ft/hr of 0.64 specific gravity gas, at 0.5 inches water drop) <sup>2</sup> . . . . .	4	2,175	104,764	2,497	121,137
3345141003	Other sizes, including commercial and industrial . . . . .	6	<sup>a</sup> 127,220	38,517	<sup>a</sup> 140,490	43,294
3345141005	Turbine type (all sizes) <sup>19</sup> . . . . .	8	(D)	(D)	(D)	(D)
3345141007	Other gas meters, consumption registering <sup>19</sup> . . . . .	3	<sup>a</sup> 48,002	<sup>a</sup> 61,532	<sup>a</sup> 52,360	<sup>a</sup> 67,349
	Liquid meters, positive displacement with registers and counters:					
	Water meters, consumption registering:					
3345141009	Small meters, up to and including 1 inch <sup>2</sup> . . . . .	9	4,659	229,189	4,715	220,719
3345141011	Intermediate meters, over 1 inch, up to and including 2 inches . . . . .	11	162,092	40,969	<sup>r</sup> 198,587	43,273
3345141013	Large meters, over 2 inches . . . . .	11	336,012	<sup>a</sup> 81,157	<sup>r</sup> 328,906	77,907
3345141015	Liquid fuel dispensing meters, excluding service station dispensing pumps <sup>20</sup> . . . . .	8	(D)	(D)	(D)	(D)
3345141017	Other liquid meters; industrial bulk plants, pipeline, batching, and treatment facilities <sup>20</sup> . . . . .	18	<sup>a</sup> 1,428,771	335,773	<sup>b</sup> 967,213	277,261
3345141019	Parts, components, and accessories for gas and liquid meters, sold separately . . . . .	32	(X)	<sup>a</sup> 241,467	(X)	227,785

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345143	Counting devices, excluding motor vehicle instruments.....	42	(X)	<sup>a</sup> 404,335	(X)	434,451
3345143001	Mechanical input <sup>2</sup> .....	9	(S)	40,494	(S)	43,031
3345143003	Electrical input <sup>2</sup> .....	13	1,046	25,880	<sup>b</sup> 1,140	<sup>a</sup> 32,504
3345143005	Electronic input.....	16	645,703	91,541	629,244	60,091
3345143007	All other counting devices not specified above, including toll meters, fare collection equipment (systems), and parking lot systems, but excluding parking meters.....	11	(X)	237,592	(X)	290,865
3345143009	Components and parts for counting devices (except parking meters, sold separately).....	7	(X)	8,828	(X)	7,960
3345145	Motor vehicle instruments.....	29	(X)	2,363,722	(X)	2,245,148
3345145001	Speedometers (speedometers, including odometers, are classified as speedometers).....	9	(X)	<sup>a</sup> 17,225	(X)	18,459
3345145003	Tachometers.....	8	(X)	<sup>b</sup> 20,405	(X)	23,981
3345145005	Odometers (speedometers, including odometers, are classified as speedometers).....	5	(X)	1,025	(X)	1,750
3345145007	Fuel level gauges.....	7	(X)	<sup>b</sup> 5,411	(X)	8,786
3345145009	Water temperature gauges.....	10	(X)	<sup>a</sup> 25,547	(X)	28,659
3345145011	Ammeters.....	8	(X)	<sup>b</sup> 3,047	(X)	5,797
3345145013	Oil pressure gauges.....	6	(X)	<sup>b</sup> 9,720	(X)	9,857
3345145015	Instrument panels, including cluster modules.....	14	(X)	2,207,756	(X)	2,082,170
3345145017	Other motor vehicle instruments.....	17	(X)	<sup>b</sup> 73,586	(X)	65,689
3345151	Integrating instruments, electrical.....	19	(X)	<sup>b</sup> 465,750	(X)	457,275
	Ac watt-hour meters:					
3345151001	Single phase <sup>2</sup> .....	7	<sup>b</sup> 5,161	122,131	<sup>b</sup> 5,470	134,569
3345151003	Polyphase.....	7	289,980	31,357	<sup>f</sup> 289,312	31,776
3345151005	Demand meters (kW and kVA), combined watt-hour and demand meters (single phase and polyphase), and combined watt-hour and time switch meters.....	8	<sup>b</sup> 688,613	141,460	<sup>b</sup> 626,062	134,878
3345151007	Other electrical integrating meters, including dc watt-hour meters, ampere-hour meters, and other miscellaneous integrating instruments not included in the above classifications.....	8	(X)	<sup>a</sup> 84,258	(X)	<sup>a</sup> 62,231
3345151009	Parts and accessories for electric integrating meters, including meter mountings and registers, sold separately.....	8	(X)	86,544	(X)	93,821
3345153	Test equipment for testing electrical, radio and communication circuits, and motors.....	363	(X)	<sup>b</sup> 11,797,730	(X)	<sup>f</sup> 11,638,606
	Voltage, current, and resistance measuring equipment (except multimeters):					
	Electronic:					
3345153001	Digital.....	26	(X)	395,614	(X)	397,604
3345153003	Analog.....	26	(X)	50,137	(X)	52,231
3345153005	Electrical, excluding panel meters.....	13	(X)	<sup>a</sup> 65,487	(X)	61,411
	Multimeters:					
3345153007	Electronic, digital and analog <sup>21</sup> .....	11	(X)	(D)	(X)	(D)
3345153009	Electrical <sup>21</sup> .....	5	(X)	146,388	(X)	145,286
	Power and energy measuring equipment:					
	Electronic:					
3345153011	Analog.....	6	(X)	5,093	(X)	6,603
3345153013	Digital.....	13	(X)	(D)	(X)	(D)
3345153015	Electrical power measuring equipment, excluding electrical integrating instruments, sold separately.....	3	(X)	(D)	(X)	(D)
	Frequency counters, timers, and other frequency and time measuring equipment, excluding standards:					
3345153017	Universal counters with time interval measuring capability <sup>22</sup> .....	5	(X)	(D)	(X)	(D)
3345153019	Other frequency counters <sup>22</sup> .....	6	(X)	<sup>b</sup> 5,358	(X)	20,923
3345153021	Frequency meters <sup>23</sup> .....	5	(X)	(D)	(X)	(D)
3345153023	Other frequency counting and time measuring equipment <sup>23</sup> .....	6	(X)	<sup>a</sup> 95,638	(X)	136,394
	Waveform measuring and/or analyzing equipment:					
3345153025	Oscilloscopes and plug-in accessories <sup>24</sup> .....	8	(X)	(D)	(X)	(D)
3345153027	Spectrum analyzers <sup>24</sup> .....	6	(X)	(D)	(X)	(D)
3345153029	Other waveform measuring and analyzing equipment <sup>24</sup> .....	18	(X)	926,070	(X)	1,014,773

See footnotes at end of table.



Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345153	Test equipment for testing electrical, radio, and communication circuits, and motors—Con.					
	Signal generating equipment:					
3345153031	Audio . . . . .	10	(X)	15,840	(X)	<sup>a</sup> 21,098
3345153033	RF (over 20 KHz to 890 MHz) <sup>25</sup> . . . . .	15	(X)	(D)	(X)	(D)
3345153035	Microwave (890 MHz and above) <sup>25</sup> . . . . .	12	(X)	289,364	(X)	436,492
	Field strength and intensity measuring equipment, including RFI measuring equipment:					
3345153037	Electronic . . . . .	12	(X)	<sup>a</sup> 251,663	(X)	125,480
3345153039	Electrical field measuring equipment . . . . .	3	(X)	(D)	(X)	7,504
	Impedance and standing wave ratio measuring equipment (transfer function measuring equipment):					
3345153043	Electronic impedance and related measuring equipment . . . . .	9	(X)	<sup>b</sup> 21,665	(X)	<sup>b</sup> 20,258
3345153045	Standing wave measuring equipment (slotted lines, sliding shorts, reflectometers, and other SWR equipment) . . . . .	5	(X)	5,936	(X)	8,694
3345153047	X-Y plotters (recorders), electronic . . . . .	3	(X)	(D)	(X)	(D)
	Automatic test and measuring equipment:					
3345153049	Combination and/or group test sets . . . . .	42	(X)	1,878,590	(X)	<sup>f</sup> 1,821,641
	Component part test sets:					
3345153051	Electron tube test equipment . . . . .	3	(X)	312	(X)	652
	Semiconductor component test equipment:					
3345153053	Memory . . . . .	18	(X)	<sup>a</sup> 257,268	(X)	250,792
3345153055	Linear . . . . .	10	(X)	<sup>b</sup> 161,818	(X)	<sup>f</sup> 207,214
3345153057	Microprocessor . . . . .	14	(X)	435,599	(X)	620,635
3345153059	Other semiconductor component test equipment . . . . .	40	(X)	2,418,853	(X)	1,159,592
3345153061	Circuit board loaded test equipment . . . . .	14	(X)	<sup>b</sup> 233,229	(X)	<sup>b</sup> 217,060
3345153063	Other component part test sets and equipment . . . . .	28	(X)	811,818	(X)	<sup>f</sup> 913,867
3345153065	Equipment and subassembly test equipment, n.e.c., including disc drive testers, and power supply testers, etc. . . . .	24	(X)	<sup>a</sup> 155,220	(X)	<sup>a</sup> 289,940
	Standards and calibration equipment for test measuring equipment, including laboratory types (metered benchtop, rack mountable, or plug-in equipment):					
3345153067	Electronic <sup>26</sup> . . . . .	26	(X)	(D)	(X)	(D)
3345153069	Electrical <sup>26</sup> . . . . .	5	(X)	<sup>a</sup> 141,675	(X)	278,948
	Analyzers for testing characteristics of internal-combustion engines, excluding aircraft:					
3345153071	Portable . . . . .	6	(X)	<sup>b</sup> 415,681	(X)	227,146
3345153073	Other . . . . .	6	(X)	<sup>b</sup> 85,773	(X)	79,247
	Communications test equipment, n.e.c.:					
3345153075	Network analyzers . . . . .	17	(X)	380,741	(X)	537,336
3345153077	Cable backplane and other continuity testers . . . . .	12	(X)	70,581	(X)	<sup>a</sup> 79,954
334553079	Fiber optics test equipment (OTDR, optical S/N meters, etc.) . . . . .	11	(X)	<sup>a</sup> 241,594	(X)	<sup>a</sup> 214,020
3345153081	Other communications test, monitoring, and control equipment (except microwave) . . . . .	37	(X)	<sup>a</sup> 593,518	(X)	624,651
3345153083	Microwave test equipment, n.e.c. (1,300 MHz and above) . . . . .	7	(X)	37,632	(X)	33,636
	Logic test, development, and analysis equipment:					
3345153085	Logic analyzers, and similar logic state, timing, and signature analyzers <sup>27</sup> . . . . .	5	(X)	(D)	(X)	(D)
3345153087	Microprocessor development systems <sup>27</sup> . . . . .	8	(X)	<sup>a</sup> 240,816	(X)	251,533
3345153089	Pulse, function, and data generators and similar metered frequency synthesizers . . . . .	11	(X)	135,096	(X)	115,113
3344160041	Portable instrument transformers . . . . .	5	(X)	(D)	(X)	131,848
3345153091	Other field service test and measurement equipment, logic probes, clips, and pulsers . . . . .	6	(X)	<sup>a</sup> 17,437	(X)	<sup>a</sup> 35,873
3345153093	Other measuring and checking instruments for testing electrical, radio, and communication circuits, and motors <sup>28</sup> . . . . .	29	(X)	(D)	(X)	(D)
3345153095	Other analyzing instruments for checking electrical quantities <sup>28</sup> . . . . .	8	(X)	418,595	(X)	546,563
3345153097	Parts and components for test equipment for testing electrical, radio, and communication circuits, and motors, sold separately . . . . .	40	(X)	<sup>a</sup> 175,793	(X)	<sup>a</sup> 246,374

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345155	Instruments to measure electricity . . . . .	81	(X)	<sup>a</sup> 410,988	(X)	<sup>a</sup> 455,906
	Electrical indicating instruments:					
	Panel type instruments:					
3345155001	Digital panel meters (DPMs) between 0.05 percent and 1 percent, plus or minus one-digit accuracy, excluding precision DVMs and electronic counters . . . . .	19	<sup>b</sup> 721,472	<sup>a</sup> 79,940	<sup>b</sup> 700,230	<sup>r</sup> 113,635
3345155003	Analog solid state panel meters (generally of plus or minus 2-percent accuracy) with LED, LCD, or neon gas discharge display . . . . .	8	<sup>b</sup> 30,897	<sup>b</sup> 4,252	<sup>b</sup> 30,761	<sup>b</sup> 4,518
	Panel types other than ruggedized or sealed (generally of 2-percent accuracy):					
3345155005	Ac, including moving iron vane and dynamometer types . . . . .	9	<sup>b</sup> 265,749	<sup>a</sup> 6,238	<sup>a</sup> 294,845	<sup>b</sup> 6,756
3345155007	Dc, including rectifier- and self-contained thermocouple types <sup>2</sup> . . . . .	12	<sup>b</sup> 1,069	<sup>b</sup> 28,003	<sup>b</sup> 1,065	25,985
3345155009	Panel types ruggedized or sealed (generally of 2-percent accuracy) . . . . .	9	<sup>b</sup> 33,725	<sup>b</sup> 8,695	<sup>b</sup> 42,633	<sup>b</sup> 8,856
3345155011	Panel types with control or signal initiating means, including instrument relays . . . . .	5	<sup>b</sup> 14,972	<sup>b</sup> 3,009	<sup>b</sup> 17,702	<sup>b</sup> 2,630
3345155013	All other panel type instruments, including ammeters and voltmeters for motor vehicles <sup>2</sup> . . . . .	11	<sup>b</sup> 2,058	<sup>b</sup> 44,309	<sup>b</sup> 2,004	<sup>b</sup> 42,721
	Switchboard instruments that are generally of 1-percent accuracy:					
3345155015	Ac, including moving iron vane and dynamometer types <sup>29</sup> . . . . .	2	(D)	(D)	(D)	(D)
3345155017	Dc, including rectifier and thermocouple types <sup>29</sup> . . . . .	5	20,176	3,045	26,885	3,091
3345155019	Elapsed time meters (with or without) <sup>2</sup> . . . . .	7	(S)	<sup>b</sup> 22,670	(S)	<sup>b</sup> 22,906
3345155021	Portable instruments that are generally capable of accuracies within plus or minus 2 percent of full scale indication, and can be enclosed in a case so that they can be moved and used at various locations, and that are an end product . . . . .	15	<sup>b</sup> 403,529	47,728	<sup>b</sup> 506,696	51,508
	Electrical recording instruments (portable and for panel mounting):					
3345155023	Direct deflecting (direct acting) (except temperature calibrated instruments) <sup>30</sup> . . . . .	2	(D)	(D)	(S)	<sup>b</sup> 4,158
3345155025	Oscillographic recorders, pen or stylus, and light beam type <sup>30</sup> . . . . .	2	(X)	(D)	(X)	(D)
3345155027	Other electrical recording instruments <sup>30</sup> . . . . .	18	(X)	<sup>a</sup> 83,615	(X)	<sup>b</sup> 90,112
	Parts and accessories for indicating and recording instruments:					
3345155029	Transducers for volts, amperes, watts, vars, frequency, temperature, and power factor . . . . .	15	(X)	<sup>a</sup> 34,751	(X)	<sup>a</sup> 33,069
3345155031	Tachometer generators (except aerospace types) <sup>31</sup> . . . . .	4	(X)	(D)	(X)	(D)
3345155033	Other, including instrument shunts <sup>31</sup> . . . . .	17	(X)	44,733	(X)	45,961
3345160	Analytical and scientific instruments (except optical) . . . . .	291	(X)	<sup>a</sup> 5,803,130	(X)	6,058,618
	Electrochemical instruments:					
3345160001	Ph electrodes and meters . . . . .	19	(X)	<sup>b</sup> 65,319	(X)	<sup>b</sup> 60,436
3345160003	Ion selective electrodes and meters . . . . .	12	(X)	<sup>b</sup> 31,740	(X)	<sup>b</sup> 33,122
3345160007	Electrophoresis instruments . . . . .	12	(X)	<sup>b</sup> 60,941	(X)	<sup>r</sup> 88,098
3345160009	Other (except process type), including photometers . . . . .	11	(X)	<sup>b</sup> 13,895	(X)	<sup>b</sup> 14,945
	Chromatographic instruments:					
3345160011	Gas <sup>32</sup> . . . . .	17	(D)	(D)	(D)	(D)
3345160013	Liquid . . . . .	26	(S)	<sup>a</sup> 577,503	(S)	546,950
3345160015	Other, including paper, gel, and thin layer <sup>32</sup> . . . . .	4	(X)	<sup>b</sup> 291,716	(X)	264,399
	Spectrophotometric instruments:					
3345160017	Atomic absorption <sup>33</sup> . . . . .	3	(X)	(D)	(X)	(D)
3345160019	Optical emission, including spark, arc, and glow, spectrographs, and all other (except ICP) <sup>33</sup> . . . . .	7	(X)	(D)	(X)	(D)
3345160021	Optical emission, including laser excited source, which includes laser microprobe source emission, laser source Raman, and laser microprobe source Raman spectrometers <sup>33</sup> . . . . .	5	(X)	(D)	(X)	(D)

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345160	Analytical and scientific instruments (except optical)—Con. Spectrophotometric instruments—Con.					
3345160023	Optical emission with inductively coupled plasma, ICP <sup>33</sup> . . . . .	3	(X)	151,050	(X)	169,750
3345160025	Infrared, including Fourier transfer methods . . . . .	19	(X)	<sup>b</sup> 140,436	(X)	<sup>b</sup> 178,835
3345160027	Ultraviolet, visible and colorimeters . . . . .	20	(X)	<sup>b</sup> 147,334	(X)	161,254
3345160029	Fluorescent instruments, including fluorometers (except chemicals) . . . . .	13	(X)	43,920	(X)	39,448
3345160031	Color measuring devices . . . . .	9	(X)	<sup>a</sup> 80,519	(X)	<sup>f</sup> 89,743
3345160033	Other, including vacuum ultraviolet, Raman, light scattering reflectors, helium glow, and light measuring . . . . .	13	(X)	<sup>a</sup> 28,417	(X)	<sup>a</sup> 30,789
3345160035	Thermal analysis instruments, including thermogravimetric analyzers (TGA), quantitative thermal analyzers (QTA) and differential thermal analyzers (DTA) . . . . .	11	(X)	<sup>a</sup> 134,462	(X)	198,219
3345160037	Nuclear magnetic resonance spectrometers, including electron paramagnetic spin types (EP) <sup>34</sup> . . . . .	3	(D)	(D)	(D)	(D)
3345160039	Microscopes, scanning type, including electron and proton . . . . .	6	694	<sup>b</sup> 102,716	687	<sup>a</sup> 94,666
3345160041	Particle beam excitation instruments, including electron microprobes, augers, energy ion spectroscopes, secondary ion mass spectrometers (SIMS), and ion microprobes <sup>34</sup> . . . . .	3	<sup>b</sup> 463	149,954	<sup>f</sup> 512	151,994
3345160043	Photon excitation analyzers, including: X-ray fluorescence, simultaneous; X-ray fluorescence, sequential; X-ray fluorescence, sequential with diffraction; X-ray fluorescence, diffraction; X-ray diffraction; and energy dispersive systems (EDSs) . . . . .	12	<sup>b</sup> 2,269	<sup>b</sup> 76,193	<sup>a</sup> <sup>f</sup> 2,746	<sup>b</sup> <sup>f</sup> 74,572
3345160045	Mass spectroscopy instrumentation . . . . .	16	(X)	329,049	(X)	372,136
3345160047	Clinical laboratory instrumentation, including instruments used in the clinical laboratory for measuring, analyzing, and processing clinical specimens . . . . .	(NA)	(X)	1,136,014	(X)	<sup>f</sup> 1,169,743
3345160049	Chemistry (measure and identify substances, e.g., metabolites, enzymes, and drugs) . . . . .	10	<sup>b</sup> 12,999	283,535	<sup>a</sup> <sup>f</sup> 12,625	242,471
3345160051	Hematology (measure and identify substances or cells contained in blood or substances influencing the development and clotting of blood, e.g., cell counting coagulation factors) . . . . .	9	10,172	301,638	<sup>f</sup> 14,437	<sup>f</sup> 368,989
3345160053	Microbiology (enumerate or identify pathogenic organisms or measure their susceptibility to antimicrobial agents) <sup>35</sup> . . . . .	5	(D)	(D)	(D)	(D)
3345160055	Histology (process tissue and cells, e.g., tissue processors and cell stainers) <sup>35</sup> . . . . .	2	(D)	(D)	(D)	(D)
3345160057	Blood bank and immunology (process blood and specimens for testing; measure and identify, using immunoassay, substances in clinical specimens) <sup>35</sup> . . . . .	8	(S)	<sup>a</sup> 397,598	(S)	399,063
3345160059	Other clinical laboratory instrumentation not specified above . . . . .	15	<sup>b</sup> 51,812	153,243	<sup>b</sup> 68,041	159,220
3345160061	Organic elemental analysis instruments, including carbon, hydrogen, nitrogen, oxygen, and sulphur . . . . .	13	<sup>a</sup> 41,964	<sup>a</sup> 83,888	<sup>f</sup> 67,385	86,748
3345160063	Amino acid, protein, and/or peptide analyzers, including chromatographic type <sup>36</sup> . . . . .	7	(D)	(D)	<sup>a</sup> 872	52,505
3345160065	Gas detectors . . . . .	23	362,583	90,482	403,550	91,531
3345160067	Other analytical and scientific instruments, n.e.c., including molecular weight, monochrometers (analytical type), nephelometers (except meteorological), osmometers, particle size analyzers, photo multipliers, surface area analyzers, turbidometers, and breatholyzers <sup>36</sup> . . . . .	101	(X)	<sup>a</sup> 1,269,347	(X)	<sup>a</sup> 897,437
	Parts, components, and accessories for analytical and scientific instruments, sold separately, including photo tubes, thermal conductivity sensors, and thermopiles . . . . .	110	(X)	<sup>a</sup> 798,235	(X)	1,191,298

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3333141	Sighting, tracking, and fire control equipment, optical type . . . . .	40	(X)	<sup>b</sup> 511,998	(X)	574,875
3333141001	Made from lenses, prisms, etc., produced in the same plant . . . . .	10	(X)	<sup>a</sup> 69,337	(X)	70,252
3333141003	Made from purchased lenses, prisms, etc. . . . .	27	(X)	<sup>b</sup> 413,325	(X)	<sup>a</sup> 458,763
3333141005	Parts and accessories. . . . .	14	(X)	<sup>a</sup> 29,336	(X)	45,860
3333143	Optical instruments and lenses . . . . .	160	(X)	<sup>b</sup> 2,060,141	(X)	2,004,966
3333143111	Binoculars, prismatic and nonprismatic, and terrestrial and celestial telescopes . . . . .	11	(X)	56,137	(X)	39,868
3333143113	Other astronomical instruments, excluding radio astronomy . . . . .	6	(X)	17,832	(X)	13,635
3333143115	Parts and accessories, including mountings, for binoculars, optical telescopes and other astronomical equipment . . . . .	12	(X)	15,622	(X)	<sup>r</sup> 13,697
3333143231	Optical test and inspection equipment, including standard sources, modulators, optical comparators, and interferometers (except optical microscopes) . . . . .	40	(X)	190,054	(X)	215,660
3333143233	Optical microscopes . . . . .	11	(X)	48,221	(X)	60,225
3333143235	Optical components: Filters, including parts and accessories thereof . . . . .	32	(X)	<sup>a</sup> 79,873	(X)	78,134
3333143237	Lenses (except ophthalmic focus lenses): Unmounted lenses . . . . .	39	(X)	<sup>a</sup> 168,418	(X)	<sup>a</sup> 140,333
3333143239	Mounted lenses: Photographic lenses . . . . .	6	(X)	<sup>a</sup> 1,475	(X)	<sup>a</sup> 1,123
3333143241	Other mounted lenses . . . . .	18	(X)	<sup>a</sup> 258,282	(X)	<sup>a</sup> 271,234
3333143243	Other (prisms, mirrors, etc.) . . . . .	50	(X)	139,717	(X)	186,194
3333143245	Other optical instruments, including optical alignment and display instruments; excluding analytical instruments and binoculars and astronomical instruments listed above, and sighting and fire control equipment . . . . .	43	(X)	848,104	(X)	786,022
3333143247	Parts and accessories for other optical microscopes <sup>37</sup> . . . . .	10	(X)	<sup>a</sup> 236,406	(X)	<sup>b</sup> 19,866
3333143249	Parts and accessories for other optical instruments <sup>37</sup> . . . . .	21	(X)	(D)	(X)	178,975
3345191	Aircraft engine instruments (except flight) . . . . .	39	(X)	<sup>a</sup> 642,511	(X)	<sup>r</sup> 520,563
3345191001	Temperature sensors, transmitters, and displays . . . . .	22	(X)	203,494	(X)	146,374
3345191003	Pressure ratio sensors, displays, and controls <sup>38</sup> . . . . .	6	(X)	(D)	(X)	(D)
3345191005	Pressure and vacuum sensors, transmitters, and displays <sup>38</sup> . . . . .	12	(X)	105,434	(X)	59,562
3345191007	Fuel and oil flow rate sensors, transmitters, and displays, including mixture controls <sup>39</sup> . . . . .	8	(X)	(D)	(X)	(D)
3345191009	Fuel and oil quantity sensors, transmitters, and displays, including densitometers <sup>39</sup> . . . . .	7	(X)	125,733	(X)	<sup>r</sup> 120,804
3345191011	Tachometer generators and indicators . . . . .	9	(X)	<sup>a</sup> 8,697	(X)	<sup>a</sup> 7,625
3345191013	All other not specified above . . . . .	15	(X)	<sup>a</sup> 181,575	(X)	<sup>a</sup> <sup>r</sup> 172,892
3345191015	Parts and components for aircraft engine instruments, (except flight), sold separately . . . . .	10	(X)	17,578	(X)	13,306
3345193	Physical properties testing and inspection equipment and kinematic testing and measuring equipment . . . . .	157	(X)	<sup>a</sup> 1,689,903	(X)	1,522,821
3345193001	Physical properties testing equipment, including hardness, tensile, stress, strain, abrasion, strength, torsion, wear, and similar testing equipment; including components and parts, sold separately: For testing of metals . . . . .	24	(X)	394,045	(X)	364,920
3345193003	Other . . . . .	46	(X)	363,978	(X)	<sup>a</sup> 279,352
3345193005	Parts for physical properties testing equipment, sold separately . . . . .	28	(X)	<sup>a</sup> 76,381	(X)	<sup>r</sup> 59,016

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345193	Physical properties testing and inspection equipment and kinematic testing and measuring equipment—Con.					
	Physical properties inspection equipment, including flaw detection, thickness measuring, and similar inspection equipment; including components and parts, sold separately:					
3345193007	For testing of metals	23	(X)	221,824	(X)	199,891
3345193009	Measuring and checking flow of fluids	12	(X)	67,976	(X)	64,714
3345193011	Other	40	(X)	278,017	(X)	283,134
3345193013	Parts for physical properties inspection equipment, sold separately	22	(X)	<sup>b</sup> 50,429	(X)	46,121
3345193015	Kinematic testing and measuring equipment, including vibration, acceleration, and other motion testing equipment	30	(X)	<sup>a</sup> 234,513	(X)	222,972
3345193017	Parts for kinematic testing and measuring equipment, sold separately	6	(X)	<sup>b</sup> 2,740	(X)	<sup>b</sup> 2,701
3345195	Nuclear radiation detection and monitoring instruments	54	(X)	<sup>a</sup> 568,616	(X)	<sup>r</sup> 529,581
3345195001	Radiation detecting elements, including ion chambers	18	<sup>a</sup> 155,799	<sup>a</sup> 68,944	<sup>a</sup> <sup>r</sup> 171,221	67,645
3345195003	Solid state detectors <sup>40</sup>	5	(D)	(D)	(D)	(D)
3345195005	Nuclear monitoring instruments, including environmental, personal dosimetry, and medical monitors, both stationary and portable types	15	(S)	<sup>a</sup> 165,476	(S)	<sup>r</sup> 147,285
3345195007	Sample and flow counting systems, manual and automatic	8	(X)	<sup>a</sup> 21,624	(X)	21,056
3345195009	Scalers <sup>41</sup>	6	(D)	(D)	(D)	(D)
3345195011	Special amplifiers for nuclear applications <sup>41</sup>	3	<sup>b</sup> 8,913	6,023	<sup>b</sup> 8,680	5,859
	Pulse analyzers, including nuclear spectrometers:					
3345195013	Single channel pulse height analyzers <sup>42</sup>	3	(D)	(D)	(D)	(D)
3345195015	Multichannel pulse height analyzers <sup>42</sup>	3	(S)	5,671	(S)	6,439
3345195017	Count rate meters	9	(S)	(D)	(S)	(D)
3345195019	Measurement and control devices using beta, gamma, or neutron gauge technology	12	(X)	113,006	(X)	<sup>r</sup> 104,950
3345195021	Nuclear power supplies <sup>43</sup>	5	(X)	(D)	(X)	(D)
3345195023	Neutron and photon activation analysis systems	5	(X)	(D)	(X)	(D)
3345195025	Nuclear instrument modules, n.e.c. <sup>43</sup>	10	(X)	37,247	(X)	35,366
3345195027	Other nuclear radiation detection and monitoring instruments <sup>40</sup>	11	(X)	93,930	(X)	90,991
3345195029	Parts and components for nuclear radiation detection and monitoring instruments, sold separately	16	(X)	<sup>a</sup> 49,751	(X)	<sup>r</sup> 41,903
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	152	(X)	<sup>a</sup> 1,423,963	(X)	1,676,701
3345197001	Barometers and barographs, aneroid and mercurial types, including recorders, wall, pendant, meteorological, hygrometers, and barometer-thermometer-humidity combinations	15	(X)	<sup>b</sup> 8,295	(X)	<sup>a</sup> <sup>r</sup> 7,807
3345197003	Hydrometers, glass, all types, including thermohydrometers <sup>2</sup>	6	<sup>b</sup> 189	<sup>a</sup> 1,753	<sup>b</sup> 252	<sup>b</sup> 2,279
3345197005	Liquid-in-glass thermometers:					
	Engraved (etched) stem, thermoregulators, deep-sea reversing, laboratory, encased glass, ASTM standards, pocket case, and max-min registering (except clinical thermometers)	13	(X)	<sup>a</sup> 5,456	(X)	<sup>a</sup> 5,790
3345197007	Threaded and flanged types, fixed and adjustable angle, inline and duct installations, for process, food, air-conditioning, and refrigeration installations <sup>2</sup>	12	<sup>b</sup> 552	<sup>b</sup> 9,985	<sup>b</sup> 583	<sup>b</sup> 10,173
3345197009	Household and commercial thermometers such as wall, outdoor, domestic science, cupcase, filled systems, and indoor-outdoor <sup>2 44</sup>	12	(D)	(D)	(D)	(D)
3391121656	Medical thermometers, <sup>2 44</sup>	1	7,331	10,453	8,533	12,223

See footnotes at end of table.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3345197	Commercial, geophysical, meteorological, and general-purpose instruments—Con.					
	Bimetal thermometers:					
3345197011	Threaded and flanged types, for pipeline and duct installations, including general and pocket test <sup>2</sup> . . . . .	18	<sup>b</sup> 1,241	<sup>b</sup> 27,398	<sup>a</sup> 1,392	29,823
3345197013	Domestic science, commercial general test, indoor, outdoor, desk models, oven, and refrigerator <sup>2</sup> . . . . .	11	<sup>a</sup> 6,572	<sup>a</sup> 17,781	6,147	17,789
3345197015	Humidity indicating and recording instruments such as bi-hygroscopic and hygroscopic element, indicators, psychrometers, wet and dry bulb, hygrographs, and indicating hygrometers . . . . .	18	<sup>b</sup> 87	10,591	<sup>b</sup> 79	<sup>r</sup> 9,997
3345197017	Other thermometers (infrared, meteorological, commercial, and industrial) . . . . .	22	(X)	<sup>a</sup> 86,007	(X)	<sup>b</sup> 58,491
3345197023	Meteorological electronics equipment and radio astronomy equipment (automatic weather stations and weather tracking equipment, ceilometers, transitometers, space satellite meteorological systems, and specialized meteorological telemetering equipment) . . . . .	20	(X)	192,251	(X)	244,678
3345197025	Other meteorological instruments, including speed and direction instruments, rain gauges, thermographs, and parts, sold separately . . . . .	15	(X)	32,592	(X)	<sup>b</sup> 44,961
3345197027	Seismic instruments . . . . .	12	(X)	<sup>a</sup> 281,575	(X)	<sup>a</sup> 403,357
3345197029	All other geophysical instruments and equipment . . . . .	18	(X)	<sup>a</sup> 234,741	(X)	298,985
3345197031	Other commercial and industrial instruments (except aircraft), including compasses, altimeters, test equipment for hydraulic and pneumatic systems and controls, and environmental gas detectors, sold separately . . . . .	41	(X)	483,737	(X)	<sup>r</sup> 511,368
3345197033	Parts and accessories for meteorological and commercial and industrial instruments. . . . .	20	(X)	21,348	(X)	<sup>a</sup> 18,980
3345199	Surveying and drafting instruments and associated equipment . . . . .	33	(X)	<sup>b</sup> 371,880	(X)	<sup>b</sup> 359,826
3345199001	Surveying instruments, including alidades, transits, plumb bobs, sextants, theodolites, surveyors, compasses, surveyor's levels, and tapes . . . . .	18	(X)	321,281	(X)	<sup>b</sup> 308,682
3345199003	Parts and components for surveying instruments, sold separately . . . . .	7	(X)	(D)	(X)	(D)
3345199005	Drafting instruments and machines, manual and automatic, drafting tables, plotting instruments, slide rules, T-squares, drafting templates, rules, etc. . . . .	13	(X)	<sup>a</sup> 25,010	(X)	<sup>a</sup> 26,863
3345199007	Parts and components for drafting instruments and machines, sold separately . . . . .	2	(X)	(D)	(X)	(D)
3345199009	Photogrammetric and geodetic equipment, excluding cameras . . . . .	1	(X)	(D)	(X)	(D)
3345199011	Parts and components for photogrammetric and geodetic equipment, sold separately . . . . .	2	(X)	(D)	(X)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.  
<sup>r</sup>Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

<sup>1</sup>Product codes 332911F019 and 332911F021 are combined with product code 332911F023 to avoid disclosing data for individual companies.

<sup>2</sup>Quantity for this product code is in thousands of units.

<sup>3</sup>Product code 332911H005 is combined with product code 332911H007 to avoid disclosing data for individual companies.

<sup>4</sup>Product codes 3345111107 and 3345111113 are combined with product code 3345111115 to avoid disclosing data for individual companies.

<sup>5</sup>Product code 3345111109 is combined with product code 3345111111 to avoid disclosing data for individual companies.

<sup>6</sup>Product code 3345111221 is combined with product code 3345111223 to avoid disclosing data for individual companies.

<sup>7</sup>Product code 3345113209 is combined with product code 3345113211 to avoid disclosing data for individual companies.

<sup>8</sup>Product code 3391110111 is combined with product code 3391110113 to avoid disclosing data for individual companies.

<sup>9</sup>Product code 3391110117 is combined with product code 3391110119 to avoid disclosing data for individual companies.

<sup>10</sup>Product code 3391110121 is combined with product code 3391110123 to avoid disclosing data for individual companies.

<sup>11</sup>Product codes 3391110127 and 3391110145 are combined with product code 3391110151 to avoid disclosing data for individual companies.

<sup>12</sup>Product code 3391110231 is combined with product code 3391110233 to avoid disclosing data for individual companies.

<sup>13</sup>Product code 3345120101 is combined with product code 3345120103 to avoid disclosing data for individual companies.

Table 24. **Quantity and Value of Shipments of Selected Instruments and Related Products: 1998 and 1997—Con.**

- <sup>14</sup>Product code 3345120109 is combined with product code 3345120111 to avoid disclosing data for individual companies.
- <sup>15</sup>Product code 3345120115 is combined with product code 3345120117 to avoid disclosing data for individual companies.
- <sup>16</sup>Product code 3345130115 is combined with product code 3345130117 to avoid disclosing data for individual companies.
- <sup>17</sup>Product code 3345130229 is combined with product code 3345130231 to avoid disclosing data for individual companies.
- <sup>18</sup>Product code 334513022A is combined with product code 334513022G to avoid disclosing data for individual companies.
- <sup>19</sup>Product code 3345141005 is combined with product code 3345141007 to avoid disclosing data for individual companies.
- <sup>20</sup>Product code 3345141015 is combined with product code 3345141017 to avoid disclosing data for individual companies.
- <sup>21</sup>Product code 3345153007 is combined with product code 3345153009 to avoid disclosing data for individual companies.
- <sup>22</sup>Product code 3345153017 is combined with product code 3345153019 to avoid disclosing data for individual companies.
- <sup>23</sup>Product code 3345153021 is combined with product code 3345153023 to avoid disclosing data for individual companies.
- <sup>24</sup>Product codes 3345153025 and 3345153027 are combined with product code 3345153029 to avoid disclosing data for individual companies.
- <sup>25</sup>Product code 3345153033 is combined with product code 3345153035 to avoid disclosing data for individual companies.
- <sup>26</sup>Product code 3345153067 is combined with product code 3345153069 to avoid disclosing data for individual companies.
- <sup>27</sup>Product code 3345153085 is combined with product code 3345153087 to avoid disclosing data for individual companies.
- <sup>28</sup>Product code 3345153093 is combined with product code 3345153095 to avoid disclosing data for individual companies.
- <sup>29</sup>Product code 3345155015 is combined with product code 3345155017 to avoid disclosing data for individual companies.
- <sup>30</sup>Product codes 3345155023 and 3345155025 are combined with product code 3345155027 to avoid disclosing data for individual companies.
- <sup>31</sup>Product code 3345155031 is combined with product code 3345155033 avoid disclosing data for individual companies.
- <sup>32</sup>Product code 3345160011 is combined with product code 3345160015 to avoid disclosing data for individual companies.
- <sup>33</sup>Product codes 3345160017, 3345160019, and 3345160021 are combined with product code 3345160023 to avoid disclosing data for individual companies.
- <sup>34</sup>Product code 3345160037 is combined with product code 3345160041 to avoid disclosing data for individual companies.
- <sup>35</sup>Product codes 3345160051 and 3345160053 are combined with product code 3345160055 to avoid disclosing data for individual companies.
- <sup>36</sup>Product code 3345160061 is combined with product code 3345160065 to avoid disclosing data for individual companies.
- <sup>37</sup>Product code 3333143247 is combined with product code 3333143249 to avoid disclosing data for individual companies.
- <sup>38</sup>Product code 3345191003 is combined with product code 3345191005 to avoid disclosing data for individual companies.
- <sup>39</sup>Product code 3345191007 is combined with product code 3345191009 to avoid disclosing data for individual companies.
- <sup>40</sup>Product code 3345195003 is combined with product code 3345195027 to avoid disclosing data for individual companies.
- <sup>41</sup>Product code 3345195009 is combined with product code 3345195011 to avoid disclosing data for individual companies.
- <sup>42</sup>Product code 3345195013 is combined with product code 3345195015 to avoid disclosing data for individual companies.
- <sup>43</sup>Product code 3345195021 is combined with product code 3345195025 to avoid disclosing data for individual companies.
- <sup>44</sup>Product code 3345197009 is combined with product code 3391121656 to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item has been estimated. <sup>b</sup>Over 26 percent of this item has been estimated.

**Table 25. Shipments, Imports and Exports of Selected Instruments and Related Products: 1998**

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption (value) <sup>2,3</sup>
332911F 001, 003, 005, 007, 009, 011, 013	Pneumatic actuated automatic valves . . . . .	600,801	48,657	32,191
332911F 015, 017, 019, 021, 023, 025, 027, 029	All other control valves, including electric and electrohydraulic . . . . .	478,922	455,790	493,879
332911F 031, 033, 035, 037, 039, 041	Self-generating power-actuated regulator valves . . . . .	912,201	155,404	276,981
332911H 001, 003, 005, 007, 009	Solenoid-operated valves (except nuclear and fluid transfer) . . . . .	523,403	163,078	475,301
3345111 101	Compasses (magnetic and gyroscopic) . . . . .	312,228	65,383	31,220
3345111 103, 105, 107, 109, 111, 113, 115, 217, 219, 221, 223, 225, 227, 229, 231, 233, 335, 437, 3345113 101, 103, 105	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments) <sup>4</sup> . . . . .	4,394,427	736,734	313,369
3345113 207, 209, 211, 313, 315, 317, 319, 321, 323	Radar systems and equipment <sup>5</sup> . . . . .	4,204,465	572,172	76,582
3345113 651	Radio navigational aid receivers and displays . . . . .	847,058	357,230	244,197
3345113 665	Automatic pilots . . . . .	299,034	74,161	15,936
3345113 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 545, 547, 549, 653, 655, 657, 659, 661, 663, 667, 669, 671, 673	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuoys, navigation, sonar fish finders, sonar range instrumentation, etc.) . . . . .	16,793,141	100,926	138,223
3345120 101, 103, 225	Temperature responsive automatic controls (thermostats) . . . . .	719,343	140,510	287,586
3345120 105, 107, 109, 111, 113, 115, 117, 219, 223, 227	Pressure responsive automatic, hydraulic automatic, pneumatic automatic, and automatic controls, n.e.c. . . . .	1,429,116	1,392,079	1,268,449
3345120 229	Parts and components for automatic controls, sold separately . . . . .	185,395	(NA)	(NA)
3345130	Process control instruments . . . . .	6,657,574	491,672	437,359
3345141 001, 003, 005, 007	Gas meters, consumption registering (except parts) . . . . .	204,813	27,457	4,772
3345141 009, 011, 013, 015, 017	Liquid meters (except parts) . . . . .	687,088	67,420	5,559
3345141 019	Parts, components, and accessories for gas and liquid meters, sold separately . . . . .	241,467	92,513	63,863
3345143 001, 003, 005, 007, 3345145, 3345191, 3345155	Counting devices, n.e.c., including taxi meters and parts, parking meters and parts, and motor vehicle instruments . . . . .	3,812,728	348,820	893,258
3345151	Electricity meters . . . . .	465,750	56,341	25,297
3345153 001, 003, 005	Voltage, current, and resistance measuring equipment (except multimeters) . . . . .	511,238	268,665	115,484
3345153 011, 013, 015	Power and energy testing equipment . . . . .	(D)	(NA)	(NA)
3345153 071, 073	Analyzers for testing characteristics of internal-combustion engines (except aircraft) . . . . .	501,454	171,110	95,833
3345153 031, 033, 035	Signal generating equipment . . . . .	305,204	100,787	38,369

See footnotes at end of table.



Table 25. **Shipments, Imports and Exports of Selected Instruments and Related Products:**  
**1998—Con.**

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption (value) <sup>2,3</sup>
3345153 017, 019, 021, 023, 025, 027, 029, 083, 037, 039, 043, 045, 007, 009, 047, 049, 051, 063, 065, 053, 055, 057, 059, 061, 067, 069, 075, 077, 079, 081, 085, 093, 087, 089	Test equipment for testing multimeters, electrical, radio, and communication circuits, and motors, n.e.c. ....	9,955,647	1,068,684	305,286
3391110, 3345160	Laboratory, analytical, and scientific instruments .....	7,647,772	(NA)	(NA)
3333141	Sighting, tracking, and fire-control equipment, optical type .....	511,998	44,957	75,012
3333143 111, 113, 115	Binoculars and astronomical instruments and parts and accessories .....	89,591	95,770	259,724
3333143 231, 235, 237, 239, 241, 243, 245, 247, 249	Optical instruments and lenses, n.e.c. ....	1,922,329	384,355	37,287
3333143 233	Microscopes, optical .....	48,221	(NA)	(NA)
3345193	Physical properties testing and inspection equipment, and kinematic testing and measuring equipment .....	1,689,903	675,582	100,567
3345195	Nuclear radiation detection and monitoring instruments, and equipment .....	568,616	299,683	42,537
3391121 656	Liquid-in-glass thermometers, clinical <sup>6</sup> .....	(D)	(D)	(D)
3345197 005, 007, 009	Liquid-in-glass thermometers, n.e.c. <sup>6</sup> .....	25,894	11,386	20,110
3345197 011, 013, 017	Thermometers (except liquid-in-glass type) .....	131,186	15,657	(NA)
3345197 029	Geophysical instruments and equipment .....	234,741	243,679	82,943
3345197 027	Seismic instruments .....	281,575	11,787	15,277
3345197 001, 015, 023, 025	Commercial, geophysical, meteorological, and general-purpose instruments, n.e.c. ....	243,729	123,921	118,977
3345199 001, 003	Surveying instruments (except photogrammetrical and geodetic equipment) .....	(D)	56,240	99,607
3345199 005	Drafting instruments and machines, manual and automatic .....	25,010	14,737	218,106

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.

<sup>1</sup>Source: Census Bureau report, EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report, IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Value represents the c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>4</sup>Product code 3345113105 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.

<sup>5</sup>Product codes 3345113313 and 3345113315 are excluded from manufacturers' shipments to avoid disclosing data for individual companies.

<sup>6</sup>Products have been combined to avoid disclosing data for individual companies.

## HISTORICAL NOTE

Data on selected instruments and related products have been collected by the Census Bureau since 1961. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.

Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

## CONTACT FOR DATA USERS

For additional information about these data, contact Chris Blackburn, 301-457-4817.

## ELECTROMEDICAL AND IRRADIATION EQUIPMENT (INCLUDING X-RAY)—MA334S (FORMERLY MA38R)

### INTRODUCTION

These data cover manufacturers of electromedical and irradiation equipment (including X-ray), except very small firms (generally less than 20 employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies.

The statistics were collected by mail on Census Bureau annual Form MA38R, Electromedical Equipment and Irradiation Equipment (Including X-ray). The survey panel includes all known producers of these products, except the very small firms excluded from the scope of the survey. Approximately 271 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

In 1998, the total value of shipments of electromedical and irradiation equipment amounted to \$13.1 billion, an

increased of 7.9 percent from \$12.2 billion in 1997. Shipments of X-ray and other irradiation equipment increased 5.7 percent to \$3.3 billion in 1998, from \$3.1 billion in 1997. Shipments of electromedical equipment increased 8.7 percent to \$9.8 billion in 1998, from \$9.1 billion in 1997.

### EXPLANATION OF TERMS

**Research and development.** Dollar shipments reflect income from development, design, and engineering services performed by the reporting plant in connection with the manufacture of the products shipped, whether included in a single production contract, or contracted for separately, but intended as preparation for the manufacture of the specific products.

Table 26. **Value of Shipments of Electromedical and Irradiation Equipment by Class of Product: 1993 to 1998**

[Value in millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993
3345170	X-ray and other irradiation equipment . . . . .	3,317.4	3,139.1	2,900.9	2,698.1	2,458.2	2,480.0
3345101	Electromedical equipment . . . . .	9,837.0	9,051.1	8,318.8	7,124.8	6,752.1	6,222.0

**Table 27. Quantity and Value of Shipments of Electromedical and Irradiation Equipment: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
	Electromedical and irradiation equipment . . . . .	251	(X)	13,154,335	(X)	12,190,201
	Medical diagnostic equipment:					
	X-ray equipment:					
3345170103	Digital radiography equipment . . . . .	5	4,597	128,181	6,152	<sup>1</sup> 147,357
3345170106	Computerized axial tomography (CT or CAT scan) . . . . .	6	2,740	542,644	<sup>2</sup> 2,908	555,574
3345170109	Dental and conventional . . . . .	13	23,573	625,626	22,956	522,837
3345170112	All other medical diagnostic X-ray equipment <sup>1</sup> . . . . .	17	(X)	(D)	(X)	(D)
3345170115	Nuclear medicine equipment (all equipment used for nuclear in vivo studies) . . . . .	8	1,908	499,557	1,441	363,128
3345101103	Magnetic resonance imaging (MRI) equipment . . . . .	8	2,392	842,961	<sup>2</sup> 2,279	<sup>1</sup> 741,003
3345101106	Ultrasound scanning devices . . . . .	15	18,181	1,300,664	14,551	1,102,906
3345101109	Electrocardiograph (EKG) . . . . .	16	48,300	227,212	44,891	204,907
3345101112	Electroencephalograph (EEG) and electromyograph (EMG) . . . . .	6	4,127	90,460	4,500	108,295
3345101115	Audiological equipment . . . . .	7	(X)	7,853	(X)	10,288
3345101118	Endoscopic equipment (bronchoscope, cystoscope, proctosigmoidoscope, colonoscope, etc.) <sup>2</sup> . . . . .	5	(D)	(D)	(D)	(D)
3345101121	Respiratory analysis equipment . . . . .	5	5,071	30,329	4,477	39,291
3345101124	All other medical diagnostic equipment <sup>2</sup> . . . . .	27	(X)	(D)	(X)	(D)
	Patient monitoring equipment:					
3345101227	Intensive care/coronary care units, including component modules such as temperature, blood pressure, and pulse . . . . .	19	(X)	617,862	(X)	<sup>1</sup> 594,256
3345101231	Prenatal monitoring <sup>3</sup> . . . . .	6	(X)	(D)	(X)	(D)
3345101234	Respiratory monitoring <sup>3</sup> . . . . .	8	(X)	(D)	(X)	(D)
3345101237	All other patient monitoring . . . . .	34	(X)	673,276	(X)	<sup>1</sup> 618,697
	Medical therapy equipment:					
3345101241	Ultrasound therapy . . . . .	7	(X)	13,843	(X)	12,096
3345101244	Pacemakers . . . . .	6	243,990	870,000	242,504	803,335
3345101247	Defibrillators . . . . .	11	65,649	746,185	50,024	578,780
3345101251	Dialyzers, including machines and equipment . . . . .	5	(X)	493,039	(X)	458,290
3345101254	Medical laser equipment . . . . .	17	(X)	617,381	(X)	623,934
3345170118	Radiation therapy (linear accelerators, X-ray, cobalt 60, brachetherapy) <sup>1</sup> . . . . .	10	(X)	(D)	(X)	(D)
3345101257	All other medical therapy equipment . . . . .	37	(X)	906,298	(X)	<sup>1</sup> 821,926
	All other irradiation and electromedical equipment:					
3345170121	Industrial and scientific X-ray equipment . . . . .	19	3,275	199,340	2,992	194,367
3345170124	X-ray tubes, sold separately . . . . .	12	40,428	318,126	45,391	413,196
3345170227	Other nonmedical irradiation equipment, including gamma- and beta-ray equipment, n.e.c. . . . .	5	(X)	17,027	(X)	20,578
3345170331	Parts and accessories for X-ray equipment and other nonmedical irradiation equipment, n.e.c. . . . .	24	(X)	146,712	(X)	<sup>1</sup> 138,108
	Surgical systems:					
3345101361	Electrosurgical equipment . . . . .	13	(X)	335,762	(X)	340,908
3345101364	Heart-lung machines, excluding iron lungs <sup>4</sup> . . . . .	2	(D)	(D)	(D)	(D)
3345101367	Blood flow systems <sup>4</sup> . . . . .	8	(X)	(D)	(X)	(D)
3345101371	All other surgical support systems . . . . .	17	(X)	333,927	(X)	<sup>1</sup> 286,005
3345101374	Other electromedical equipment (except diagnostic and therapeutic), n.e.c. . . . .	14	(X)	135,577	(X)	<sup>1</sup> 106,820
3345101477	Electromedical parts and accessories, including diagnostic and therapeutic, n.e.c. . . . .	46	(X)	745,686	(X)	<sup>1</sup> 747,028

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>The combined value total for product codes 3345170112 and 3345170118 is 840,166 for 1998 and 783,922 for 1997.

<sup>2</sup>The combined value total for product codes 3345101118 and 3345101124 is 192,827 for 1998 and 216,893 for 1997.

<sup>3</sup>The combined value total for product codes 3345101231 and 3345101234 is 91,920 for 1998 and 88,046 for 1997.

<sup>4</sup>The combined value total for product codes 3345101364 and 3345101367 is 563,894 for 1998 and 547,534 for 1997.

**Table 28. Shipments, Exports, and Imports of Electromedical and Irradiation Equipment: 1998**

[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption (value) <sup>2 3</sup>
3345170106	Computerized axial tomography (CT or CAT scan) . . . . .	542,644	114,298	132,221
3345170103, 109, 112, 115, 118	Medical X-ray and nuclear equipment diagnostic and therapeutic . . . . .	2,093,530	585,230	565,777
3345170121	Industrial and scientific X-ray equipment . . . . .	199,340	118,537	60,192
3345170124	X-ray tubes, sold separately . . . . .	318,126	127,709	94,923
3345170331	Parts and accessories for X-ray equipment and other nonmedical irradiation equipment, n.e.c. . . . .	146,712	309,852	344,994
3345170227	Nonmedical irradiation equipment, including gamma- and beta-ray equipment, n.e.c. . . . .	17,027	24,162	6,948
3345101109	Electrocardiograph (EKG), diagnostic . . . . .	227,212	70,767	13,259
3345101112	Electroencephalographs (EEG's) and electromyographs (EMG) . . . . .	90,460	19,320	11,885
3345101106	Ultrasound scanning devices, diagnostic . . . . .	1,300,664	497,207	81,333
3345101103	Magnetic resonance imaging (MRI) equipment . . . . .	842,961	251,647	291,292
3345101244	Pacemakers, therapeutic . . . . .	870,000	253,929	20,129
3345101115, 118, 121, 124	Diagnostic electromedical equipment, n.e.c. . . . .	231,009	767,714	470,620
3345101247, 254, 257	Therapeutic electromedical equipment, n.e.c. . . . .	2,269,864	199,719	39,908
3345101364, 367, 371, 374	Electromedical equipment and irradiation equipment, including X-ray, n.e.c. . . . .	1,033,398	230,500	360,942
3345101251	Dialyzers, machines and equipment . . . . .	493,039	72,228	55,516
3345101227, 231, 234, 237	Patient monitoring equipment . . . . .	1,383,058	251,561	29,690
3345101241	Therapeutic ultrasound equipment . . . . .	13,843	14,110	3,145
3345101361	Electrosurgical equipment . . . . .	335,762	425,232	90,090
3345101477	Electromedical parts and accessories, including diagnostic and therapeutic, n.e.c. . . . .	745,686	592,682	555,877

n.e.c. Not elsewhere classified.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

**HISTORICAL NOTE**

Data on selected electronic and associated products have been collected by the Census Bureau since 1961 on survey MA36N, Selected Electronics and Associated Products. In 1985, survey MA36N was divided into three annual surveys: MA334P (MA36P), Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment; MA334Q (MA36Q), Semiconductors, Printed Circuit Boards, and Other Electronic

Components; and MA334S (MA38R), Electromedical Equipment and Irradiation Equipment (Including X-ray). Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact James Hinckley, 301-457-4772.

# Chapter 8. Consumer Durables

## ELECTRIC HOUSEWARES AND FANS—MA335E (FORMERLY MA36E)

### INTRODUCTION

These data cover manufacturers of electric housewares and fans in the United States. These statistics were collected by mail on Census Bureau annual Form MA335E, Electric Housewares and Fans. The survey panel includes all known manufacturers of electric housewares and fans, approximately 95 companies.

### SUMMARY OF FINDINGS

In 1998, manufacturers' shipments of electric fans totaled \$549.4 million, a 15-percent increase from the 1997 value of shipments of \$466.1 million. The 1998

value of shipments of small household electric appliances totaled \$1.6 billion, a decrease of 12 percent from the 1997 total. Shipments of parts and attachments increased 6 percent, from \$106.2 million in 1997 to \$113.3 million in 1998.

### EXPLANATION OF TERMS

See the Introduction for an explanation of terms.

Table 1. **Value of Shipments of Electric Housewares and Fans by Class of Product: 1989 to 1998**

[Millions of dollars]

Year	Electric fans (except industrial type)	Small household electric appliances	Parts and attachments for electric housewares and fans
1998 .....	549.4	1,551.9	113.3
1997 .....	466.1	1,745.0	106.2
1996 .....	527.3	1,663.1	96.7
1995 .....	493.0	1,897.6	99.6
1994 .....	554.7	2,049.1	119.9
1993 .....	494.1	1,945.0	136.5
1992 .....	511.4	1,985.0	142.7
1991 .....	409.6	1,720.8	98.7
1990 .....	482.0	1,778.7	104.3
1989 .....	531.5	1,914.9	128.1

**Table 2. Quantity and Value of Shipments of Electric Housewares and Fans by Product: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3352111	Electric fans (except industrial) . . . . .	13	25,999,594	<sup>a</sup> 549,400	22,549,786	466,115
3352111011	Window (household) permanent, portable, and roll-abouts . . . . .	7	12,549,791	218,297	8,070,222	132,669
3352111013	Ceiling (paddle) fans . . . . .	4	300,755	22,057	291,104	<sup>r</sup> 20,974
3352111015	All other electric fans (except industrial), including electric range hoods, oven hoods, ventilating, exhaust, desk, and wall bracket fans . . . . .	7	13,149,048	<sup>a</sup> 309,046	<sup>r</sup> 14,188,460	<sup>r</sup> 312,472
3352113	Small electric household appliances (except fans) . . . . .	65	(X)	1,551,944	(X)	1,745,008
	Electrothermal type . . . . .	41	(X)	1,131,078	(X)	1,304,657
3352113011	Broilers . . . . .	4	118,549	3,276	139,641	4,183
	Coffee makers:					
3352113013	Drip type <sup>1</sup> . . . . .	5	(D)	(D)	(D)	(D)
3352113015	Percolator or vacuum type <sup>1</sup> . . . . .	3	(D)	(D)	(D)	(D)
3352113017	Urn type <sup>1</sup> . . . . .	3	(D)	(D)	(D)	(D)
3352113019	Deep fat fryers, excluding covers and controls shipped separately <sup>2</sup> . . . . .	5	(D)	(D)	(D)	(D)
3352113021	Ovens, including toaster ovens and roasters (with or without broiler attachments) . . . . .	7	3,214,000	110,496	4,234,154	151,505
3352113023	Hot plates and disc stoves, 1650 watts and less (except built-in units) . . . . .	3	740,613	10,300	814,049	10,950
3352113025	Waffle irons, sandwich grills, griddles, and combinations <sup>3</sup> . . . . .	7	(D)	(D)	(D)	(D)
3352113027	Frying pans and skillets, excluding covers and controls shipped separately <sup>3</sup> . . . . .	4	(D)	(D)	(D)	(D)
	Air space heaters:					
	Portable room heaters:					
3352113029	Fan-forced type . . . . .	8	1,267,480	50,892	1,072,967	37,655
3352113031	Other than fan-forced type (convector, radiant, etc.) . . . . .	8	1,023,856	26,324	<sup>r</sup> 935,923	<sup>r</sup> 31,442
	For fixed installation, all types:					
	Baseboard, excluding glass panel type . . . . .	7	928,827	21,351	1,065,842	23,361
3352113035	Other than baseboard, excluding warm air furnaces . . . . .	4	975,343	60,345	1,039,955	63,214
3352113037	Electric irons . . . . .	1	(D)	(D)	(D)	(D)
3352113049	Electric bed coverings, including sheets, mattress covers, comforters, and blankets . . . . .	3	(D)	(D)	(D)	(D)
3352113051	Electric heating pads, including foot warmers . . . . .	4	<sup>b</sup> 843,769	<sup>b</sup> 9,612	827,742	9,075
3352113057	Portable humidifiers, including vaporizers . . . . .	10	<sup>b</sup> 4,245,685	<sup>b</sup> 75,346	4,703,313	74,349
3352113059	Other small electrothermal food processing appliances, including such items as pressure cookers, automatic saucepans, toasters, casseroles, chafing dishes, and crockpots; excluding covers and controls shipped separately <sup>2</sup> . . . . .	10	(D)	(D)	(D)	(D)
	Other small electrothermal household appliances, including such items as immersion heaters, faucet attachments, water heaters, steam radiators, warming trays, food warmers, bottle warmers, hair curlers, curling irons, hair dryers, etc.; excluding covers and controls shipped separately . . . . .	11	<sup>a</sup> 5,916,739	<sup>a</sup> 98,903	6,630,365	109,349
	Electromechanical type, including cordless . . . . .	24	(X)	420,866	(X)	440,351
	Household food mixers, including value of standard attachments sold with mixers:					
3352113039	Hand (portable) <sup>4</sup> . . . . .	2	(D)	(D)	(D)	(D)
3352113041	Stand type <sup>4</sup> . . . . .	1	(D)	(D)	(D)	(D)
3352113043	Blenders (liquefiers) <sup>4</sup> . . . . .	5	(D)	(D)	(D)	(D)
3352113045	Household food processors, including food choppers, slicers, and shredders . . . . .	5	79,126	2,631	790,557	23,824

See footnotes at end of table.

**Table 2. Quantity and Value of Shipments of Electric Housewares and Fans by Product: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3352113	Small electric household appliances (except fans)—Con.					
	Electromechanical type, including cordless—Con.					
3352113047	Household food preparation appliances, (except food mixers and food processors), including drink mixers, whippers, juicers, grinders, ice crushers, and coffee grinders. . . .	7	218,863	13,002	379,221	19,911
3352113053	Portable air purifiers and portable dehumidifiers, including vaporizers. . . . .	8	(D)	(D)	(D)	(D)
3352113055	Other small electromechanical appliances, including knives, knife sharpeners, scissors, toothbrushes, vibrators, electric razors, dry shavers, and can openers . . . . .	11	11,946,272	216,930	4,830,417	109,143
3352115	Parts and attachments for small household electric appliances . . . . .	25	(X)	113,349	(X)	106,201
3352115093	Electrothermal in operation (value only) . . . . .	11	(X)	73,814	(X)	73,006
3352115095	Electromechanical in operation (value only) . . . . .	9	(X)	9,736	(X)	11,550
3352115097	Other (value only) . . . . .	5	(X)	29,799	(X)	21,645

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Product codes 3352113013, 3352113015, and 3352113017 sum to: 1998 quantity, 6,002,716; 1998 value, 119,044; 1997 quantity, 8,237,112; 1997 value, 168,916.

<sup>2</sup>Product codes 3352113019 and 3352113059 sum to: 1998 quantity, 22,939,456; 1998 value, 340,033; 1997 quantity, 18,980,261; 1997 value, 308,251.

<sup>3</sup>Product codes 3352113025 and 3352113027 sum to: 1998 quantity, 2,972,386; 1998 value, 67,679; 1997 quantity, 3,549,040; 1997 value, 85,356.

<sup>4</sup>Product codes 3352113039, 3352113041, and 3352113043 sum to: 1998 quantity, 2,125,185; 1998 value, 201,044; 1997 quantity, 6,155,737; 1997 value, 269,425.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item has been estimated. <sup>b</sup>Over 25 percent of this item has been estimated.

**Table 3. Shipments, Exports, Imports, and Apparent Consumption of Electric Housewares and Fans: 1998**

[Quantity in number of units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1 2</sup>		Imports for consumption <sup>1 3</sup>	
	Quantity	Value f.o.b. plant	Quantity	Value at port	Quantity	Value
Electric fans (except industrial) . . . . .	25,999,594	549,400	1,409,119	64,008	41,156,665	803,147
Coffee makers . . . . .	(D)	(D)	774,566	25,559	19,027,536	259,126
Air space heaters, portable and fixed installation types . . . . .	4,195,506	158,912	(NA)	36,538	5,223,442	82,964
Standard household electric irons . . . . .	(D)	(D)	422,510	6,878	19,058,101	2,079,211
Electric bed coverings . . . . .	(D)	(D)	179,584	6,324	8,512	104
Electrothermal household appliances, n.e.c. . . . .	15,079,355	921,891	3,383,443	115,238	131,402,360	774,188
Electromechanical household food mixers (except blenders) <sup>4</sup> . . . . .	(D)	(D)	(NA)	(NA)	9,587,864	133,300
Electromechanical household food mixers <sup>4</sup> . . . . .	(D)	(D)	1,623,759	46,685	(NA)	(NA)
Household blenders and liquefiers <sup>4</sup> . . . . .	(D)	(D)	(NA)	(NA)	12,318,250	158,470
Household food preparation appliances, including food processors (except food mixers) . . . . .	297,989	15,633	371,269	18,936	8,559,603	66,125
Portable humidifiers, including vaporizers . . . . .	4,245,685	75,346	194,670	6,750	2,489,600	43,429
Small electromechanical appliances, n.e.c. . . . .	11,946,272	216,930	347,343	7,113	32,844,782	451,923

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified.

<sup>1</sup>For a comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA imports, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. General Imports for Consumption*.

<sup>4</sup>Manufacturers' shipments for "Electromechanical household food mixers (except blenders)" and "Electromechanical household food mixers" are combined with "Household blenders and liquefiers" to avoid disclosing data for individual companies.

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**HISTORICAL NOTE**

Data on electric housewares and fans have been collected by the Census Bureau since 1962. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Vera Harris-Bourne, 301-457-1604.



## MAJOR HOUSEHOLD APPLIANCES—MA335F (FORMERLY MA36F)

### INTRODUCTION

These data cover manufacturers of major household appliances and parts in the United States. These statistics were collected by mail on Census Bureau annual Form MA335F, Major Household Appliances. The survey panel includes all known manufacturers of major household appliances, approximately 100 companies.

### SUMMARY OF FINDINGS

In 1998, manufacturers' shipments of major household appliances increased 6 percent from \$15.2 billion in 1997 to \$16.2 billion. Shipments of household cooking equipment, including parts and accessories, totaled \$3.9 billion

in 1998, a 4-percent increase from the 1997 value of \$3.8 billion. The value of household refrigerators and freezers, including parts and attachments, increased 6 percent, from \$5.4 billion in 1997 to \$5.8 billion in 1998. Shipments for household laundry equipment and parts increased 4 percent, from \$3.2 billion in 1997 to \$3.3 billion in 1998. Shipments for household appliances, not elsewhere classified, increased 10 percent from \$1.7 billion in 1997 to \$1.9 billion in 1998.

### EXPLANATION OF TERMS

See the Introduction for an explanation of terms.

**Table 4. Value of Shipments of Major Household Appliances by Class of Products: 1991 to 1998**

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992	1991
3352211110	Electric household ranges, ovens, and surface cooking units, equipment, and parts . . . . .	2,228.6	2,099.9	1,865.8	1,791.8	1,791.1	1,731.3	1,619.8	1,614.9
3352213000	Gas household ranges, ovens, and surface cooking units, equipment, and parts . . . . .	683.2	606.8	544.6	654.1	649.6	621.5	599.6	609.5
3352215000	Other household ranges, and cooking equipment and outdoor cooking equipment, including parts and accessories . . . . .	1,029.0	1,082.0	1,004.0	911.6	872.7	786.1	750.0	657.4
3352221000	Household refrigerators, including combination refrigerator-freezers <sup>1</sup> . . . . .	5,672.1	5,272.4	5,084.4	4,739.4	4,882.1	4,310.3	3,937.6	3,362.7
3352222000	Food freezers, complete units, for freezing and/or storing frozen food (household type) <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	277.4
3352223000	Parts and attachments for household refrigerators and freezers . . . . .	95.8	155.8	160.7	111.8	84.7	73.7	78.7	127.9
3352240000	Household laundry machines and parts . . . . .	3,327.3	3,191.5	3,217.9	3,095.4	3,361.4	3,389.4	2,961.7	2,919.0
3352281000	Water heaters, electric . . . . .	541.3	552.3	558.8	513.0	516.4	473.4	401.0	446.7
3352283000	Water heaters (except electric) . . . . .	810.7	748.7	764.6	681.8	748.8	700.0	586.5	616.1
3352285000	Household appliances, n.e.c., and parts . . . . .	1,861.0	1,671.4	1,601.6	1,579.2	1,624.3	1,305.6	1,276.5	1,170.8

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified.

<sup>1</sup>For the years 1992 through 1998, product codes 3352222000 and 3352221000 are combined to avoid disclosing data for individual companies.

**Table 5. Quantity and Value of Shipments of Major Household Appliances: 1998 and 1997**

[Quantity in thousands of units. Value in millions of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3352211	Major household appliances .....	(NA)	(X)	16,153.2	(X)	<sup>†</sup> 15,225.0
3352211110	Electric ranges, ovens, and surface cooking units, equipment, and parts .....	17	8,620.3	2,228.6	<sup>†</sup> 7,888.0	<sup>†</sup> 2,099.9
	Free-standing ranges (widths are based on outside dimensions):					
3352211311	Under 23 (58.4 cm) inches in width, all types, including apartment house type ...	6	(D)	(D)	(D)	(D)
3352211313	23 (58.4 cm) inches up to and including 32 (81.3 cm) inches in width .....	8	3,367.9	1,082.1	<sup>†</sup> 3,079.7	<sup>†</sup> 994.1
3352211315	33 (83.8 cm) inches and over in width, all types .....	3	(D)	(D)	(D)	(D)
	Other than free-standing:					
	Built-in ranges:					
	Built-in ovens:					
3352211417	Single oven .....	7	381.8	231.5	<sup>†</sup> 351.1	<sup>†</sup> 213.2
3352211419	Two ovens .....	5	180.4	<sup>a</sup> 156.8	<sup>†</sup> 129.9	<sup>†</sup> 114.4
3352211421	Surface cooking tops .....	7	406.3	118.6	<sup>†</sup> 418.9	<sup>†</sup> 123.0
3352211423	Drop-in ranges .....	4	(D)	(D)	(D)	(D)
3352211525	Microwave ranges and ovens, including combination microwave/electric ranges and built-in ovens that utilize microwave and electrothermal energy in one or more of the oven cavities .....	5	76.2	<sup>a</sup> 68.4	<sup>†</sup> 68.0	<sup>†</sup> 75.8
3352211527	Microwave ovens, including counter top, built-in, and wall or cabinet-hung ovens ....	3	(D)	(D)	(D)	(D)
3352211290	Parts and accessories for household electric ranges and ovens such as burners, rotisseries, oven racks, and broiler pans, sold separately .....	12	(X)	105.6	(X)	<sup>†</sup> 134.9
3352213	Gas household ranges, ovens, and surface cooking units, equipment, and parts .....	15	1,869.0	683.2	<sup>†</sup> 1,674.6	<sup>†</sup> 606.8
	Standard type, free-standing:					
3352213111	Over 32 (81.3 cm) inches cooking top and oven <sup>1</sup> .....	5	(D)	(D)	(D)	(D)
3352213113	Over 24 (61 cm) inches to 32 (81.3 cm) inches cooking top and oven <sup>1</sup> .....	6	(D)	(D)	(D)	(D)
3352213115	Apartment ranges, 24 (61 cm) inches cooking top and under .....	3	201.2	38.2	<sup>†</sup> 176.5	<sup>†</sup> 33.4
3352213117	Standard type, for built-in installation (built-in or stack-on oven broiler unit) .....	4	(D)	(D)	(D)	(D)
3352213119	Surface cooking tops (one or more burners) .....	7	243.8	<sup>a</sup> 87.1	<sup>†</sup> 213.2	<sup>†</sup> 76.1
3352213121	Nonstandard types, including wall-hung, slide-in, or drop-in .....	5	254.5	77.8	<sup>†</sup> 226.0	<sup>†</sup> 60.4
3352213123	Other gas household ranges, ovens, hot plates, and surface cooking units, not listed above .....	3	(D)	(D)	(D)	(D)
3352213190	Parts and accessories for gas household ranges and ovens, such as burners, rotisseries, oven racks, and broiler pans, sold separately .....	10	(X)	61.9	(X)	<sup>†</sup> 58.5
3352215	Other household ranges and cooking equipment (except gas and electric) and outdoor cooking equipment, including parts and accessories .....	23	10,748.0	1,029.0	<sup>†</sup> 11,558.1	1,082.0
	Barbecuers, grills, stoves, braziers, etc., for outdoor cooking and other cooking:					
	Portable units:					
3352215111	Gas fuel or both gas and other fuel .....	13	<sup>a</sup> 5,065.8	686.2	<sup>†</sup> 5,901.7	<sup>†</sup> 752.5
3352215113	Solid fuel (charcoal, wood, coal, etc.) ...	10	<sup>b</sup> 5,111.6	<sup>a</sup> 146.0	<sup>†</sup> 5,146.5	<sup>†</sup> 143.0
3352215115	Liquid fuel (oil, kerosene, etc.) .....	3	<sup>b</sup> 456.7	<sup>b</sup> 50.7	<sup>†</sup> 379.2	<sup>†</sup> 42.4
3352215117	All other outdoor and other cooking equipment .....	6	113.9	14.6	<sup>†</sup> 130.7	<sup>†</sup> 14.5
3352215190	Parts and accessories for outdoor and other cooking equipment, sold separately .....	15	(X)	131.5	(X)	129.6

See footnotes at end of table.

**Table 5. Quantity and Value of Shipments of Major Household Appliances: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3352221	Major household appliances—Con. Household refrigerators, including combination refrigerator-freezers <sup>2</sup> . . . . .	12	12,617.9	5,672.1	<sup>1</sup> 12,092.4	<sup>1</sup> 5,272.4
	Compression type, fitted with separate external doors, including all combinations with two or more external doors:					
3352221011	9.4 cu. ft. and under (under 269 liters) . . . .	2	(D)	(D)	84.8	18.8
3352221013	9.5 to 13.4 cu. ft. (269 liters but under 382 liters) . . . . .	2	(D)	(D)	<sup>1</sup> 225.7	<sup>1</sup> 63.3
3352221015	13.5 to 15.4 cu. ft. (382 liters but under 438 liters) . . . . .	3	930.6	270.5	1,275.1	399.1
3352221017	15.5 to 17.4 cu. ft. (438 liters but under 495 liters) . . . . .	4	850.6	272.9	<sup>1</sup> 918.2	<sup>1</sup> 307.9
3352221019	17.5 to 19.4 cu. ft. (495 liters but under 552 liters) . . . . .	6	3,109.0	1,360.8	<sup>1</sup> 3,089.1	<sup>1</sup> 1,151.2
3352221021	19.5 to 21.4 cu. ft. (552 liters but under 608 liters) . . . . .	6	1,340.3	745.7	1,432.8	757.8
3352221023	21.5 to 24.4 cu. ft. (608 liters but under 693 liters) . . . . .	6	1,446.0	1,031.1	1,343.2	961.8
3352221025	24.4 cu. ft. and over (693 liters and over) . .	5	1,268.9	1,077.7	1,085.6	980.0
	Compression type, fitted with only one external door:					
3352221027	6.4 cu. ft. and under (under 184 liters) . . . .	5	846.0	127.4	720.2	109.9
3352221029	6.5 cu. ft. and over (184 liters and over) . . .	3	(D)	(D)	(D)	(D)
3352221031	Other household refrigerators . . . . .	4	(D)	(D)	(D)	(D)
3352222	Food freezers, complete units, for freezing and/or storing frozen food (household type) <sup>2</sup> . .	5	(D)	(D)	(D)	(D)
3352222011	Upright type freezers . . . . .	5	(D)	(D)	(D)	(D)
3352222013	Chest type freezers . . . . .	2	(D)	(D)	(D)	(D)
3352223000	Parts and attachments for household refrigerators and freezers, excluding compressors and condensing units and ice-making machines . . . . .	16	(X)	95.8	(X)	155.8
3352240	Household laundry machines (household type defined as having dry linen capacity not exceeding 10 kg (22 lb)) . . . . .	5	12,145.4	3,327.3	12,129.0	3,191.5
	Washing machines, mechanical (electric):					
3352240211	Coin-operated <sup>3</sup> . . . . .	4	(D)	(D)	<sup>1</sup> 226.2	<sup>1</sup> 105.8
3352240213	Noncoin-operated . . . . .	5	7,503.9	2,121.9	6,715.6	1,836.5
3352240215	Other washing machines, including machines with built-in centrifugal drier and gasoline driven <sup>3</sup> . . . . .	2	(D)	(D)	269.4	151.8
	Dryers, mechanical (incorporating heat):					
3352240317	Gas (noncoin-operated) . . . . .	4	1,157.1	309.8	1,048.5	269.7
3352240319	Electric (noncoin-operated) . . . . .	4	2,961.1	632.3	3,782.1	792.2
3352240321	Coin-operated . . . . .	3	87.1	37.9	<sup>1</sup> 87.2	<sup>1</sup> 35.4
	Parts, accessories, and attachments for household laundry equipment, sold separately . . . . .	12	(X)	253.0	(X)	<sup>1</sup> 291.8
3352240191	For household washing machines . . . . .	10	(X)	150.3	(X)	186.1
3352240195	For household drying machines . . . . .	5	(X)	9.2	(X)	11.2
3352281	Water heaters, electric (for permanent installation) . . . . .	10	<sup>a</sup> 4,170.5	<sup>a</sup> 541.3	<sup>b</sup> 4,427.7	<sup>b</sup> 552.3
	Storage type:					
3352281011	34 gallons and under (under 132 liters) . . . .	7	886.0	107.1	<sup>b</sup> 1,006.7	<sup>b</sup> 111.4
3352281013	35 to 44 gallons (132 liters but under 170 liters) . . . . .	7	<sup>b</sup> 1,505.5	<sup>b</sup> 183.7	<sup>b</sup> 1,558.2	<sup>b</sup> 189.3
3352281015	45 to 54 gallons (170 liters but under 208 liters) . . . . .	5	<sup>a</sup> 1,112.6	<sup>a</sup> 150.6	<sup>b</sup> 1,198.2	<sup>b</sup> 158.9
3352281017	55 gallons and over (208 liters and over) . .	6	344.4	68.1	<sup>1</sup> 372.4	63.9
3352281019	Other types, including circulating and portable storage . . . . .	5	<sup>a</sup> 322.0	<sup>a</sup> 31.8	292.1	28.7

See footnotes at end of table.

Table 5. **Quantity and Value of Shipments of Major Household Appliances: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in millions of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3352283	Major household appliances—Con. Water heaters (except electric) . . . . .	11	<sup>a</sup> 4,850.3	<sup>a</sup> 810.7	<sup>b</sup> 4,862.7	<sup>b</sup> 748.7
	Direct-fired water heaters:					
3352283011	Gas <sup>4</sup> . . . . .	9	(D)	(D)	(D)	(D)
3352283013	Oil <sup>4</sup> . . . . .	3	(D)	(D)	(D)	(D)
3352283015	Indirect water heaters, including storage, cast or coil type (less tank); tanks (with or without generator coils); generator coils with tank collar (sold without tank); and instantaneous . . . . .	6	113.6	22.8	<sup>r</sup> 107.1	<sup>r</sup> 20.8
3352285	Other household type appliances and parts, n.e.c. . . . .	19	14,110.8	1,861.0	13,526.3	<sup>r</sup> 1,671.4
	Dishwashing machines:					
3352285111	Portable type, including convertible type . . .	3	(D)	(D)	(D)	(D)
3352285113	Built-in type . . . . .	4	5,184.1	1,211.9	<sup>r</sup> 4,626.6	<sup>r</sup> 1,064.9
3352122219	Floor-waxing, polishing, scrubbing, and shampooing machines (for household use only) . . . . .	3	(D)	(D)	(D)	(D)
3352285117	Food waste disposers (all sizes, of the electromechanical, comminutor type, operating in conjunction with household plumbing systems of the type generally used in residences) . . . . .	2	(D)	(D)	(D)	(D)
3352285119	Household trash compactors . . . . .	2	(D)	(D)	(D)	(D)
	Parts for other household appliances, n.e.c.:					
3352285193	For electric water heaters (value only) . . . .	6	(X)	22.1	(X)	<sup>b</sup> 21.5
3352285195	For nonelectric water heaters (value only) . .	5	(X)	17.7	(X)	<sup>b</sup> 20.1
3352285197	For dishwashing machines (value only) . . . .	9	(X)	31.5	(X)	36.9
3352285199	For other major household appliances, n.e.c. (value only) . . . . .	3	(X)	(D)	(X)	(D)

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. <sup>r</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Product codes 3352213111 and 3352213113 sum to: 1998 quantity, 1,108,299; 1998 value, 388,175; 1997 quantity, 1,009,505; 1997 value, 355,295

<sup>2</sup>Product code 3352222 and 3352221 have been combined.

<sup>3</sup>Product codes 3352240211 and 3352240215 sum to: 1998 quantity, 436,045; 1998 value, 225,393.

<sup>4</sup>Product codes 3352283011 and 3352283013 sum to: 1998 quantity, 4,736,689; 1998 value, 787,948; 1997 quantity, 4,755,693; 1997 value, 727,842

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item has been estimated. <sup>b</sup>Over 25 percent of this item has been estimated.

**Table 6. Shipments, Exports, and Imports of Major Household Appliances: 1998**

[Quantity in thousands of units. Value in millions of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1 2</sup>		Imports for consumption <sup>1 3</sup>	
		Quantity	Value	Quantity	Value	Quantity	Value
3352211311, 313, 315, 417, 419, 421, 423, 525	Electric ranges, ovens, and surface cooking units; microwave oven combinations.....	4,412.6	1,657.3	90.3	51.3	7,164.4	259.5
3352211527	Microwave ovens.....	(D)	(D)	458.8	63.7	(X)	(X)
3352211290	Parts and accessories for electric ranges and ovens.....	(X)	105.6	(X)	230.7	(X)	147.2
3352213111, 113, 115, 117, 119, 121, 123	Gas ranges, ovens, and surface cooking units.....	699.4	203.1	119.0	45.8	1,423.8	292.6
3352213190	Parts and accessories for gas ranges and ovens and other cooking equipment.....	(X)	61.9	(X)	20.9	(X)	65.5
	Other household ranges and cooking equipment, including barbecuers, grills, stoves, braziers, etc., (except gas and electric) for outdoor cooking and other cooking:						
3352215111	Gas fuel or both gas and other fuel.....	5,065.8	686.2	783.6	67.7	(X)	(X)
3352215113	Solid fuel (charcoal, wood, coal, etc.).....	5,111.6	146.0	144.7	21.0	2,628.4	24.7
3352215115	Liquid fuel (oil, kerosene, etc.).....	456.7	50.7	297.1	6.1	49.5	1.0
3352215117, 190	All other outdoor cooking equipment.....	113.9	146.1	96.0	7.6	236.3	4.8
	Compression type refrigerators, fitted with separate external doors, including all combinations with two or more external doors:						
3352221011	9.4 cu. ft. and under (under 269 liters).....	(D)	(D)	55.5	22.8	226.6	26.7
3352221013	9.5 to 13.4 cu. ft. (269 liters but under 382 liters).....	(D)	(D)	29.5	8.2	179.2	43.8
3352221015, 017, 019, 021, 023, 025	13.5 cu. ft. and over (382 liters and over).....	8,945.3	4,758.7	765.8	429.9	321.4	102.1
	Compression type refrigerators, fitted with one external door:						
3352221027	6.4 cu. ft. and under (under 184 liters).....	846.0	127.4	41.6	19.5	1,614.9	156.4
3352221029	6.5 cu. ft. and over (184 liters and over).....	(D)	(D)	290.4	148.2	213.7	89.3
3352221031	Other household refrigerators, noncompression, fitted with one external door.....	(D)	(D)	132.7	54.8	284.6	28.9
3352222011	Freezers, upright type.....	(D)	(D)	95.1	37.4	104.0	24.3
3352222013	Freezers, chest type.....	(D)	(D)	121.6	33.9	250.2	45.9
3352240211	Fully automatic electric washing machines (coin-operated).....	(D)	(D)	49.8	17.4	6.0	2.3
3352240213	Fully automatic electric washing machines (noncoin-operated).....	7,503.9	2,121.9	771.8	219.4	328.3	49.1
3352240215	Other washing machines.....	(D)	(D)	28.6	13.6	1.1	1.4
3352240317, 319	Dryers (noncoin-operated) and other drying equipment.....	4,118.2	942.2	12.9	5.1	4.8	1.3
3352240321	Dryers (coin-operated).....	87.1	37.9	428.3	86.0	609.7	99.2
3352281011, 013, 015, 017	Water heaters, electric, storage type.....	3,848.5	509.5	(NA)	(NA)	(NA)	(NA)
3352281019	Water heaters, electric, other.....	322.0	31.8	(NA)	(NA)	(NA)	(NA)
3352283011, 013	Water heaters, nonelectric, direct fired, gas or oil.....	(D)	(D)	(NA)	(NA)	(NA)	(NA)
3352283015	Water heaters, nonelectric, indirect fired, other than gas or oil.....	113.6	22.8	(NA)	(NA)	(NA)	(NA)
	Other household appliances, n.e.c.:						
3352285111, 113	Dishwashing machines, household.....	5,184.1	1,211.9	352.1	83.0	134.8	41.5
3352122219	Floor polishers.....	(D)	(D)	52.5	7.7	17.4	3.1
3352285117, 119	Food waste disposals.....	(D)	(D)	224.7	16.2	85.6	2.0
3352285193, 195, 197, 199	Parts for other major household appliances.....	(X)	(D)	(X)	11.4	(X)	68.0

D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not elsewhere classified. X Not applicable.

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

Note: Detail may not add to totals because of rounding.

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**HISTORICAL NOTE**

Data on major household appliances have been collected by the Census Bureau since 1968. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Vera Harris-Bourne, 301-457-1604.

## CONSUMER ELECTRONICS—MA334M (FORMERLY MA36M)

### INTRODUCTION

These data cover companies engaged in the manufacture of home-type radio receivers, television sets, phonographs, high-fidelity components, and speakers in the United States. Very small firms (generally less than five employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies are excluded.

The statistics were collected by mail on Census Bureau annual Form MA334M, Radio and Television Receivers, Phonographs, and Related Equipment. The survey panel includes all known domestic manufacturers of these products, except the very small firms excluded from the scope of the survey. Approximately 155 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

During 1998, the total value of shipments for consumer electronics was \$9.2 billion, an increase of 12.3 percent from the 1997 value of \$8.2 billion. The 1998 figure includes automotive audio equipment, \$979.4 million; television receivers, \$3.8 billion; other consumer audio and video equipment, \$720.9 million; and loudspeakers, microphones, kits, and public address systems, \$3.7 billion.

### EXPLANATION OF TERMS

See the Introduction for an explanation of terms.

**Table 7. Value of Shipments of Consumer Electronics by Selected Products: 1989 to 1998**

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
3343101000	Consumer electronics . . . . .	9,184.3	8,178.4	7,986.6	8,171.9	8,024.2	7,299.8	7,324.8	6,494.5	6,567.3	6,659.3
3343102000	Automotive audio equipment (except speakers) . . . . .	979.4	933.3	865.6	721.9	779.8	630.5	607.6	340.2	307.4	322.0
3343103000	Household television receivers, including combinations . . . . .	3,764.2	4,367.1	4,653.3	5,144.7	5,018.4	4,777.1	4,865.4	4,562.0	4,642.6	4,737.7
3343104000	Other consumer audio and video equipment (except speakers) <sup>1</sup> . . . . .	720.9	644.5	391.8	425.1	339.1	224.9	207.2	294.5	347.4	373.4
	Speakers, microphones, and home-type electronic kits . . . . .	3,719.8	2,233.5	2,075.9	1,880.2	1,886.9	1,758.3	1,644.6	1,297.8	1,269.9	1,226.5

<sup>1</sup>Total for product code 3343103000 does not include product code 334419D101.

**Table 8. Quantity and Value of Shipments of Consumer Electronics: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3343101	Automotive audio equipment (except speakers) . . . . .	21	9,199,757	979,379	8,529,543	933,289
3343101001	AM-FM radios with tape/compact disc player combinations . . . . .	7	4,531,596	723,623	4,446,831	<sup>1</sup> 710,126
3343101004	Other automotive audio equipment, including equalizers and amplifiers, excluding speakers . . . . .	18	4,668,161	255,774	4,082,712	223,163
3343102	Household television receivers, including combinations models . . . . .	14	10,240,281	3,764,197	11,475,966	4,367,098
3343102001	Projection television . . . . .	10	779,940	1,011,871	<sup>1</sup> 924,203	<sup>1</sup> 1,198,734
3343102004	Other CRT-based color television:					
3343102004	50 cm (19.7 inches) and under . . . . .	4	1,385,700	241,537	1,440,263	244,963
3343102007	Over 50 cm (19.7 inches) . . . . .	9	8,074,641	2,510,789	9,111,500	2,923,401
3343102011	Other household television receivers . . . . .	-	-	-	-	-
3343103	Other consumer audio and video equipment (except speakers) <sup>1</sup> . . . . .	74	2,332,888	720,874	2,202,505	644,522
3343103001	Compact and video disc players <sup>2</sup> . . . . .	9	(D)	(D)	(D)	(D)
3343103007	Power amplifiers, including preamplifiers . . . . .	32	349,687	<sup>a</sup> 102,857	<sup>1</sup> 433,611	<sup>1</sup> 152,895
3343103011	Receivers, tuners, and other consumer audio equipment incorporating radio reception <sup>2</sup> . . . . .	6	(D)	(D)	(D)	(D)
334419D101	Earphones, headsets, and phonograph cartridges, pickups, needles, and styli . . . . .	16	(X)	<sup>a</sup> 55,544	(X)	<sup>1</sup> 49,327
3343103004	Equalizers . . . . .	9	35,244	5,873	<sup>1</sup> 22,902	<sup>1</sup> 6,799
3343103014	Other consumer audio and video equipment (except speakers) . . . . .	34	1,364,409	<sup>a</sup> 312,302	<sup>1</sup> 1,235,395	<sup>1</sup> 258,472
3343104	Speakers, microphones, and home-type electronic kits . . . . .	113	64,295,046	3,719,830	84,022,957	2,233,488
3343104001	Single loudspeakers mounted in an enclosure . . . . .	32	1,622,374	1,104,846	2,336,852	<sup>1</sup> 218,600
3343104004	Multiple loudspeakers mounted in an enclosure . . . . .	51	6,078,075	1,504,818	6,372,241	<sup>1</sup> 684,880
3343104007	Other loudspeakers, including unmounted speakers sold separately . . . . .	53	<sup>a</sup> 52,380,839	<sup>a</sup> 762,566	<sup>1</sup> 70,080,244	<sup>1</sup> 939,753
3343104011	Microphones . . . . .	16	3,224,685	189,209	<sup>1</sup> 4,039,515	<sup>1</sup> 198,705
3343104014	Home-type electronic kits designed for consumer assembly <sup>3</sup> . . . . .	1	(D)	(D)	(D)	(D)
3343104017	Public address systems, including musical instrument amplifiers <sup>3</sup> . . . . .	26	(D)	(D)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Product code 334419D101 is not included in the total for 3343103000.

<sup>2</sup>Product codes 3343103001 and 3343103011 have a combined total of 583,548 for quantity and 299,842 for shipments for 1998 and 510,597 for quantity and 226,356 for shipments for 1997.

<sup>3</sup>Product codes 3343104014 and 3343104017 have a combined total of 989,073 for quantity and 158,391 for shipments for 1998 and 1,194,105 for quantity and 191,550 for shipments for 1997.

Note: Percent of estimation for each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item has been estimated.



**Table 9. Shipments, Exports, and Imports of Consumer Audio and Video Electronics: 1998**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Imports for consumption <sup>2</sup>	
		Quantity	Value f.o.b. plant	Quantity	Value at port	Quantity	Value <sup>3</sup>
3343101001, 004	Automotive audio equipment . . . . .	9,199,757	979,397	2,799,842	410,399	29,618,443	3,003,582
3343102001, 004, 007, 011	Household television receivers . . . . .	10,240,281	3,764,197	1,912,511	616,636	27,145,066	4,872,773
3343103001, 007, 011, 004, 014	Coin-operated audio equipment, power amplifiers, audio tape recorders and players, compact and video disc players, equalizers, and other consumer audio and video equipment (except speakers) .	2,332,888	720,874	4,643,416	719,009	48,848,300	2,706,998
3343101001	Single loudspeakers mounted in an enclosure . . . . .	1,622,374	1,104,846	5,251,563	141,015	42,668,143	4,691,160
3343104004	Multiple loudspeakers mounted in an enclosure . . . . .	6,078,075	1,504,818	1,322,736	98,851	15,217,203	403,234
3343104007	Other loudspeakers . . . . .	52,380,839	762,566	25,038,474	206,800	178,054,031	610,658
3343104011	Microphones . . . . .	3,224,685	189,209	(X)	71,900	55,292,076	142,256
3343104014, 017	Home-type electronic kits designed for consumer assembly and public address systems, including musical instrument amplifiers . . . . .	989,073	158,391	1,271,546	102,007	5,549,621	502,715
334419D101	Earphones, headsets, and phonograph cartridges, pickups, needles, and styli . . .	(X)	55,544	4,079,160	58,774	75,543,518	286,674

X Not applicable.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first point of entry into the United States plus U.S. import duties.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item has been estimated.

**HISTORICAL NOTE**

Data on radio and television receivers, phonographs, and related equipment have been collected by the Census Bureau since 1952. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library.

Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Richard Hough, 301-457-4823.

# Chapter 9. Industrial Equipment

## STEEL SHIPPING DRUMS AND PAILS—MA332K (FORMERLY MA34K)

### INTRODUCTION

These data cover all companies engaged in the manufacture of steel shipping drums and pails. The reconditioning of containers is excluded.

The statistics were collected by mail on Census Bureau annual Form MA332K, Steel Shipping Drums and Pails. The survey panel includes all known producers of steel shipping drums and pails, approximately 40 companies.

### SUMMARY OF FINDINGS

During 1998, the value of shipments of steel pails totaled \$289.8 million, up 3.7 percent from the 1997 value of \$279.4 million. Shipments of steel drums decreased by 5.2 percent, from \$722.1 million in 1997 to \$684.2 million in 1998.

### EXPLANATION OF TERMS

**Steel pails.** Single-walled shipping containers having capacities of 12 gallons or less, in both cylindrical and tapered form, constructed of steel sheet of 29 gauge or heavier. Included are pails constructed with open tops as well as closed tops, flat and dome tops, tapered and straight sides, and lock and welded side seams.

**Steel shipping drums.** Single-walled cylindrical or bilged shipping containers, including overpacks for plastics containers, with a capacity greater than 7 gallons, and constructed of steel sheet 12 gauge and lighter.

Table 1. **Summary of Producers' Shipments of Steel Pails and Drums: 1989 to 1998**

[Quantity in thousands of units. Value in thousands of dollars]

Year	Steel pails		Steel drums	
	Quantity	Value	Quantity	Value
1998.....	91,341	289,768	32,293	684,242
1997.....	88,940	279,449	34,107	722,101
1996.....	60,443	200,681	34,334	706,084
1995.....	71,896	162,992	33,279	685,499
1994.....	86,478	208,406	34,857	681,972
1993.....	85,899	202,460	33,474	672,948
1992.....	76,794	178,850	33,336	632,616
1991.....	72,645	180,408	33,970	668,692
1990.....	75,242	195,669	36,388	701,615
1989.....	80,693	205,834	35,966	667,024

**Table 2. Total Shipments of Steel Pails and Drums: 1998 and 1997**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3324911	Steel pails .....	17	<sup>b</sup> 91,341	<sup>b</sup> 289,768	<sup>r</sup> 88,940	<sup>r</sup> 279,449
	11 1/4-inch diameter .....	(NA)	49,292	160,186	60,045	185,431
3324391102	Full removable head .....	10	35,732	116,149	46,539	141,696
3324391106	Tight head (standard and dome top) .....	8	13,560	44,037	13,506	43,735
3324391113	All other diameters .....	12	<sup>b</sup> 42,049	<sup>b</sup> 129,582	<sup>r</sup> 28,895	<sup>r</sup> 94,018
33243931	Steel drums and barrels .....	25	32,293	<sup>a</sup> 684,242	34,107	<sup>r</sup> 722,101
3324393101	Under 30 gallon capacity, all thicknesses .....	10	3,494	36,748	3,772	39,917
3324393106	30 to 49 gallon capacity, all thicknesses .....	12	<sup>a</sup> 1,156	<sup>a</sup> 21,412	1,818	<sup>r</sup> 32,731
	50 gallon capacity and over .....	(NA)	27,643	626,082	28,517	649,453
	0.04 inch (1.01 mm) body thickness and over .....	(NA)	10,735	263,924	<sup>r</sup> 11,846	<sup>r</sup> 289,828
3324393116	Tight head .....	20	6,164	139,322	<sup>r</sup> 6,956	<sup>r</sup> 157,457
3324393121	Open head .....	22	4,571	<sup>a</sup> 124,602	<sup>r</sup> 4,890	<sup>r</sup> 132,371
	Under 0.04 inch (1.01 mm) body thickness ..	(NA)	16,908	362,158	<sup>r</sup> 16,671	<sup>r</sup> 359,625
3324393126	Tight head .....	19	13,254	<sup>a</sup> 281,435	<sup>r</sup> 13,520	<sup>a</sup> <sup>r</sup> 289,055
3324393131	Open head .....	18	3,654	80,723	<sup>r</sup> 3,151	<sup>r</sup> 70,570

NA Not available. <sup>r</sup>Revised by 5 percent or more from previously published data.

Note: The percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 3. Shipments, Exports, Imports, and Apparent Consumption of Steel Shipping Pails and Drums: 1998 and 1997**

[Value in thousands of dollars]

Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) <sup>1</sup>	Imports for consumption (value) <sup>2 3</sup>	Apparent consumption <sup>4</sup>
Steel shipping pails:				
1998 .....	289,768	72,285	76,457	293,940
1997 .....	279,449	86,069	69,155	262,535
Steel shipping drums and barrels:				
1998 .....	684,242	29,054	27,732	682,920
1997 .....	722,101	26,888	25,153	720,366

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>4</sup>Apparent consumption is derived by subtracting exports from manufacturers' shipments plus imports.

**HISTORICAL NOTE**

Data on steel shipping drums and pails have been collected by the Census Bureau since 1924. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Larry Blumberg, 301-457-4744.

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## SELECTED INDUSTRIAL AIR POLLUTION CONTROL EQUIPMENT—MA333J (FORMERLY MA35J)

### INTRODUCTION

These data cover firms engaged in the manufacture of selected industrial air pollution control equipment. The statistics in this publication were collected by mail on Census Bureau annual Form MA333J, Selected Air Pollution Control Equipment. The survey panel includes all known manufacturers of the selected products specifically designed for use in air pollution control, approximately 120 companies.

### SUMMARY OF FINDINGS

Shipments (and onsite construction in certain instances) of industrial air pollution devices in 1998 totaled \$844.5 million, of which \$534.9 million were particulate emissions collectors, \$203.0 million were gaseous emissions control devices, and \$106.5 million were other and not specified by kind emission control devices. Shipments decreased by 0.1 percent from the 1997 level of \$845.3 million.

New orders increased by 6.8 percent in 1998 to \$848.2 million from \$794.3 million in 1997. Backlog of orders increased by 0.9 percent in 1998 to \$414.3 million from \$410.6 million in 1997.

### EXPLANATION OF TERMS

**Net new orders (bookings).** Orders received during the year minus all cancellations received during the same year. Net new orders are defined to include: (a) the sales value of orders accepted during the reporting period for products and services to be delivered at some future date; (b) plus the sales value of orders received during the reporting period for immediate delivery; (c) plus or minus the net sales value of contract change documents that increase or decrease (or equal) the sales values of previous orders when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those orders that are supported by binding legal documents such as signed contracts, letters or awards, or letters of intent. In the case of letters of intent, the full amount of sales value is included if the parties concerned were in substantial agreement on this amount; otherwise, only the funds specially authorized to be expanded are included. Orders received and canceled during the year are excluded.

**Backlog of orders.** All orders that have not yet been reflected as shipments. Generally, unfilled orders at the end of the reporting period are equal to unfilled orders at the end of the prior period, plus net new orders received, less net shipments.

### Particulate Emissions Collectors

*Electrostatic precipitator.* A device that separates aerosol particulate matter (solid or liquid) from industrial gases by imparting an electric charge to the particles and removing them from the gas stream with the force created by an electric field.

*Fabrics filter.* A device in which the dustbearing gas is passed through fabrics in such a manner that the dust particles are retained on the upstream or "dirty" gas side of the fabrics, while the cleaned gas passes through the fabrics to the downstream or "clean" gas side, where it is removed by natural and/or mechanical means. The fabrics may be of any fibrous material, natural or manmade.

*Mechanical collector.* A device for the separation in a dry state of entrained particulate material from a gas stream by the application of one or a combination of the following forces: centrifugal, inertial, and gravitational.

*Wet scrubber.* A device for the removal of particulate contaminants from a gas stream by means of intimate contact with scrubbing liquid. (If water is added in any form, it is considered a scrubber, except in the cases of wetted wall electronic precipitators and those devices which are primarily mechanical collectors.)

### Gaseous Emissions Control Devices

*Catalytic oxidation system.* A device for the removal of combustible air contaminants in which the contaminant-laden stream is preheated by a suitable heating mechanism. The contaminant-laden stream is then passed through a catalyst bed that initiates and promotes oxidation of the combustible contaminants to carbon dioxide, water vapor, and other compounds less noxious than those originally in the gas stream.

*Thermal oxidation system.* A device for the correction of combustible air contaminants in which the contaminant-laden gas stream is passed over a burner or other suitable preheat device(s) to a thermal residence chamber where the contaminant materials are oxidized to carbon dioxide, water vapor, and other materials less noxious than those originally in the gas stream.

*Direct oxidation system.* A device for the destruction of concentrated combustible or oxidant streams in which the air contaminant is reacted directly with a fuel or with oxidizing air in a burner flame, and the products of combustion are exhausted into the atmosphere directly or through a suitable incineration chamber and stack.

*Scrubber (gas absorber).* A device for the removal of soluble or reactive gaseous material from gas streams by contacting the stream with water, aqueous chemical solution, or other scrubbing liquids. The process involves a chemical reaction.

*Flue gas desulfurization systems (FGD).* Chemical process plants designed primarily for the removal of sulfur oxides from gaseous products of combustion emitted to the atmosphere from the use of fossil fuels, in boilers or other

combustion devices operated for the generation of thermal or combustion devices operated for the generation of thermal or electric energy. The system extends from gas inlet to gas discharge, including all required auxiliaries and controls.

*Gas adsorber.* A device for the removal of air contaminants by adsorption on a surface-active solid such as activated carbon or molecular sieves. Depending on the application, the adsorbent is either discarded or regenerated.

**Table 4. New Orders, Shipments, and Backlog of Orders for Selected Industrial Air Pollution Control Equipment: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	New orders		Shipments		Backlog of orders, December 31	
			Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>								
	Selected industrial air pollution control equipment . . . . .	110	(S)	848,174	(S)	844,463	(S)	414,273
	Particulate emissions collectors . . . . .	86		81,718		511,142		82,013
3334111111	Electrostatic precipitators . . . . .	14	(D)	(D)	(D)	(D)	(D)	(D)
3334111114	Fabrics filters . . . . .	55		64,888		302,920		65,096
3334111116	Mechanical collectors . . . . .	34	(D)	(D)	(D)	(D)	(D)	(D)
3334111119	Wet scrubbers . . . . .	26		1,323		57,706		1,362
	Gaseous emissions control devices . .	38	(S)	237,300	(S)	203,048	(S)	217,974
333411111C	Catalytic oxidation systems . . . . .	11	(D)	(D)	(D)	(D)	(D)	(D)
333411111E	Nitric oxide (NO) control systems . .	2	(D)	(D)	(D)	(D)	(D)	(D)
333411111G	Thermal and direct oxidation systems . . . . .	17	(S)	61,614	(S)	73,776	(S)	37,719
333411111J	Scrubbers (gas absorber) (except flue gas desulfurization systems) . . . . .	11		436		24,494		461
333411111M	Wet flue gas desulfurization systems . . . . .	3	(D)	(D)	(D)	(D)	(D)	(D)
333411111P	Dry flue gas desulfurization systems . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)
333411111R	Gas adsorbers . . . . .	8		36		14,899		47
333411111U	Other and not specified by kind emissions control devices . . . . .	16	(S)	99,732	(S)	106,530	(S)	22,859
<b>1997</b>								
	Selected industrial air pollution control equipment . . . . .	114	(S)	794,319	(S)	845,333	(S)	410,562
	Particulate emissions collectors . . . . .	90		80,478		531,051		77,686
3334111111	Electrostatic precipitators . . . . .	16	(D)	(D)	(D)	(D)	(D)	(D)
3334111114	Fabrics filters . . . . .	54		61,795		302,336		58,750
3334111116	Mechanical collectors . . . . .	37	(D)	(D)	(D)	(D)	(D)	(D)
3334111119	Wet scrubbers . . . . .	26		1,240		47,734		1,249
	Gaseous emissions control devices . .	42	(S)	151,953	(S)	220,273	(S)	183,722
333411111C	Catalytic oxidation systems . . . . .	12	(D)	(D)	(D)	(D)	(D)	(D)
333411111E	Nitric oxide (NO) control systems . .	2	(D)	(D)	(D)	(D)	(D)	(D)
333411111G	Thermal and direct oxidation systems . . . . .	19	(S)	78,246	(S)	70,059	(S)	49,881
333411111J	Scrubbers (gas absorber) (except flue desulfurization systems) . . . . .	13		504		26,409		470
333411111M	Wet flue gas desulfurization systems . . . . .	4	(D)	(D)	(D)	(D)	(D)	(D)
333411111P	Dry flue gas desulfurization systems . . . . .	3	(D)	(D)	(D)	(D)	(D)	(D)
333411111R	Gas adsorbers . . . . .	7		20		5,167		35
333411111U	Other and not specified by kind emissions control devices . . . . .	19	(S)	111,315	(S)	111,355	(S)	29,657

D Withheld to avoid disclosing data for individual companies. meet publication standards.

<sup>†</sup>Revised by 5 percent or more from previously published data.

S Does not

**Table 5. Value of Shipments of Selected Air Pollution Control Equipment by End Use: 1998 and 1997**

[Thousands of dollars]

Product description	Particulate emissions collectors		Gaseous emissions control devices		Other and not specified by kind emissions control devices	
	1998	1997	1998	1997	1998	1997
<b>Shipments</b> .....	<b>534,885</b>	<b>513,705</b>	<b>203,048</b>	<b>'220,273</b>	<b>106,530</b>	<b>'111,355</b>
Steam electric utility power plants .....	48,037	'32,219	(D)	(D)	(D)	(D)
Steam industrial power plants .....	(D)	(D)	(D)	(D)	(D)	(D)
Coal mining and cleaning .....	(D)	(D)	-	-	-	-
Petroleum refining .....	(D)	(D)	(D)	(D)	(D)	(D)
Foundries .....	3,237	'3,637	(D)	-	(D)	(D)
Iron and steel mills .....	11,251	'11,141	(D)	(D)	(D)	(D)
Primary nonferrous metal smelting plants .....	4,906	4,011	(D)	(D)	(D)	(D)
Chemical and fertilizer production .....	54,754	'54,876	12,487	'13,081	(D)	(D)
Cement manufacturing .....	6,578	6,831	-	-	(D)	(D)
Grain milling and handling .....	3,693	3,000	(D)	-	(D)	(D)
Pulp and paper mill operations .....	46,017	32,534	(D)	(D)	(D)	(D)
Municipal waste combusters .....	8,267	(D)	(D)	(D)	-	-
Other and not specified by kind industries .....	321,700	336,775	111,564	'118,085	98,615	'97,240

- Represents zero.      D Withheld to avoid disclosing data for individual companies.      'Revised by 5 percent or more from previously published data.

**HISTORICAL NOTE**

Data on selected air pollution control equipment have been collected by the Census Bureau since 1971. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.

Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Keeley Voor, 301-457-1604.

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## AIR-CONDITIONING AND REFRIGERATION EQUIPMENT—MA333M (FORMERLY MA35M)

### INTRODUCTION

The data in this subsection cover firms engaged in the manufacture of refrigeration, air-conditioning equipment, and nonelectric warm air furnaces. The statistics in this publication were collected by mail on Census Bureau annual Form MA333M, Refrigeration and Air-Conditioning Equipment, Including Warm Air Furnaces. The survey panel includes all known producers of these products, approximately 267 companies.

### SUMMARY OF FINDINGS

In 1998, the value of shipments of heat transfer equipment increased by 6 percent to \$4,472.1 million, compared with the 1997 figure of \$4,228.5 million. The value of shipments of condensing units, refrigeration (complete), increased by 7 percent to \$339.5 million, from the 1997 level of \$317.3 million. Room air-conditioners showed an increase of 8 percent in 1998 with \$1,098.4 million shipped, compared with \$1,020.2 million shipped in 1997. The value of shipments of motor vehicle mechanical air-conditioning systems decreased by 5 percent to \$2,099.9 million, compared with the 1997 figure of \$2,221.0 million. Compressors and compressor units increased by 1 percent to \$2,814.4 million, compared with \$2,795.7 million in 1997. Automotive air-conditioning compressors showed an increase of 1 percent in 1998 with \$1,976.8 million shipped, compared with \$1,951.3 million shipped in 1997. Nonelectric warm air furnaces and humidifiers had a value of shipments for 1998 of \$1,607.0 million, a 3-percent increase from the 1997 value of \$1,558.4 million. Unitary air-conditioners increased by 13 percent to \$5,229.1 million, from the 1997 level of \$4,614.6 million. The value of shipments of air source heat pumps increased by 15 percent to \$1,053.8 million, compared with the 1997 figure of \$917.2 million.

### EXPLANATION OF TERMS

**Open-type condensing unit.** A specific refrigerating combination for a given refrigerant, consisting of a compressor with an extended shaft for an external drive, a condenser, a liquid receiver (when required), and regularly furnished accessories. Includes units for household refrigerators and freezers.

**Hermetic-type condensing unit.** A specific refrigerating combination for a given refrigerant, consisting of a compressor and a motor, both of which are enclosed in the same housing, with no external shaft or shaft seal; the compressor motor operating in the refrigerant atmosphere; a condenser; a liquid receiver (when required); and

the regularly furnished accessories. The compressor and compressor motor housing may be either the fully welded or brazed type, or the service-sealed type. Includes units for household refrigerators and freezers.

**Hermetic-type motor compressors.** Consists of a mechanical compressor and motor, both of which are enclosed in the same housing, with no external shafts or shaft seals, a motor that operates in the refrigerant atmosphere, and that uses a refrigerant other than ammonia. Includes units for household refrigerators and freezers.

**Open-type compressors.** An open-type compressor (with or without motor) is a specific machine for compressing a given refrigerant vapor. This machine consists of a compressor with an extended shaft for an external drive. Includes units for household refrigerators and freezers.

**Ammonia compressor.** A compressor in which increase in ammonia vapor is attained by changing the internal volume of the compression chamber.

### Heat Transfer Equipment

*Evaporative condensers.* Consists of a condensing coil, spray system and pump (if furnished), a means for air circulation (including drive if furnished), and frame and enclosure.

*Room fan-coil air-conditioning units.* Units that are factory-made assemblies providing the functions of circulation, cooling, or heating, and filtering of air, but not including the source of cooling or heating.

*Room air-induction units.* Consists of a cooling coil, or cooling and heating coil, and means for delivering pre-conditioned air (received under pressure from an external source, mixed with recirculated air) to the space being conditioned.

*Packaged terminal air-conditioners.* Factory selected combinations of heating and cooling components or assemblies, intended to serve an individual room, and comprising: (1) heating assembly available with elements for use with hot water, steam, and electricity; means for forced heated air circulation and distribution; integral or remote temperature controls; (2) slide-in cooling section with complete refrigerant cycle; (3) room cabinet; (4) provision for outdoor air intake and discharge and accessories as required for mounting in a building wall; (5) provisions for air filtration and ventilation; (6) permanent individual branch circuit wiring with a suitable line cord or terminating at a junction box with the room cabinet; and (7) provisions for free conditioned air distribution or, when forced

circulation is employed for minimal duct work, have a total external static resistance not exceeding 1/10 inch of water.

*Packaged terminal heat pumps.* Packaged terminal heat pumps are a separate unencased refrigeration system installed in a cabinet of similar function and configuration to that of a packaged terminal air-conditioner. It utilizes reverse cycle refrigeration as its prime heat source and should have other supplementary heat source availability.

*Unit coolers, refrigeration, all types.* Equipment in suitable enclosures with refrigerant or brine coils, fans, fan motor and drive; with or without refrigerant control; with or without sprays, pump, and defroster. This unit is also known as a forced air evaporator.

*Air-cooled refrigerant condensers, remote-type.* Condensing coil, a means for air circulation (including drive if furnished, frame, and enclosure).

### **Miscellaneous Heat Transfer Equipment**

#### **Shell-and-tube, shell-and-coil, shell-and-u-tube, tube-in-tube condensers**

*General.* A water-cooled refrigerant condenser is a factory-made assembly of elements by which the flows of refrigerant vapor and water are maintained in such a heat transfer relationship that the refrigerant vapor is condensed into a liquid.

*Shell-and-tube refrigerant condenser.* One in which the refrigerant vapor is condensed either on the inside or on the outside of a group of straight parallel tubes within a closed shell, with the tubes terminating at each end in a tube sheet.

*Shell-and-u-tube refrigerant condenser.* One in which the refrigerant vapor is condensed in a closed shell, with the cooling water circulated through a tube bundle consisting of U-tubes terminating in a single tube sheet.

*Tube-in-tube refrigerant condenser.* One or more assemblies of two tubes, one within the other, in which the refrigerant vapor is condensed either in the annular space or in the inner tube.

*Shell-and-coil refrigerant condenser.* One in which the refrigerant vapor is condensed in a closed shell, with the cooling water circulated through one or more continuous or assembled coils contained within the shell.

#### **Shell-and-tube, shell-and-coil, and shell-and-u-tube liquid coolers**

*General.* A factory-made assembly of elements in which the liquid and the refrigerant are in heat transfer relationship, causing the refrigerant to evaporate and the liquid to be cooled.

*Shell-and-tube liquid cooler.* Heat transfer is effected through a group of straight parallel tubes within a closed shell, with the tubes terminating at both ends of the cooler.

*Shell-and-u-tube liquid cooler.* Heat transfer is effected through a U-tube bundle in a closed shell; the U-tubes terminate at one end of the cooler.

*Tube-in-tube liquid cooler.* One or more assemblies of two tubes, one within the other, in which the heat transfer is effected through the inner tube or tubes.

*Shell-and-coil liquid cooler.* Heat transfer is effected through one or more continuous or assembled coils contained within a closed shell.

*Liquid-suction heat exchanger.* A device used to transfer heat from the refrigerant liquid to the suction gas. Such devices may be of the following types: shell-and-coil, tube-in-tube, finned-tube-in-tube, etc.

*Refrigerant liquid receiver.* A vessel, permanently connected to a refrigerant system by inlet and outlet pipes, for storage of a liquid refrigerant.

*Central system finned coils, air-conditioning and refrigeration type, used with, but not including, means for air circulation.* One or two row coils are considered as "heating only" coils. Three or more row coils are considered as "cooling and/or heating" coils.

*Original equipment manufactures (OEM) coil sales intended for resale or assembly into equipment by other manufacturers (all types).* Includes shipments of coils to private branders and OEM accounts, as well as those finned coils that are intended for resale or for assembly into equipment by other manufacturers.

*Factory-assembled, refrigeration-type, finned gravity coils.* Includes all types of (1) flat or shaped plate surface type heat exchangers for use with volatile refrigerants, eutectic solutions, or brine and (2) extended surface heat exchangers consisting of tube or pipe prime surface and finned secondary surface, generally used for refrigeration in either frosted or not frosted operation, and usually without forced circulation of the substance being refrigerated. These include bunker and gravity-type evaporators.

*Wetted-surface dehumidifiers.* Consists of a suitable enclosure containing cooling coils or means for liquid spray over the cooling coils and tank but without means for air circulation provided as an integral part of the unit. The unit may include a recirculating water pump, eliminator plates, and inlet deflectors.

#### **Packaged unitary air-conditioning equipment, except room air-conditioners**

*Year-round air-conditioners, single package.* Factory-made assemblies of one or more condensing units or absorption refrigeration units, heat-generating units (such as electric,



gas, or oil-fired furnace), and means for air-cooling, dehumidifying, heating, cleaning, and forced circulation of air through a duct system, which may also have a means for humidifying and controlling temperature.

*Year-round air-conditioners, remote-condenser type.* All units that have the condenser located remotely from the equipment described previously.

*Air source heat pumps.* A heat pump that transfers heat from outdoor air to an indoor air circulation system.

*Heat pumps, single package.* Factory-made assemblies of one or more condensing units and evaporators and with the means for air circulation, ventilation, and cleaning, with provision for modifying the performance so that either heating, or cooling and dehumidification may be produced.

*Heat pumps, split systems.* All units that have the coil located remotely from the equipment described previously.

*Water source heat pump.* A factory-made assembly that normally includes an indoor conditioning coil with air moving means, compressor(s) and refrigerant-to-water heat exchanger(s), including the means to provide both cooling and heating functions. When such equipment is provided in more than one assembly, the separate assemblies shall be designed to be used together, and the rating requirements outlined in the standard are based upon the use of matched assemblies.

*Split system air-conditioning units (air-conditioning condensing units only).* Units assembled in factory-made enclosures and consisting of a motor-driven compressor, a condenser, and possibly a liquid receiver.

*Recreational vehicle air-conditioning units.* Designed for application to a recreational vehicle, as defined in American National Standard for Recreational Vehicles (American National Standards Institute Standard A119.2) (NFPA 501C), and consisting of one or more factory-made assemblies that normally include an evaporator or cooling coil, and a compressor and condenser combination. These air-conditioning units may include a heating function as well. Where such equipment is provided in more than one assembly, the separated assemblies shall have been designed to be used together, and the requirements of rating outlined in this standard are based upon the use of matched assemblies.

*Split system air-conditioning coil with blower.* Factory-made assemblies of a coil (supplied with cooling media from an external source), without means for air circulation, and those that may have provision for the introduction of outside air.

*Split system air-conditioning coil without blower.* Factory-made assemblies that include only a coil (supplied with cooling media from an external source), without circulating fan, for use with heating equipment incorporating a fan.

## **Other Air-Conditioning and Refrigeration Equipment**

*Centrifugal liquid-chilling packages.* Factory-made assemblies of one or more centrifugal or screw compressors, condensers, liquid coolers, controls, component parts, with motor compressor (if hermetic), or without drive or prime mover (if open). The hermetic centrifugal horsepower should be the maximum brake horsepower for which the motor is rated. The open centrifugal horsepower should be the maximum brake horsepower for which the motor or turbine drive, to which the machine is intended to be connected, is rated.

*Ice-making machine.* A factory-made assembly (not necessarily shipped in one package) consisting of a condensing unit and ice-making section operating as an integrated unit, with means for making and harvesting ice. It may also include means for storing or dispensing ice, or both.

*Self-contained ice-making machine.* A model in which the ice-making mechanisms and storage compartment are in an integral cabinet.

*Absorption liquid-chilling systems.* Those systems of 25 tons and over that cool and dehumidify the air by means of cold contact surface, in the same manner as a compression system. (This is the closed-type absorption system.)

*Absorption systems.* A system utilizing the process by which gas is taken up by the capillaries and extended surface of a porous material.

*Open-type absorption systems.* A system that dehumidifies by bringing the air into direct contact with the absorbent.

*Central station air-handling unit.* A factory-made, encased assembly consisting of a fan or fans and the other necessary equipment to perform one or more of the functions of circulating, cleaning, heating, cooling, humidifying, dehumidifying, and mixing of air, but that does not include a source of heating or cooling.

*Factory fabricated water-cooling towers.* Towers that are prefabricated by the manufacturers, and shipped either as a factory-assembled section (i.e., cell) or as major components (e.g., casing, fan, and precut fill) for assembly at the site of the installation.

*Mobile vehicle refrigeration and air-conditioning systems.* An assembly of refrigeration compressor apparatus with suitable power source for use when the vehicle is in motion or not in motion; means for air-cooling and dehumidification; means for air circulation, ventilation, and air-cleaning; interconnecting refrigerant piping; and refrigerant and temperature control apparatus, for mounting on the vehicle. The system may or may not have provision for heating.

*Reciprocating liquid-chilling packages.* Factory-made assemblies of one or more reciprocating compressors, condensers, and water or brine coolers, with interconnections, base, and accessories. These assemblies may be furnished with or without refrigerant, drive, and prime mover.

**Mechanical drinking water cooler.** A factory-made assembly, in one structure, that includes a complete mechanical refrigerating system, and that has the primary function of cooling potable water, and also provides for dispensing such water, by either integral or remote means, or both.

**Electrically operated dehumidifiers, mechanically refrigerated, self-contained.** A factory-made assembly of a condensing unit and means for air circulation, dehumidification, and condensate collection.

**Nonelectric warm air furnace.** A device for the transfer of heat, generated by the combustion of fuel within the

device, or by radiation from an electric heating element, to air that flows between the combustion chamber and an outer enclosure to pipes or ducts that carry the heat to the desired location. In a gravity air flow furnace, the warm air rises by gravity. In a forced air furnace, the warm air is circulated by a motor-driven blower.

**Humidifiers.** Furnace of duct-mounted device installed in the supply or return-air plenum of a residential warm air furnace or in a supply or return air duct of a warm air heating system.

Table 6. **Summary of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 1998 and 1997**

[Value in thousands of dollars]

Product code	Product description	1998	1997
3334151	Heat transfer equipment . . . . .	4,472,072	4,245,885
3334153 pt.	Commercial refrigeration equipment . . . . .	234,476	246,141
3334155	Condensing units, refrigeration (complete) . . . . .	339,543	<sup>1</sup> 317,273
3334156	Room air-conditioners and dehumidifiers . . . . .	1,098,416	1,020,171
3363917	Motor vehicle mechanical air-conditioning systems <sup>1</sup> . . . . .	2,099,860	2,220,957
333415A	Compressors and compressor units . . . . .	2,814,397	<sup>1</sup> 2,795,669
336391B	Automotive air-conditioning compressors <sup>1</sup> . . . . .	1,976,832	<sup>1</sup> 1,951,290
333415C	Nonelectric warm air furnaces and humidifiers <sup>1</sup> . . . . .	1,606,981	1,558,425
333415E	Unitary air conditioners . . . . .	5,229,123	4,614,616
333415F	Air source heat pumps <sup>1</sup> . . . . .	1,053,837	<sup>1</sup> 917,152
333415G	Ground and ground water source heat pumps <sup>2</sup> . . . . .	(D)	(D)

D Withheld to avoid disclosing data for individual companies. pt. Part. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Data for this product is collected separately in 1997.

<sup>2</sup>New product code for 1997.

**Table 7. Quantity and Value of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3334151	Heat transfer equipment (except room and unitary air-conditioners) . . . . .	150	(X)	4,472,072	(X)	4,245,885
3334151001	Packaged terminal air-conditioners <sup>1</sup> . . . . .	10	185,745	107,771	168,084	93,399
3334151003	Packaged terminal heat pumps . . . . .	9	156,132	82,695	130,736	70,143
	Evaporative condensers . . . . .	(X)	2,715	68,687	2,737	67,709
3334151005	100 tons and under . . . . .	10	556	4,854	577	4,753
3334151007	Over 100 tons . . . . .	13	2,159	63,833	2,160	62,956
	Room fan-coil air-conditioning units . . . . .	(X)	291,064	183,726	281,920	<sup>f</sup> 154,604
3334151009	Vertical stack . . . . .	6	<sup>b</sup> 20,015	<sup>b</sup> 20,063	<sup>f</sup> 15,949	<sup>f</sup> 10,901
3334151011	Vertical . . . . .	11	133,579	101,139	130,555	<sup>f</sup> 83,042
3334151013	Horizontal . . . . .	9	137,470	62,524	135,416	<sup>f</sup> 60,661
3334151015	Room air induction units . . . . .	2	(D)	(D)	(D)	(D)
	Central station air-handling units (motor-driven fan type) . . . . .	(X)	381,797	614,865	357,603	567,961
3334151017	Draw through . . . . .	28	356,540	532,922	332,216	487,298
3334151019	Blow through . . . . .	10	8,617	48,665	9,114	54,455
3334151021	Heating and ventilating . . . . .	12	16,640	<sup>a</sup> 33,278	16,273	26,208
	Coolers (refrigeration):					
	Ceiling, wall-mounted, and floor-mounted unit coolers . . . . .	(X)	219,943	157,967	209,686	154,152
3334151023	4,000 Btuh and under . . . . .	10	61,365	12,676	59,202	12,281
3334151025	4,001 to 6,000 Btuh . . . . .	10	11,967	3,616	10,685	3,512
3334151027	6,001 to 8,000 Btuh . . . . .	10	24,390	9,329	20,419	7,871
3334151029	8,001 to 12,000 Btuh . . . . .	10	47,885	22,478	48,138	22,039
3334151031	12,001 to 18,000 Btuh . . . . .	12	39,179	26,363	39,161	29,476
3334151033	Over 18,000 Btuh . . . . .	16	35,157	83,505	32,081	78,973
	Air-cooled refrigerant condensers (remote type) . . . . .	(X)	25,292	65,095	25,688	62,163
3334151035	Under 30 tons . . . . .	15	17,656	13,578	<sup>a</sup> 18,194	<sup>a</sup> 16,090
3334151037	30 to 50 tons . . . . .	12	2,187	8,104	2,821	8,058
3334151039	Over 50 tons . . . . .	12	5,449	43,413	4,673	38,015
	Miscellaneous heat transfer equipment:					
	Shell-and-tube, shell-and-coil, shell-and-u-tube, tube-in-tube . . . . .	(X)	(X)	50,982	(X)	51,706
3334151041	Condensers . . . . .	9	(X)	26,085	(X)	26,332
3334151043	Liquid coolers . . . . .	11	(X)	24,897	(X)	25,374
3334151045	Liquid-suction heat exchangers and refrigerant liquid receivers . . . . .	6	(X)	11,647	(X)	(D)
	Central system finned coils (air-conditioning and refrigeration type) . . . . .	(X)	(X)	81,537	(X)	83,178
3334151047	Standard steam and steam distributing tube . . . . .	12	(X)	17,435	(X)	18,645
3334151049	Standard water cooling and/or heating and cleanable tube water . . . . .	18	(X)	53,669	(X)	57,087
3334151051	Volatile refrigerant cooling . . . . .	11	(X)	10,433	(X)	7,446
	Coil sales by original equipment manufacturers intended for resale or assembly into equipment by other manufacturers (all types) . . . . .	(X)	(X)	451,527	(X)	428,897
3334151053	Copper and aluminum . . . . .	17	(X)	309,794	(X)	284,284
3334151055	Aluminum (only) . . . . .	8	(X)	<sup>b</sup> 69,064	(X)	65,620
3334151057	Other, including steel and copper . . . . .	12	(X)	72,669	(X)	78,993
3334151059	Factory-assembled, refrigeration type, finned gravity coils, including wetted-surface dehumidifiers . . . . .	4	(X)	<sup>c</sup> 14,923	(X)	13,131
	Centrifugal liquid chilling packages, hermetic and open types . . . . .	(X)	8,354	695,217	9,579	737,252
3334151061	200 hp and under . . . . .	12	1,965	55,993	1,732	49,358
3334151063	201 to 300 hp . . . . .	8	1,541	86,914	1,441	84,161
3334151065	301 to 400 hp . . . . .	7	1,377	102,961	1,138	79,650
3334151067	Over 400 hp . . . . .	7	3,471	449,349	5,268	524,083

See footnotes at end of table.

Table 7. **Quantity and Value of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3334151	Heat transfer equipment (except room and unitary air-conditioners)—Con.					
	Ice-making machines .....	(X)	295,670	434,895	223,015	325,791
	Self-contained ice-cube makers .....	(X)	183,625	210,399	136,192	147,454
3334151069	Automatic, 200 lb and under .....	6	109,469	75,815	87,843	64,681
3334151071	Automatic, 201 lb and over .....	7	74,156	134,584	48,349	82,773
	Self-contained flake or chip machines .....	(X)	16,998	42,830	8,309	20,894
3334151073	300 lb and under .....	4	<sup>c</sup> 2,072	<sup>b</sup> 2,681	<sup>b</sup> 3,085	<sup>b</sup> 3,876
3334151075	Over 300 lb .....	12	14,926	40,149	5,224	17,018
3334151077	Not self-contained .....	8	59,624	<sup>a</sup> 95,994	48,295	83,138
3334151079	Combination ice makers and ice drink dispensers .....	6	35,423	85,672	30,219	74,305
3334151081	Absorption refrigeration and dehydration systems .....	6	(D)	(D)	(D)	(D)
3334151083	Mechanical refrigeration systems used on all types of vehicles .....	7	(D)	(D)	(D)	(D)
	Reciprocating air and reciprocating water cooled, air-cooled scroll, air-cooled scroll, and water-cooled scroll machines .....	(X)	24,071	455,675	24,163	<sup>f</sup> 433,075
3334151085	20 hp and under .....	26	8,231	<sup>a</sup> 41,817	8,740	<sup>a</sup> 49,396
3334151087	21 to 49 hp .....	20	4,478	36,994	4,496	<sup>f</sup> 36,458
3334151089	50 to 75 hp .....	19	4,195	81,226	3,429	<sup>f</sup> 63,236
3334151091	Over 75 hp .....	19	7,167	295,638	7,498	283,985
3334151093	Factory-fabricated water cooling towers .....	16	8,859	161,608	9,006	161,273
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers .....	5	1,015,578	234,476	<sup>f</sup> 1,023,721	<sup>f</sup> 246,141
3334155	Condensing units, refrigeration (complete) .....	28	521,653	<sup>b</sup> 339,543	465,344	317,273
	Air-cooled hermetic-type .....	(X)	500,862	222,863	445,741	195,205
3334155023	1 hp and under .....	17	404,878	98,015	353,847	76,927
3334155025	1.5 hp .....	13	19,828	14,001	19,181	13,257
3334155028	2 and 2.5 hp .....	16	24,543	20,577	23,863	19,646
3334155030	3 hp .....	15	22,657	26,980	21,191	25,690
3334155032	Over 3 hp, but under 15 hp .....	16	28,956	63,290	27,659	59,685
3334155044	Water-cooled hermetic-type, under 15 hp .....	4	6,548	5,119	6,615	5,089
	Water or air-cooled hermetic-type .....	(X)	5,912	66,311	4,722	<sup>f</sup> 71,316
3334155061	15 hp .....	10	2,549	32,285	<sup>f</sup> 2,789	<sup>f</sup> 54,103
3334155063	20 hp .....	9	944	5,541	689	3,689
3334155065	25 hp .....	9	681	4,774	<sup>f</sup> 474	<sup>f</sup> 3,089
3334155067	30 hp .....	9	809	6,621	344	3,279
3334155070	40 hp .....	7	929	17,090	426	7,156
3334155080	Water or air-cooled open-type (all sizes) .....	6	(D)	(D)	(D)	(D)
3334156	Room air-conditioners and dehumidifiers .....	17	(X)	1,098,416	(X)	1,020,171
3334156011	Electrically operated dehumidifiers, mechanically refrigerated, self-contained .....	11	(X)	<sup>b</sup> 139,306	(X)	<sup>b</sup> 131,312
	Room air-conditioners .....	(X)	3,223,981	959,110	2,838,381	888,859
3334156031	5,999 Btuh and under .....	8	<sup>a</sup> 855,326	<sup>b</sup> 158,955	<sup>b</sup> 649,840	<sup>b</sup> 129,527
3334156034	6,000 to 6,999 Btuh .....	7	<sup>b</sup> 88,419	<sup>b</sup> 19,878	<sup>b</sup> 98,858	<sup>b</sup> 23,859
3334156038	7,000 to 7,999 Btuh .....	7	395,704	97,169	304,344	<sup>a</sup> 77,048
3334156042	8,000 to 8,999 Btuh .....	6	<sup>c</sup> 141,450	<sup>c</sup> 38,617	<sup>b</sup> 191,233	<sup>b</sup> 54,586
3334156046	9,000 to 9,999 Btuh .....	6	<sup>c</sup> 115,675	<sup>c</sup> 36,842	61,642	20,589
3334156052	10,000 to 10,999 Btuh .....	8	437,488	128,185	<sup>a</sup> 359,399	<sup>a</sup> 110,192
3334156056	11,000 to 12,999 Btuh .....	9	542,990	176,047	504,149	170,646
3334156061	13,000 to 14,999 Btuh .....	7	<sup>b</sup> 62,453	<sup>b</sup> 25,824	<sup>b</sup> 69,985	<sup>b</sup> 29,572
3334156063	15,000 to 16,999 Btuh .....	6	<sup>c</sup> 71,114	<sup>c</sup> 29,119	99,715	41,153
3334156065	17,000 to 19,999 Btuh .....	7	311,437	129,980	<sup>b</sup> 302,935	<sup>b</sup> 114,954
3334156067	20,000 to 22,999 Btuh .....	6	<sup>b</sup> 26,892	<sup>b</sup> 13,405	<sup>b</sup> 22,643	<sup>b</sup> 11,523
3334156071	23,000 to 25,999 Btuh .....	9	<sup>a</sup> 152,437	<sup>a</sup> 76,911	<sup>b</sup> 143,716	<sup>b</sup> 73,122
3334156075	26,000 Btuh and over .....	9	<sup>b</sup> 22,596	<sup>b</sup> 28,178	<sup>b</sup> 29,922	<sup>b</sup> 32,088
3363917	Motor vehicle mechanical air-conditioning systems .....	(X)	(X)	2,099,860	(X)	2,220,957
3363917010	Air-conditioning units and systems for passenger automobiles <sup>2</sup> .....	21	10,376,957	1,476,079	10,452,110	1,544,766
3363917020	Air-conditioning units and systems for buses .....	10	257,637	109,686	350,684	134,525
3363917030	Other motor vehicle mechanical air-conditioning systems .....	7	3,151,793	514,095	3,275,347	541,666

See footnotes at end of page.

**Table 7. Quantity and Value of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
333415A	Compressors and compressor units <sup>3 4</sup> . . . . .	32	(X)	<sup>b</sup> 2,814,397	(X)	2,795,669
	All refrigerants (except ammonia) . . . . .	(X)	23,918,501	2,699,397	23,411,295	2,696,380
	Hermetic-type motor compressors . . . . .	(X)	23,842,842	2,495,021	23,333,320	2,507,259
333415A011	Under 3 hp . . . . .	10	18,040,357	1,272,792	17,898,968	1,306,660
333415A023	3 to 10 hp . . . . .	11	5,611,915	999,658	5,263,330	975,437
333415A030	15 hp . . . . .	11	26,517	31,225	29,072	33,864
333415A032	20 hp . . . . .	12	21,025	32,130	24,034	36,162
333415A034	25 hp . . . . .	11	15,473	25,781	17,731	29,399
333415A036	30 hp . . . . .	12	34,696	38,814	26,714	31,047
333415A039	40 and 50 hp . . . . .	11	46,767	64,477	37,736	64,825
333415A042	60 hp . . . . .	9	43,697	21,067	33,181	20,130
333415A046	75 hp . . . . .	9	2,395	9,077	2,554	9,735
333415A049	100 hp and over . . . . .	8	(D)	(D)	(D)	(D)
333415A052	Open-type compressors (with or without motor—all sizes) . . . . .	13	<sup>a</sup> 68,011	69,253	69,494	58,754
333415A054	Screw type . . . . .	6	(D)	(D)	(D)	(D)
333415A058	Ammonia refrigerants (all types) . . . . .	9	2,936	114,825	2,746	99,289
336391B000	Automotive air-conditioning compressors (open-type, with or without motor) . . . . .	8	18,218,457	1,976,832	<sup>r</sup> 17,792,735	<sup>r</sup> 1,951,290
333415C pt.	Nonelectric warm air furnaces and dehumidifiers . . . . .	(X)	(X)	<sup>b</sup> 1,606,981	(X)	1,558,425
	Oil, forced air:					
333415C001	150,000 Btuh bonnet output and under . . .	18	<sup>b</sup> 135,011	<sup>b</sup> 95,278	152,728	106,031
333415C005	150,001 Btuh bonnet output and over . . . .	16	<sup>b</sup> 6,571	<sup>b</sup> 9,021	6,945	<sup>a</sup> 10,215
	Gas, forced air:					
333415C007	150,000 Btuh bonnet output and under . . .	21	3,025,498	1,260,708	2,707,851	1,197,014
333415C009	150,001-400,000 Btuh bonnet output . . . .	17	<sup>c</sup> 14,392	<sup>a</sup> 18,256	10,470	7,313
333415C011	Over 400,000 Btuh bonnet output . . . . .	9	369,484	156,059	398,634	165,486
333415C079	All other nonelectric warm air furnaces . . . .	5	<sup>c</sup> 1,489	<sup>c</sup> 2,160	1,336	2,072
333415C081	Humidifiers (attachments to warm air furnaces) (all types), including central systems and self-contained (except portable humidifiers) . .	19	633,800	65,499	<sup>r</sup> 652,408	<sup>r</sup> 70,294
333415E	Unitary air-conditioners . . . . .	63	(X)	<sup>b</sup> 5,229,123	(X)	4,614,616
333415E005	Recreational vehicle air-conditioners . . . . .	6	(D)	(D)	(D)	(D)
	Single package air-conditioners, with or without evaporator fans, including refrigeration chassis and remote-condenser type . . . . .	(X)	265,546	617,025	241,584	520,927
	Horizontal . . . . .	(X)	265,546	617,025	241,584	520,927
	Under 27,000 Btuh . . . . .	19	<sup>b</sup> 22,336	25,085	<sup>b</sup> 19,408	21,567
333415E009	27,000 to 32,999 Btuh . . . . .	17	<sup>a</sup> 31,341	33,032	<sup>a</sup> 37,454	42,943
333415E011	33,000 to 53,999 Btuh . . . . .	20	<sup>a</sup> 94,045	90,878	<sup>r</sup> 86,704	<sup>r</sup> 80,617
333415E013	54,000 to 64,999 Btuh . . . . .	18	<sup>a</sup> 51,063	64,429	40,296	51,216
333415E015	65,000 to 96,999 Btuh . . . . .	14	21,680	<sup>a</sup> 51,726	<sup>a</sup> 19,157	<sup>r</sup> 45,092
333415E017	97,000 to 134,999 Btuh . . . . .	14	16,695	54,600	15,060	50,470
333415E019	135,000 to 184,999 Btuh . . . . .	12	10,873	47,152	9,477	40,527
333415E021	185,000 to 249,999 Btuh . . . . .	10	6,847	46,599	5,358	37,595
333415E023	250,000 to 319,999 Btuh . . . . .	8	5,108	40,970	4,499	35,724
333415E035	320,000 to 379,999 Btuh . . . . .	9	1,150	16,540	1,017	13,792
333415E041	380,000 Btuh and over . . . . .	8	<sup>a</sup> 4,408	146,014	3,154	101,384
	Other than horizontal . . . . .	(X)	(D)	(D)	(D)	(D)
333415E043	Under 54,000 Btuh . . . . .	6	(D)	(D)	(D)	(D)
333415E045	54,000 to 64,999 Btuh . . . . .	5	<sup>b</sup> 4,727	<sup>c</sup> 11,951	<sup>r</sup> 6,474	<sup>r</sup> 15,537
333415E047	65,000 to 96,999 Btuh . . . . .	4	<sup>a</sup> 487	<sup>a</sup> 1,822	<sup>a</sup> 568	<sup>a</sup> 2,028
333415E049	97,000 to 134,999 Btuh . . . . .	4	615	2,994	<sup>r</sup> 639	<sup>r</sup> 2,895
333415E051	135,000 to 184,999 Btuh . . . . .	4	771	5,110	<sup>r</sup> 678	<sup>r</sup> 4,422
333415E053	185,000 Btuh and over . . . . .	5	(D)	(D)	(D)	(D)
	Year-round air-conditioners, single package and remote-condenser type (except heat pumps) . . . . .	(X)	649,764	1,425,791	567,157	1,280,158
333415E055	Under 33,000 Btuh . . . . .	21	148,741	135,484	128,238	119,690
333415E057	33,000 to 38,999 Btuh . . . . .	22	118,405	125,277	<sup>r</sup> 104,402	110,164
333415E059	39,000 to 43,999 Btuh . . . . .	16	39,511	42,878	32,263	34,572
333415E061	44,000 to 53,999 Btuh . . . . .	19	70,850	92,234	59,175	78,174
333415E063	54,000 to 64,999 Btuh . . . . .	19	102,907	160,052	88,951	138,043
333415E065	65,000 to 134,999 Btuh . . . . .	14	109,653	313,294	99,888	286,559

See footnotes at end of table.

**Table 7. Quantity and Value of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
333415E	Unitary air-conditioners—Con.					
	Year-round air-conditioners, single package and remote condenser type (except heat pumps)—Con.					
333415E067	135,000 to 184,999 Btuh .....	11	31,447	155,363	28,220	144,300
333415E069	185,000 to 249,999 Btuh .....	12	13,890	109,275	12,905	104,329
333415E071	250,000 to 319,999 Btuh .....	9	7,080	66,828	6,210	59,440
333415E073	320,000 to 379,999 Btuh .....	9	2,015	30,049	2,169	32,668
333415E075	380,000 to 539,999 Btuh .....	7	1,800	35,238	1,767	33,891
333415E077	540,000 to 639,999 Btuh .....	8	<sup>a</sup> 1,252	<sup>a</sup> 43,198	1,127	39,923
333415E079	640,000 Btuh and over .....	7	2,213	116,621	1,842	98,405
333415E081	Water source heat pumps (except room air-conditioners) .....	9	120,080	129,668	112,052	116,280
	Split system air-conditioning condensing units .	(X)	4,465,836	2,168,059	3,810,178	1,879,622
333415E082	Under 22,000 Btuh .....	15	<sup>a</sup> 363,464	<sup>a</sup> 114,849	<sup>†</sup> 306,721	<sup>†</sup> 97,524
333415E083	22,000 to 26,999 Btuh .....	17	930,517	317,102	796,691	272,568
333415E085	27,000 to 32,999 Btuh .....	19	888,608	354,077	764,763	309,400
333415E087	33,000 to 38,999 Btuh .....	16	895,784	401,393	778,932	356,410
333415E089	39,000 to 43,999 Btuh .....	16	438,753	232,181	374,237	202,181
333415E091	44,000 to 53,999 Btuh .....	16	468,134	275,339	394,611	234,770
333415E093	54,000 to 64,999 Btuh .....	14	404,316	275,513	328,262	227,685
333415E095	65,000 to 96,999 Btuh .....	7	30,364	38,874	25,200	32,878
333415E097	97,000 to 134,999 Btuh .....	8	21,411	39,347	18,411	34,885
333415E099	135,000 to 184,999 Btuh .....	8	11,244	32,993	10,099	29,839
333415E09A	185,000 to 249,999 Btuh .....	7	5,989	24,734	5,476	22,796
333415E09C	250,000 to 319,999 Btuh .....	3	1,899	10,458	1,672	9,244
333415E09E	320,000 to 379,999 Btuh .....	4	2,051	13,137	1,882	11,898
333415E09G	380,000 to 539,999 Btuh .....	5	1,475	12,789	1,476	13,155
333415E09J	540,000 to 639,999 Btuh .....	4	742	7,912	670	7,313
333415E09L	640,000 Btuh and over .....	4	1,085	17,361	1,075	17,076
	Split system air-conditioning coils .....	(X)	3,226,276	666,305	<sup>†</sup> 2,946,522	<sup>†</sup> 616,439
333415E09M	With blower .....	15	1,521,713	435,716	1,341,524	389,252
333415E09P	Without blower .....	18	<sup>a</sup> 1,704,563	230,589	<sup>†</sup> 1,604,998	<sup>†</sup> 227,187
333415F	Air source heat pumps (except room air-conditioners) .....	24	1,326,736	1,053,837	<sup>†</sup> 1,179,930	<sup>†</sup> 917,152
	Single package:					
333415F023	Under 27,000 Btuh .....	20	<sup>b</sup> 42,284	<sup>a</sup> 33,343	<sup>†</sup> 34,564	<sup>†</sup> 26,217
333415F034	27,000 to 41,999 Btuh .....	19	<sup>b</sup> 146,547	<sup>a</sup> 139,897	<sup>†</sup> 123,822	<sup>†</sup> 112,290
333415F045	42,000 to 64,999 Btuh .....	18	<sup>a</sup> 94,319	119,504	<sup>†</sup> 81,897	<sup>†</sup> 98,310
333415F056	65,000 Btuh and over .....	11	14,610	50,884	12,889	44,162
	Split system:					
333415F067	Under 27,000 Btuh .....	18	339,436	168,415	<sup>†</sup> 299,827	<sup>†</sup> 145,805
333415F078	27,000 to 41,999 Btuh .....	16	448,299	306,067	<sup>†</sup> 414,701	<sup>†</sup> 282,096
333415F089	42,000 to 64,999 Btuh .....	15	223,220	202,904	<sup>†</sup> 198,100	<sup>†</sup> 177,201
333415F095	65,000 Btuh and over .....	7	18,021	32,823	14,130	31,071
333415G	Ground and ground water source heat pumps <sup>5</sup> ..	4	(D)	(D)	(D)	(D)
	Single and split systems:					
333415G010	Under 27,000 Btuh .....	2	(D)	(D)	(D)	(D)
333415G020	27,000 to 41,999 Btuh .....	1	(D)	(D)	(D)	(D)
333415G030	42,000 to 64,999 Btuh .....	2	(D)	(D)	(D)	(D)
333415G040	65,000 Btuh and over .....	1	(D)	(D)	(D)	(D)

Btuh British thermal units-per hour. D Withheld to avoid disclosing data for individual companies. pt. Part. <sup>†</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Defined as factory-selected combinations of heating and cooling components or assemblies intended to serve an individual room and comprising: (1) heating assembly available with element for use with hot water, steam, and electricity; means for forced heated air circulation and distribution; integral or remote temperature controls; (2) slide-in cooling section with complete refrigerant cycle; (3) room cabinet; (4) provision for outdoor air intake and discharge and accessories as required for mounting in a building wall; (5) provisions for air filtration and ventilation; (6) permanent individual branch circuit wiring with a suitable line cord or terminating at a junction box within the room cabinet; and (7) provision for free conditioned air distribution, or when forced circulation is employed for minimal duct work having a total external static resistance not exceeding 1/10 inch of water.

<sup>2</sup>Data exclude systems assembled from purchased components and installed at passenger automobile assembly lines. The values are understated for some systems because of exclusion of compressors.

<sup>3</sup>Represents only those compressors and compressor units produced and shipped separately, including interplant transfers.

<sup>4</sup>Includes units shipped for household refrigerators.

<sup>5</sup>New product in 1997; therefore no previous year data available.

Note: Percent of estimation for each item is indicated as follows: <sup>a</sup>15 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 8. Quantity of Assembled Compressor Bodies: 1998 and 1997**

[Quantity in number of units]

Product description	Number of companies	1998	1997
Compressor bodies <sup>1 2</sup> .....	(X)	34,591,184	34,916,176
All refrigerants (except ammonia) .....	(X)	34,590,547	34,915,482
Other than automotive air-conditioning .....	(X)	23,902,084	23,649,977
1/4 hp and under .....	5	7,182,057	7,009,406
1/3 and 1/2 hp .....	6	(D)	(D)
3/4 and 1 hp .....	5	(D)	(D)
1-1/2 hp .....	6	873,123	871,087
2 hp .....	6	4,866,483	5,217,022
3 hp .....	11	3,014,679	2,811,080
4 hp .....	5	1,112,816	931,805
5 hp .....	8	1,676,270	1,607,735
7-1/2 hp .....	11	247,944	254,211
10 hp .....	14	341,967	327,148
15 hp .....	12	136,954	129,716
20 hp .....	10	28,570	30,331
25 hp .....	11	22,966	24,589
30 hp .....	13	(D)	(D)
40 hp .....	13	(D)	(D)
50 hp .....	10	4,164	3,997
60 hp .....	11	(D)	(D)
75 hp .....	12	3,975	4,245
100 hp and over .....	11	15,623	13,975
Automotive air-conditioning, including passenger automobiles, trucks, buses, agriculture, and construction equipment .....	4	(D)	(D)
Ammonia refrigerants .....	3	(D)	(D)

D Withheld to avoid disclosing data for individual companies. X Not applicable.

<sup>1</sup>Includes units for household refrigerators.

<sup>2</sup>Represents total number of compressor bodies assembled, whether shipped separately or incorporated into a condensing package or unitary end-use product such as single package air-conditioners, freezers, and refrigerators (manufactured and remanufactured units).

**Table 9. Shipments, Exports, Imports, and Apparent Consumption of Air-Conditioning and Refrigeration Equipment: 1998 and 1997**

[Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Manufacturers' shipments (value f.o.b. plant)	Export of domestic merchandise <sup>1</sup>		Imports for consumption <sup>4 5</sup>
			Value at port <sup>2</sup>	Estimated producers' value <sup>3</sup>	
<b>1998</b>					
3334151	Heat transfer equipment, excluding room and unitary air-conditioners and dehumidifiers . . . . .	4,472,072	337,882	253,479	91,626
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers . . . . .	234,476	15,567	11,678	10,269
3334155	Condensing units, all refrigerants . . . . .	339,543	29,089	21,823	18,047
3334156	Room air-conditioners and dehumidifiers . . . . .	1,098,860	125,391	94,068	366,950
3363917	Motor vehicle mechanical air-conditioning systems <sup>6</sup> . . . . .	2,099,860	(NA)	(NA)	(NA)
333415A	Compressors and compressor units, all refrigerants . . . . .	2,814,397	939,405	704,742	743,445
336391B	Automotive air-conditioning compressors <sup>7</sup> . . . . .	1,976,832	(NA)	(NA)	(NA)
333415C pt.	Nonelectric warm air furnaces and humidifiers . . . . .	1,606,981	(NA)	(NA)	(NA)
333415E	Unitary air-conditioners . . . . .	529,123	373,425	280,143	62,913
333415F	Air source heat pumps <sup>8</sup> . . . . .	1,053,837	(NA)	(NA)	(NA)
333415G	Ground and ground water source heat pumps <sup>9</sup> . . . . .	(D)	(NA)	(NA)	(NA)
<b>1997</b>					
3334151	Heat transfer equipment, excluding room and unitary air-conditioners and dehumidifiers . . . . .	4,245,885	421,233	316,009	70,754
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers . . . . .	246,141	29,980	22,491	4,910
3334155	Condensing units, all refrigerants . . . . .	317,273	31,338	23,510	29,285
3334156	Room air-conditioners and dehumidifiers . . . . .	1,020,171	117,444	88,106	404,098
3363917	Motor vehicle mechanical air-conditioning systems <sup>6</sup> . . . . .	2,220,957	(NA)	(NA)	(NA)
333415A	Compressors and compressor units, all refrigerants . . . . .	2,795,669	1,102,224	826,888	611,160
336391B	Automotive air-conditioning compressors <sup>7</sup> . . . . .	1,951,290	(NA)	(NA)	(NA)
333415C pt.	Nonelectric warm air furnaces and humidifiers . . . . .	1,558,425	(NA)	(NA)	(NA)
333415E	Unitary air-conditioners . . . . .	4,614,616	348,456	261,412	78,499
333415F	Air source heat pumps <sup>8</sup> . . . . .	917,152	(NA)	(NA)	(NA)
333415G	Ground and ground water source heat pumps <sup>9</sup> . . . . .	(D)	(NA)	(NA)	(NA)

D Withheld to avoid disclosing data for individual companies. NA Not available. pt. Part. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at port of export.

<sup>3</sup>Values were derived by use of adjustment factors to exclude freight, insurance, and other charges incurred in moving goods to port of export. Adjustment is made to convert values to an approximation of the producers' value of exported goods. Current adjustment factors are based on data for 1995 that are published in *Exports from Manufacturing Establishments*, AR95-1, Appendix B. Adjustment factor for this report is 0.7502.

<sup>4</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*. Figures include both import value and duty value.

<sup>5</sup>Represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

<sup>6</sup>Data for this product is collected separately from SIC product code 35851 in 1997.

<sup>7</sup>Data for this product is collected separately from SIC product code 35854 in 1997.

<sup>8</sup>Data for this product is collected separately from SIC product code 35852 in 1997.

<sup>9</sup>Data for this product were collected for the first time in 1997.

**HISTORICAL NOTE**

Data on air-conditioning and refrigeration have been collected by the Census Bureau since 1944. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Stanis Batton, 301-457-4750.



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## FLUID POWER PRODUCTS, INCLUDING AEROSPACE—MA333N (FORMERLY MA35N)

### INTRODUCTION

These data cover producers of fluid power products, including aerospace, except very small firms (generally less than 20 employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies.

The statistics were collected by mail on Census Bureau annual Form MA333N, Fluid Power Products, Including Aerospace Products. The survey panel includes all known producers of fluid power products, approximately 361 companies. This survey does not include products produced and consumed within the same establishment.

### SUMMARY OF FINDINGS

In 1998, fluid power product manufacturers, including aerospace, had shipments of \$11,951 million, an increase of 3.2 percent from \$11,576.3 million reported in 1997. Hydraulic and pneumatic valves decreased 0.6 percent to \$3,360.8 million in 1998 from \$3,379.7 million in 1997. Fittings and assemblies for tubing and hose, excluding plumbers' brass goods, increased 10 percent to \$2,589.8 million in 1998 from \$2,350.2 million in 1997. Hydraulic and pneumatic cylinders, actuators, accumulators, cushions, and dryers and lubricators decreased 9.5 percent to \$81.2 million in 1998 from \$89.8 million in 1997. Filters of hydraulic and pneumatic systems decreased 2.6 percent to \$501.3 million in 1998 from \$514.8 million in 1997. Hydraulic and pneumatic pumps, motors, and hydrostatic-transmission components increased 5 percent to \$2,441.2 million in 1998 from \$2,326.3 million in 1997.

### EXPLANATION OF TERMS

**Accumulators (hydraulic only).** Devices that store hydraulic fluid under pressure as a source of fluid power.

**Actuators.** Devices that convert fluid power into linear or rotary mechanical force. Linear types are typically referred to as cylinders. Rotary types are referred to as rotary actuators and motors. Motors have shafts that rotate continuously in the same direction. Rotary actuator shafts do not rotate continuously. Typically, the shafts rotate a certain number of degrees before rotating in the opposite direction to their point of origin.

**Air dryer.** A device for reducing the moisture vapor content of the compressed air in a pneumatic system.

**Assembly.** A length of hose and/or tubing to which fittings have been attached.

**Cushion.** A device that provides controlled resistance to nonlinear motion.

**Cylinder, electrohydraulic.** A hydraulic, linear actuator that produces a continuously variable mechanical output, as a function of a continuously variable electronic input signal (voltage or current).

**Cylinder, mill type.** A linear actuator that has circular flanges welded to the cylinder barrel ends. This type of cylinder is used in severe duty applications like the steel mills from which it derived its name.

**Cylinder, rodless (shuttle).** A linear actuator with a rod that never leaves its case, that is sealed lengthwise. Typically used in position control applications.

**Cylinder, telescoping.** A linear actuator with nested tubular rod segments that provide a long working stroke in a short retracted envelope.

**Cylinder, threaded/weld fused combination.** A linear actuator with one threaded end and one weld fused end.

**Cylinder, tie rod.** A linear actuator with head and cap end closures that are secured by tie rods.

**Filter (filter assembly).** A device whose primary function is the retention of insoluble contaminants in a fluid by a porous media.

**Filter element.** That part of a filter that retains contaminants. Some elements are permanent (reusable or cleanable) and others are disposable (nonreusable). Disposable elements must eventually be replaced.

**Fittings.** Devices used to connect hoses and tubing to components (valves, cylinders, motors, pumps) of a fluid power system. They are constructed from metal or plastics and are sometimes referred to as connectors or couplings.

**Gerotor/gerolor.** A special type of internal gear motor where the internal gear is always in sliding contact with the external gear.

**Hydrostatic transmission.** A device that combines a hydraulic pump with a hydraulic motor. Quantity and value of pumps and motors sold together as transmissions were reported separately in the relevant pump and motor categories.

**Intensifiers.** A device that is driven by a low pressure fluid to produce fluid at a higher pressure.

**Lubricator.** A device that adds controlled or metered amounts of lubricant into a pneumatic system.

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**Manifold (manifold assembly).** A fluid conductor that can provide multiple connection ports. In a fluid power system, manifolds are typically used as housings for cartridge valves.

**Motor.** A device that transforms fluid power into rotary mechanical force. Motors can be hydraulic or pneumatic.

**Motor, axial piston.** A motor with several parallel pistons arranged around a common axis.

**Motor, external gear.** A motor that has only external gears and no internal gear.

**Motor, internal gear.** A motor with an internal gear that meshes with one or more external gears. See also gerotor/gerolor.

**Motor, radial piston.** A motor with several pistons arranged to operate radially.

**Motor, vane.** A motor with multiple vanes that cause rotation of an internal member when under pressure.

**Power unit.** A device that combines a hydraulic pump with a prime mover (usually an electric motor). As is done for hydrostatic transmissions, the quantity and value of the pumps and prime movers were reported separately in relevant categories.

**Pump, axial piston.** A reciprocating pump with several parallel pistons arranged around a common axis.

**Pump, external gear.** A rotary pump that has only external gears, and no internal gear.

**Pump, internal gear.** A rotary pump that has an internal gear in engagement with one or more external gears. An internal gear pump generally has external gears that rotate on a fixed axis. A gerotor pump differs from other internal gear types in that its internal gear is always in sliding contact with the external gear.

**Pump, radial piston.** A reciprocating pump with several pistons arranged radially within the pump chamber.

**Pump, reciprocating.** A pump that uses pistons to create a partial vacuum to draw hydraulic fluid through the pump inlet. The return strokes of the pistons unseat outlet check valves and force the fluid through the pump outlet.

**Pump, rotary.** A pump that uses gears or vanes to cause rotary motion that moves hydraulic fluid from the pump inlet to the pump outlet.

**Pump, vane.** A rotary pump with multiple vanes within a supporting rotor.

**Reservoir, hydraulic.** A container for storage of hydraulic fluid under pressure.

**Valves, cartridge.** Valves with working parts contained in a cylindrical body. The body must be inserted into a housing (usually a manifold) for use. Ports through the body of the valve align with ports in the housing.

**Valves, electrohydraulic.** Valves that use continuously variable electronic input (voltage or current) to produce a continuously variable hydraulic output.

**Valve, manually operated.** Valves actuated by means of a hand lever, or other manual energizing device.

**Valve, mechanical.** Valves that are actuated by cams, levers, rollers, screws, springs, stems, or other mechanical energizing devices.

**Valve, relief.** Direct acting or pilot operated valves that are used to prevent a hydraulic system from exceeding its maximum pressure limits.

**Valve, remote pilot.** Pilot operated valves that are controlled remotely through the use of air pressure.

**Valve, solenoid.** Valves that are operated by a solenoid.

**Table 10. Value of Shipments of Fluid Power Products, Including Aerospace: 1998 and 1997**

[Value in thousands of dollars]

Product code	Product description	1998	1997
	Fluid power products, including aerospace . . . . .	11,951,065	11,576,347
3329125	Nonaerospace-type hydraulic directional control valves . . . . .	583,558	'582,591
3329127	Nonaerospace-type hydraulic valves (except directional control) . . . . .	825,357	'819,479
3329129	Nonaerospace-type pneumatic directional control valves . . . . .	463,783	517,060
332912B	Nonaerospace-type pneumatic valves (except directional control) . . . . .	269,901	266,493
3329121	Aerospace-type hydraulic fluid power valves . . . . .	419,890	393,897
3329123	Aerospace-type pneumatic fluid power valves . . . . .	489,513	'495,216
332912D	Parts for fluid power valves . . . . .	308,842	304,996
332912H	Nonaerospace-type flared (metal) fittings and couplings for, and assemblies of tubing used in fluid power transfer systems . . . . .	387,023	348,553
332912J	Nonaerospace-type flareless fittings and couplings, including nonmetal fittings, used in fluid power transfer systems . . . . .	431,752	'419,283
332912L	Nonaerospace-type hydraulic and pneumatic fittings and couplings for hose, and manifolds . . . . .	866,557	807,878
332912N	Nonaerospace-type hydraulic and pneumatic assemblies of hose . . . . .	300,649	255,252
332912F	Aerospace-type hydraulic and pneumatic hose or tube end fittings and assemblies and manifolds . . . . .	603,778	519,278
3339993	Nonaerospace-type filters for hydraulic fluid power systems . . . . .	328,836	334,252
3339994	Nonaerospace-type filters for pneumatic fluid power systems . . . . .	113,361	108,544
3339996	Aerospace-type hydraulic and pneumatic filters . . . . .	59,143	71,961
3339998 pt.	Compressed air and gas dryers, and lubricators . . . . .	81,209	89,756
3339951	Nonaerospace-type hydraulic fluid power cylinders and actuators, linear and rotary . . . . .	1,193,295	1,204,401
3339953	Nonaerospace-type pneumatic fluid power cylinders and actuators, linear and rotary . . . . .	440,359	465,655
3339955	Parts for nonaerospace-type hydraulic and pneumatic fluid power cylinders, actuators, and related items, n.e.c. . . . .	292,186	284,788
3339957	Aerospace-type fluid power cylinders and actuators, hydraulic and pneumatic . . . . .	1,050,876	'960,759
3339961	Nonaerospace-type reciprocating pumps . . . . .	616,781	580,923
3339963	Nonaerospace-type rotary and other fluid power pumps . . . . .	479,501	460,498
3339965	Nonaerospace-type fluid power motors . . . . .	620,491	579,700
3339967	Aerospace-type fluid power pumps and motors . . . . .	256,598	'224,541
3339969	Parts for fluid power pumps, motors, and hydrostatic transmissions . . . . .	467,826	480,593

n.e.c. Not elsewhere classified. pt. Part. 'Revised by 5 percent or more from previously published data.

**Table 11. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Type: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		Number of companies	Quantity	Value	Number of companies	Quantity	Value
3329125	Fluid power products, including aerospace . . . . .	(X)	(X)	11,951,065	(X)	(X)	11,576,347
	Nonaerospace-type hydraulic directional control valves . . . . .	(X)	8,271,212	583,558	(X)	7,593,529	<sup>f</sup> 582,591
	Manual:						
3329125110	3- and 4-way monoblock . . . . .	27	3,743,507	120,756	27	3,671,979	128,050
3329125120	3- and 4-way sectional . . . . .	19	1,098,076	225,216	19	<sup>f</sup> 1,071,075	<sup>f</sup> 218,665
3329125130	Other manual . . . . .	5	<sup>c</sup> 44,256	<sup>b</sup> 1,566	4	32,261	1,133
	Solenoid:						
3329125140	2-way types . . . . .	16	463,820	33,560	16	413,459	30,460
3329125150	3- and 4-way types . . . . .	24	1,032,999	120,944	25	1,092,258	134,955
3329125160	Other directional control . . . . .	29	1,888,554	81,516	29	1,312,497	69,328
3329127	Nonaerospace-type hydraulic valves (except directional control) . . . . .	(X)	19,738,745	825,357	(X)	20,355,898	<sup>f</sup> 819,479
	Pressure control:						
3329127110	Relief valves . . . . .	25	<sup>a</sup> 953,300	35,165	27	<sup>f</sup> 1,026,435	<sup>f</sup> 39,628
3329127120	Other, including load sensing and manual types . . . . .	15	(D)	(D)	17	(D)	(D)
	Flow control:						
3329127130	Manual types . . . . .	18	<sup>a</sup> 871,309	19,531	21	<sup>f</sup> 1,040,548	<sup>f</sup> 24,592
3329127140	Other flow control valves . . . . .	24	<sup>a</sup> 2,593,793	61,819	24	3,243,418	69,986
3329127150	Cartridge valves, all types . . . . .	20	10,278,227	220,107	20	10,387,822	222,699
	Electrohydraulic valves:						
3329127160	Pilot-operated, torque motor servovalves . . . . .	9	(D)	(D)	9	(D)	(D)
3329127170	Other types, including proportional . . . . .	13	199,199	<sup>a</sup> 56,817	11	146,840	<sup>f</sup> 47,529
3329127180	Other nonaerospace-type hydraulic valves, including stack and logic . . . . .	25	2,749,840	287,429	25	2,399,348	267,166
3329129	Nonaerospace-type pneumatic directional control valves . . . . .	(X)	16,778,731	463,783	(X)	18,163,430	517,060
3329129110	Manual . . . . .	38	<sup>b</sup> 4,253,310	<sup>b</sup> 78,089	39	<sup>f</sup> 4,455,224	<sup>a</sup> 82,952
3329129120	Solenoid:						
	Under 1/8 inch port diameter . . . . .	11	<sup>b</sup> 2,780,504	<sup>b</sup> 48,774	12	3,112,164	57,677
	1/8 inch up to and including 1/4 inch port diameter:						
3329129130	3-way types . . . . .	22	<sup>b</sup> 2,497,534	<sup>a</sup> 59,626	24	2,617,715	61,813
3329129140	4-way types . . . . .	21	3,066,263	108,764	22	2,733,507	116,204
	Over 1/4 inch port diameter:						
3329129150	3-way types . . . . .	19	576,740	42,562	20	665,886	47,365
3329129160	4-way types . . . . .	17	1,363,544	76,685	17	1,457,082	84,015
3329129170	All other types . . . . .	5	(S)	7,694	5	(D)	(D)
3329129180	Mechanical, remote pilot, and all other types . . . . .	27	(S)	41,589	28	(D)	(D)
332912B	Nonaerospace-type pneumatic valves (except directional control) . . . . .	(X)	14,463,327	269,901	(X)	14,342,705	266,493
332912B110	Filter-regulator combination units, integral types . . . . .	14	1,419,173	28,287	14	1,386,920	27,373
332912B120	Other FRs and filter-regulator-lubricator combo units . . . . .	15	556,401	21,932	15	526,703	<sup>a</sup> 20,794
332912B130	Regulators, sold separately . . . . .	19	4,844,253	76,309	20	<sup>a</sup> 4,928,867	<sup>a</sup> 78,919
332912B140	Flow control valves . . . . .	28	<sup>a</sup> 4,047,039	<sup>a</sup> 102,185	31	4,046,080	103,099
332912B150	Check, shuttle, exhaust, needle, and all other types . . . . .	27	<sup>b</sup> 3,596,461	<sup>a</sup> 41,188	30	<sup>f</sup> 3,454,135	36,308
3329121	Aerospace-type hydraulic fluid power valves . . . . .	(X)	1,388,946	419,890	(X)	1,321,154	393,897
	2-, 3-, and 4-way directional control valves:						
3329121110	Manually or mechanically operated . . . . .	17	(D)	(D)	17	(D)	(D)
3329121120	Solenoid operated . . . . .	25	(D)	(D)	25	<sup>a</sup> 75,652	<sup>b</sup> 54,849
3329121130	Motor operated . . . . .	9	29,865	20,321	9	(D)	(D)
3329121140	Electrohydraulic servovalves . . . . .	8	101,274	139,795	7	93,305	125,529
3329121150	Flow, pressure, and other types of hydraulic valves . . . . .	27	444,132	<sup>b</sup> 110,763	28	<sup>f</sup> 462,974	<sup>a</sup> 120,403
3329123	Aerospace-type pneumatic fluid power valves . . . . .	(X)	1,071,363	489,513	(X)	1,157,083	<sup>f</sup> 495,216
3329123110	Pneumatic valves, all types . . . . .	30	<sup>a</sup> 1,071,363	<sup>a</sup> 489,513	28	1,157,083	<sup>f</sup> 495,216
332912D	Parts for fluid power valves . . . . .	(X)	(X)	308,842	(X)	(X)	304,996
332912D110	Parts for nonaerospace-type hydraulic and pneumatic valves, sold separately . . . . .	57	(X)	201,939	61	(X)	209,722
332912D120	Parts for aerospace-type hydraulic and pneumatic valves, sold separately . . . . .	24	(X)	106,903	23	(X)	95,274

See footnotes at end of table.

**Table 11. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Type: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		Number of companies	Quantity	Value	Number of companies	Quantity	Value
332912H	Fluid power products, including aerospace—Con. Nonaerospace-type flared (metal) fittings and couplings for, and assemblies of tubing used in fluid power transfer systems . . . . .	(X)	(X)	387,023	(X)	(X)	348,553
	Flared fittings:						
332912H110	Brass and bronze (SAE 45 degrees and 37 degrees) . . . . .	9	(X)	(D)	9	(X)	(D)
332912H120	Carbon steel (JIC 37 degrees) . . . . .	12	(X)	149,196	12	(X)	138,905
332912H130	Other, including alloy steel . . . . .	14	(X)	69,725	14	(X)	60,967
332912H140	Assemblies of tubing . . . . .	7	(X)	(D)	8	(X)	(D)
332912H150	Assemblies of tubing and hose . . . . .	7	(X)	48,010	7	(X)	46,475
332912J	Nonaerospace-type flareless fittings and couplings, including nonmetal fittings, used in fluid power transfer systems . . . . .	(X)	(X)	431,752	(X)	(X)	<sup>1</sup> 419,283
	Metal types:						
332912J110	Brass and bronze . . . . .	15	(X)	88,042	16	(X)	91,008
332912J120	Carbon steel . . . . .	12	(X)	100,575	13	(X)	89,684
332912J130	Stainless steel . . . . .	14	(X)	<sup>a</sup> 224,919	15	(X)	<sup>1</sup> 227,556
332912J140	Other, including alloy steel . . . . .	7	(X)	<sup>a</sup> 10,931	9	(X)	7,598
332912J150	Nonmetal fittings, including plastics . . . . .	9	(X)	7,285	9	(X)	3,437
332912L	Nonaerospace-type hydraulic and pneumatic fittings and couplings for hose, and manifolds . . . . .	(X)	(X)	866,557	(X)	(X)	807,878
332912L110	Permanent hose end fittings (crimped and swaged) . . . . .	19	(X)	358,227	19	(X)	327,325
332912L120	Hydraulic and pneumatic reusable end fittings . . . . .	26	(X)	<sup>b</sup> 133,968	28	(X)	131,478
332912L130	Hydraulic quick connect and disconnect couplings . . . . .	18	(X)	160,490	18	(X)	152,523
332912L140	Pneumatic quick connect and disconnect couplings . . . . .	24	(X)	90,803	23	(X)	80,450
332912L150	Manifolds and manifold assemblies for fluid power systems . . . . .	19	(X)	78,909	22	(X)	75,062
332912L160	All other, including steel adaptor, swivel, rotating, and extension fittings . . . . .	24	(X)	<sup>a</sup> 44,160	24	(X)	41,040
332912N	Nonaerospace-type hydraulic and pneumatic assemblies of hose . . . . .	(X)	(X)	300,649	(X)	(X)	255,252
332912N110	Assemblies with permanent end fittings . . . . .	21	(X)	<sup>a</sup> 253,703	21	(X)	213,582
332912N120	Assemblies with reusable end fittings . . . . .	8	(X)	46,946	8	(X)	41,670
332912F	Aerospace-type hydraulic and pneumatic hose or tube end fittings and assemblies and manifolds . . . . .	(X)	(X)	603,778	(X)	(X)	519,278
332912F110	Assemblies of hose and/or tubing . . . . .	14	(X)	<sup>a</sup> 188,619	13	(X)	151,938
332912F120	Quick connect, rotating, swivel, and extension fittings . . . . .	11	(X)	167,741	10	(X)	151,901
332912F130	Manifolds for aerospace hydraulic systems . . . . .	6	(X)	46,884	6	(X)	<sup>c</sup> 45,059
332912F140	Aerospace hose and tube fittings, n.e.c. . . . .	15	(X)	<sup>a</sup> 200,534	14	(X)	<sup>a</sup> 170,380
3339993	Nonaerospace-type filters for hydraulic fluid power systems . . . . .	(X)	(X)	328,836	(X)	(X)	334,252
	Hydraulic fluid filter assemblies, with or without filter element installed:						
3339993010	Low pressure (below 301 psi) . . . . .	25	<sup>a</sup> 725,348	<sup>a</sup> 48,140	26	<sup>1</sup> 707,828	<sup>a</sup> <sup>1</sup> 48,410
3339993020	Medium pressure (301 to 2,999 psi) . . . . .	18	710,981	26,693	18	853,174	28,059
3339993030	High pressure (3,000 psi and above) . . . . .	15	164,852	39,700	14	<sup>1</sup> 177,026	<sup>a</sup> <sup>1</sup> 43,045
	Filter replacement elements:						
3339993040	Reusable (cleanable) type . . . . .	14	<sup>a</sup> 1,076,630	<sup>a</sup> 18,073	15	1,185,096	20,592
3339993050	Nonreusable type . . . . .	25	13,256,752	167,059	24	<sup>1</sup> 13,172,947	<sup>a</sup> <sup>1</sup> 162,480
3339993060	Strainers and separators, filter parts, and accessories . . . . .	19	(X)	<sup>a</sup> 29,171	20	(X)	<sup>a</sup> 31,666
3339994	Nonaerospace-type filters for pneumatic fluid power systems . . . . .	(X)	(X)	113,361	(X)	(X)	108,544
	Air supply filter assemblies and filter replacement elements, excluding those shipped as part of an FR or FRL combo unit:						
3339994010	Coalescing types, including elements sold separately . . . . .	15	(X)	50,138	14	(X)	45,056
3339994020	Other types, including elements sold separately . . . . .	12	(X)	35,944	12	(X)	<sup>a</sup> 35,507
3339994030	Air exhaust mufflers, diffusers, filter parts, and air preparation accessories . . . . .	15	(X)	27,279	16	(X)	27,981

See footnotes at end of table.

**Table 11. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Type: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		Number of companies	Quantity	Value	Number of companies	Quantity	Value
3339996	Fluid power products, including aerospace—Con.						
3339996010	Aerospace-type hydraulic and pneumatic filters . . .	(X)	(X)	59,143	(X)	(X)	71,961
3339996020	Hydraulic . . . . .	7	(X)	(D)	6	(X)	(D)
3339998 pt.	Pneumatic . . . . .	3	(X)	(D)	3	(X)	(D)
3339998872	Compressed air and gas dryers, and lubricators . .	(X)	743,527	81,209	(X)	796,268	89,756
3339998874	Compressed air and gas dryers:						
3339998879	Refrigerated dryers . . . . .	4	(D)	(D)	5	32,009	37,357
3339998880	Dessicant dryers . . . . .	4	(D)	(D)	7	(D)	(D)
3339998880	Other compressed air and gas dryers . . . . .	4	(D)	(D)	4	(D)	(D)
3339951	Lubricators for pneumatic systems, sold separately . . . . .	8	633,929	14,408	8	<sup>a</sup> 684,153	<sup>a</sup> 15,494
3339951110	Nonaerospace-type hydraulic fluid power cylinders and actuators, linear and rotary . . . . .	(X)	4,736,601	1,193,295	(X)	4,516,122	1,204,401
3339951120	Hydraulic cylinders, excluding electrohydraulic:						
3339951130	Tie-rod types:						
3339951140	Standard NFPA and JIC tie-rod types:						
3339951150	Less than 1,500 psi . . . . .	21	168,886	41,055	24	151,912	<sup>r</sup> 37,747
3339951160	1,500 to 3,000 psi . . . . .	21	229,832	95,064	22	239,079	97,355
3339951170	Greater than 3,000 psi . . . . .	6	(D)	(D)	8	(D)	(D)
3339951180	Other tie-rod types . . . . .	17	(D)	(D)	20	(D)	(D)
3339951190	Threaded/weld fused combination . . . . .	45	<sup>a</sup> 2,965,675	<sup>a</sup> 720,651	48	2,764,181	739,525
3339951190	Telescoping . . . . .	19	119,433	107,577	20	109,634	99,070
3339951190	Mill type . . . . .	10	20,277	18,337	13	23,873	20,139
3339951190	Other, including those threaded at both ends . . . . .	23	690,285	<sup>a</sup> 73,959	24	660,137	68,409
3339951190	Electrohydraulic types . . . . .	9	<sup>a</sup> 6,160	<sup>a</sup> 21,361	10	<sup>r</sup> 6,604	<sup>r</sup> 20,508
33399511A0	Hydraulic rotary actuators . . . . .	14	<sup>b</sup> 60,997	<sup>b</sup> 52,338	14	59,949	53,946
3339953	Nonaerospace-type pneumatic fluid power cylinders and actuators, linear and rotary . . . . .	(X)	6,285,440	440,359	(X)	6,813,214	465,655
3339953110	NFPA interchangeable cylinders:						
3339953120	Steel . . . . .	18	284,016	86,260	19	<sup>r</sup> 304,424	<sup>r</sup> 86,519
3339953130	Aluminum:						
3339953130	Less than 1-1/2 inch bore size . . . . .	6	<sup>a</sup> 49,771	<sup>a</sup> 5,659	6	<sup>a</sup> 55,563	<sup>a</sup> 5,529
3339953140	1-1/2 inch bore size and over . . . . .	19	<sup>a</sup> 328,136	<sup>a</sup> 54,966	22	347,008	54,515
3339953150	Rodless cylinders . . . . .	11	122,663	38,074	12	119,819	39,623
3339953160	Other pneumatic cylinders:						
3339953170	Less than 1-1/2 inch bore size . . . . .	23	<sup>a</sup> 3,859,806	119,703	26	<sup>a</sup> 4,266,060	<sup>r</sup> 138,555
3339953170	1-1/2 inch bore size and over . . . . .	35	<sup>a</sup> 1,529,852	<sup>a</sup> 103,503	36	1,614,971	111,894
3339955	Pneumatic rotary actuators . . . . .	15	111,196	32,194	15	<sup>r</sup> 105,369	<sup>r</sup> 29,020
3339955110	Parts for nonaerospace-type hydraulic and pneumatic fluid power cylinders, actuators, and related items, n.e.c. . . . .	(X)	(X)	292,186	(X)	(X)	284,788
3339955120	Accumulators (bladder, piston, and other types) . . . . .	20	228,849	43,534	23	216,179	43,768
3339955130	Shock absorbers, not for vehicle suspension, and cushions (hydraulic and pneumatic) . . . . .	15	3,112,834	<sup>b</sup> 72,525	18	2,744,272	70,743
3339955140	Reservoirs, intensifiers, and other devices for fluid energy absorption and/or storage . . . . .	13	7,424	2,794	13	13,501	<sup>r</sup> 2,661
3339957	Parts for nonaerospace-type hydraulic and pneumatic cylinders, actuators, accumulators, cushions, and nonvehicular shock absorbers, sold separately . . . . .	59	(X)	<sup>a</sup> 173,333	62	(X)	167,616
3339957110	Aerospace-type fluid power cylinders and actuators, hydraulic and pneumatic . . . . .	(X)	(X)	1,050,876	(X)	(X)	<sup>r</sup> 960,759
3339957120	Hydraulic servo-actuator assemblies (linear and rotary):						
3339957130	Mechanical input . . . . .	6	16,554	148,586	6	<sup>r</sup> 26,484	<sup>r</sup> 172,559
3339957140	Electrical input . . . . .	7	22,452	351,181	7	<sup>r</sup> 15,441	<sup>r</sup> 248,850
3339957150	Combination input . . . . .	4	(D)	(D)	4	(D)	(D)
3339957160	Hydraulic utility actuators:						
3339957170	Linear actuators (cylinders) . . . . .	8	<sup>a</sup> 18,820	<sup>a</sup> 99,241	9	<sup>a</sup> 21,151	99,181
3339957170	Rotary actuators (limited rotation) . . . . .	2	(D)	(D)	2	(D)	(D)
3339957170	Shock absorbers, snubbers, and cushions, all types, excluding oleo strut assemblies . . . . .	9	(D)	(D)	9	(D)	(D)
3339957170	Pneumatic actuators (linear and rotary) . . . . .	7	(D)	(D)	8	(D)	(D)

See footnotes at end of table.

**Table 11. Manufacturer's Shipments of Fluid Power Products, Including Aerospace by Type: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	1998			1997		
		Number of companies	Quantity	Value	Number of companies	Quantity	Value
3339955140	Fluid power products, including aerospace—Con.						
3339957180	Aerospace-type fluid power cylinders and actuators, hydraulic and pneumatic—Con.						
3339957190	Accumulators (bladder, piston, and other types) . . . . .	10	11,451	16,431	11	10,729	8,482
33399571A0	Reservoirs, intensifiers, and other devices for fluid energy absorption and/or storage . . . . .	5	<sup>b</sup> 1,459	<sup>a</sup> 12,967	6	<sup>b</sup> 1,457	<sup>b</sup> 9,131
3339955150	Other aerospace-type fluid power cylinders, rotary actuators, cushions, and related items, n.e.c. . . . .	4	(X)	2,269	3	(X)	(D)
3339961	Parts for aerospace-type hydraulic and pneumatic cylinders, actuators, accumulators, cushions, and related items, sold separately . . . . .	14	(X)	83,569	13	(X)	<sup>r</sup> 72,865
3339961110	Nonaerospace-type reciprocating pumps . . . . .	(X)	2,125,116	616,781	(X)	1,894,152	580,923
3339961120	Axial piston:						
3339961130	Variable displacement types:						
3339961140	Closed loop . . . . .	9	1,342,598	383,103	9	1,230,266	366,833
3339963	Open loop . . . . .	11	<sup>b</sup> 262,568	<sup>b</sup> 120,958	11	292,585	140,958
3339963110	Fixed displacement types . . . . .	8	(D)	(D)	9	(D)	(D)
3339963120	Radial piston types . . . . .	3	(D)	(D)	4	(D)	(D)
3339963130	Nonaerospace-type rotary and other fluid power pumps . . . . .	(X)	3,139,564	479,501	(X)	3,075,625	460,498
3339963140	Gear type:						
35944 38	Internal gear type, including gerotors . . . . .	11	1,031,449	99,029	11	990,342	97,293
3339965	External gear type . . . . .	16	1,749,346	257,283	17	1,703,786	256,477
3339965110	Vane type:						
3339965120	Fixed displacement . . . . .	4	(D)	(D)	4	(D)	(D)
3339965130	Variable displacement . . . . .	5	(D)	(D)	5	(D)	(D)
3339965140	Nonaerospace-type fluid power motors . . . . .	(X)	(X)	620,491	(X)	(X)	579,700
3339965150	Pneumatic (air) motors . . . . .	4	(D)	(D)	4	(D)	(D)
3339965160	Hydraulic motors:						
3339965170	Gear type:						
3339965180	Internal types, excluding gerotors . . . . .	8	(D)	(D)	7	(D)	(D)
3339965190	Gerotors types . . . . .	7	<sup>a</sup> 1,271,430	<sup>b</sup> 203,628	6	1,232,417	189,582
3339965190	External types . . . . .	8	169,158	<sup>a</sup> 27,145	8	166,272	26,107
3339965190	Vane types, fixed and variable . . . . .	8	<sup>b</sup> 13,622	<sup>b</sup> 14,828	7	13,479	13,987
3339965190	Radial piston types, fixed and variable . . . . .	2	(D)	(D)	2	(D)	(D)
3339965190	Axial piston type:						
3339965190	Fixed displacement . . . . .	8	703,870	91,734	8	646,537	92,213
3339965190	Variable displacement . . . . .	8	128,680	72,320	8	(D)	(D)
3339965190	Prime movers shipped with pumps or sold separately . . . . .	6	(X)	(D)	6	(X)	(D)
3339967	Aerospace-type fluid power pumps and motors . . . . .	(X)	103,533	256,598	(X)	<sup>r</sup> 101,535	<sup>r</sup> 224,541
3339967110	Hydraulic pumps:						
3339967120	Fixed and variable displacement types . . . . .	10	<sup>b</sup> 37,282	<sup>a</sup> 140,672	10	<sup>r</sup> 36,675	<sup>r</sup> 131,086
3339967130	Pump/electric motor assemblies, fixed, and variable displacement types . . . . .	10	<sup>a</sup> 27,927	<sup>a</sup> 81,261	10	(D)	(D)
3339967140	Other pump packages, n.e.c. . . . .	7	33,004	<sup>a</sup> 12,154	8	39,124	12,606
3339967150	Motors:						
3339967160	Pneumatic (air) motors and motor packages . . . . .	1	(D)	(D)	1	(D)	(D)
3339969	Hydraulic motors, fixed and variable displacement types . . . . .	3	(D)	(D)	3	(D)	(D)
3339969110	Hydraulic motor packages, including motor/gearbox, motor/valve, motor/generator, and similar combination units . . . . .	4	(D)	(D)	4	(D)	(D)
3339969120	Parts for fluid power pumps, motors, and hydrostatic transmissions . . . . .	(X)	(X)	467,826	(X)	(X)	480,593
3339969130	Hydraulic:						
3339969140	Nonaerospace . . . . .	30	(X)	367,992	31	(X)	386,791
3339969140	Aerospace . . . . .	9	(X)	89,046	8	(X)	<sup>r</sup> 85,290
3339969140	Pneumatic:						
3339969140	Nonaerospace . . . . .	2	(X)	(D)	2	(X)	(D)
3339969140	Aerospace . . . . .	2	(X)	(D)	2	(X)	(D)

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. pt. Part.  
<sup>r</sup>Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.  
 Note: Percent of estimation for each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 12. Shipments, Exports, and Imports of Fluid Power Products: 1998**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments		Export shipments <sup>1</sup>		Import shipments <sup>2</sup>	
		Quantity	Value	Quantity	Value	Quantity	Value
3329121, 125, 127	Hydraulic fluid power valves . . . . .	29,398,903	1,828,805	2,661,132	185,582	9,452,328	140,989
3329123, 129, 12B	Pneumatic fluid power valves . . . . .	32,313,421	1,223,197	1,946,183	96,468	22,564,598	139,712
332912D	Parts for fluid power valves; hydraulic, pneumatic, all types . . . . .	(X)	308,842	(X)	76,200	(X)	86,253
3339951 pt., 957 pt.	Hydraulic cylinders and hydraulic actuators (except electrohydraulic types) . . . . .	4,794,024	1,939,368	280,139	100,584	790,991	183,657
3339953 pt.	Pneumatic cylinders (tie-rod types) . . . . .	661,923	146,885	568	774	23,940	2,656
3339953 pt., 957 pt.	Pneumatic cylinders (except tie-rod types) . . . . .	5,876,269	435,299	309,279	37,681	495,147	34,168
3339951 pt., 957 pt.	Fluid power accumulators, hydraulic and pneumatic, and other hydraulic, pneumatic or combination devices for fluid energy absorption and/or storage, all types . . . . .	(X)	79,409	178,846	108,780	339,867	78,065
3339965 pt., 967 pt.	Pneumatic (air) motors and motor packages, all types . . . . .	(D)	(D)	8,279	3,306	6,050	1,172
3339965 pt., 967 pt.	Hydraulic motors, all types . . . . .	3,321,151	571,475	111,025	39,533	185,352	135,449
3339961, 963, 967 pt.	Hydraulic pumps, all types . . . . .	5,362,893	1,330,369	4,661,993	333,444	2,718,413	289,762
3339969	Parts for fluid power pumps and motors . . . . .	(X)	467,826	(X)	248,440	(X)	249,968

D Withheld to avoid disclosing data for individual companies. pt. Part. X Not applicable.

<sup>1</sup>Source: Census Bureau report, EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report, IM 145, *U.S. Imports for Consumption*.

**HISTORICAL NOTE**

Data on fluid power products have been collected by the Census Bureau since 1981. Historical data may be obtained from Current Industrial reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**FUNDING**

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**CONTACT FOR DATA USERS**

For additional information about these data, contact James Hinckley, 301-457-4772.



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## PUMPS AND COMPRESSORS—MA333P (FORMERLY MA35P)

### INTRODUCTION

This survey covers companies engaged in manufacturing industrial pumps (reciprocating, turbine, centrifugal, rotary, diaphragm, and other pumps); domestic water systems; domestic sump pumps; oil well and oil field pumps; other pumps; air compressors; gas compressors; and vacuum pumps. Very small firms (generally less than five employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies are excluded. Excluded from this survey are hand pumps; measuring and dispensing pumps; automotive circulating pumps; hydraulic fluid power pumps; paint-spraying equipment; compressors for ice making, refrigeration equipment, and air-conditioning units; and replacement and repair parts for pumps and compressors.

The statistics in this publication were collected by mail on Census Bureau annual Form MA333P, Pumps and Compressors. The survey panel includes all known manufacturers of the covered products, except the very small firms excluded from the scope of the survey. Approximately 460 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

In 1998, manufacturers' shipments of pumps and compressors totaled \$9,122 million, an increase of 3 percent from the 1997 figure of \$8,879 million. The 1998 total includes industrial pumps, \$2,924 million, an increase of 7 percent from the 1997 total of \$2,732 million; compressors and vacuum pumps, \$3,089 million, a decrease of 6 percent from the 1997 total of \$3,273 million; domestic water systems, \$409 million, an increase of 14 percent from the 1997 total of \$357 million; domestic sump pumps, \$146 million, a decrease of 10 percent from the 1997 total of \$161 million; oil well and oil field pumps, \$362 million, an increase of 9 percent over the 1997 total of \$333 million.

Since 1995, replacement parts, sold separately, for pumps and compressors, are included in the survey total, although companies which manufacture only parts and not complete units are presently excluded from the survey. For 1998, in-scope shipments of parts for pumps totaled \$1,097 million, an increase of 9 percent from the 1997 total of \$1,003 million, and in-scope shipments of compressor and vacuum pumps parts totaled \$333 million, a decrease of 8 percent from the 1997 total of \$361 million.

### EXPLANATION OF TERMS

**Pump.** A device for raising, transferring, moving, or pressurizing fluids.

**Driver.** An electric motor or a prime mover, such as a steam engine, steam or gas turbine, or internal combustion engine.

### Reciprocating Pumps

*Direct-acting steam-driven.* A reciprocating pump and a steam engine built together as a unit. The power to drive the pump is furnished by the steam engine.

*Power-operated, other than steam.* A reciprocating pump driven by power from an outside source applied to the crankshaft of the pump.

**Vertical turbine pumps (including deep well).** A submersible pump system, over 5 horsepower. Submersible pump systems, 5 horsepower and under, are included in domestic water systems.

### Centrifugal Pumps

*Centrifugal pump.* A pump in which the pressure is developed principally by the action of centrifugal force. Pumps in this class with single inlet impellers usually have a specific speed below 4,200; and with double suction impellers, a specific speed below 6,000. In pumps of this class, the liquid normally enters the impeller at the hub and flows radially to the periphery.

*Frame-mounted pump.* A pump design in which the impeller is mounted on a shaft, held in a bearing frame and coupled to a motor with a flexible coupling.

*Close-coupled pump.* A pump design in which the impeller is mounted on the motor shaft.

*Mixed-flow pump.* A pump in which the head is developed partly by centrifugal force and partly by the lift of the vanes on the liquid. This type pump has a single inlet impeller with the flow entering axially and discharging in an axial and radial direction. Pumps of this type usually have a specific speed from 4,200 to 9,000.

*Propeller (or axial-flow) pump.* A pump of this type develops most of its head by the propelling or lifting action of the vanes on the liquid. It has a single inlet impeller, with the flow entering axially and discharging nearly axially. Pumps of this type usually have a speed above 9,000.

*Single-stage pump.* A pump in which the total head is developed by one impeller.

*Multistage pump.* A pump having two or more impellers acting in series in one casing.

*Single-suction pump.* A pump equipped with one or more single suction impellers.

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*Double-suction pump.* A pump equipped with one or more double suction impellers.

**Rotary pump.** A positive displacement pump, consisting of a fixed casing containing gears, cams, screws, vanes, plungers, or similar elements actuated by rotation of the drive shaft. These pumps are characterized by their close running clearances and the absence of suction and discharge valves.

**Domestic water system.** A complete water supply pump system for household and farm use, containing driver, tank, and fittings. May include submersible pump systems 5 horsepower and under. Submersible pump systems over 5 horsepower are reported as vertical turbine pumps. Excluded are irrigation pumps, which are reported under industrial pumps by class and type of pump.

*Jet pump.* A pump with built-in jet (ejector) assembly for either shallow or deep well use.

*Nonjet pump.* An electrical reciprocating piston pump for shallow or deep well use.

*Submersible pump.* A pump completely submerged in water (well, pond, reservoir, etc.) that uses a series of impellers and diffusers (stages) on a single shaft or a helical rotor positive displacement design propelled by an oil-filled or water-lubricated motor.

*Domestic hand pumps, etc..* Hand, windmill, or engine-driven well pumps not electrically powered.

**Oil well and oil field pumps.** Included are pumps especially designed for oil well and oil field applications (except boiler feed).

**Vacuum pump.** A device for withdrawing air, gas, or air and gas mixtures from piping systems, enclosed vessels, or enclosed spaces, discharging the air to the atmosphere, and removing the moisture.

**Compressors.** Devices for compressing gases such as air for motive power or natural gas for the transfer of gas or for the recovery of liquid hydrocarbons.

*Stationary air compressors.* Air compressors that are intended for permanent installation and are not typically mobile.

*Portable air compressors.* Air compressors that are mountable on wheels, skids or motor trucks in order to be typically mobile.

*Gas compressors.* This category includes engine-compressor units that generally consist of an integral engine compressor block that houses both the engine and compressor. In such machines, the engine pistons and compressor pistons are mounted on a common crankshaft.

#### STANDARD ABBREVIATIONS

hp	horsepower
ANSI	American National Standards Institute
API	American Petroleum Institute
ISO	International Organization for Standardization
FM	Factory Mutual Insurance Certification
UL	Underwriters' Laboratories
PSI	Pounds per square inch
GPM	Gallons per minute
PSIG	Pounds per square inch gauge (represents the differential between atmospheric pressure and output pressure of compressors)
CFM	Cubic feet per minute

**Table 13. Summary of Quantity and Value of Shipments of Pumps and Compressors: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product description	1998		1997	
	Quantity	Value	Quantity	Value
<b>Total</b> .....	<b>26,396,312</b>	<b>9,121,946</b>	<b>24,498,030</b>	<b>8,878,621</b>
Pumps (except vacuum pumps), including parts.....	22,643,560	5,192,092	20,995,595	4,889,707
Industrial pumps.....	11,931,808	2,924,318	9,771,390	2,731,723
Drivers, reported.....	(X)	507,833	(X)	354,310
Centrifugal pumps (except drivers).....	7,132,943	1,717,090	5,236,979	1,563,175
Submersible, reported.....	703,204	252,851	717,029	262,454
Other, reported.....	6,080,074	1,422,212	4,196,772	1,261,859
Estimated from pre-1995-basis reports.....	349,665	42,027	323,178	38,862
Vertical turbine pumps (except drivers).....	54,905	209,719	59,004	223,049
Reported.....	54,537	207,264	58,613	220,438
Estimated from pre-1995-basis reports.....	368	2,455	391	2,611
Reciprocating pumps (except drivers), reported.....	(D)	(D)	(D)	(D)
Diaphragm pumps (except drivers), reported.....	1,877,154	222,730	1,691,417	217,310
Rotary pumps (except drivers), reported.....	(D)	(D)	(D)	(D)
Other (except drivers), reported.....	1,083,483	146,745	1,081,144	140,663
Estimated from other sources (potentially including drivers).....	70,101	23,367	(D)	(D)
Domestic water systems, including drivers.....	2,337,603	408,882	2,063,189	357,162
Reported.....	2,332,983	408,112	2,055,842	356,489
Estimated from other sources.....	4,620	770	(S)	673
Domestic sump pumps, including drivers.....	2,601,680	145,784	2,741,110	161,202
Reported.....	2,594,629	145,389	2,741,110	160,763
Estimated from other sources.....	7,051	395	(S)	439
Oil well and oil field pumps.....	58,443	362,068	59,369	332,669
Drivers, reported.....	(X)	110,681	(X)	115,822
Except drivers, reported.....	57,922	248,132	59,369	213,861
Reported.....	5,691,932	252,617	6,334,935	303,155
Estimated from other sources (potentially including drivers).....	22,094	1,048	(S)	1,258
Parts (reported; made by manufacturers of complete pumps).....	(X)	1,097,375	(X)	1,002,538
Compressors, including vacuum pumps, and parts.....	3,752,752	3,088,715	3,502,435	3,273,282
Air and gas compressors (but not vacuum pumps).....	3,395,226	2,522,060	3,182,025	2,634,859
Drivers (except for one category of gas compressor), reported.....	(X)	252,885	(X)	277,656
Air compressors (except drivers), new, stationary, reported.....	763,702	934,212	918,876	1,068,800
Air compressors (except drivers), new, portable, reported.....	2,515,560	631,392	2,201,181	584,611
Gas compressors (usually except driver), new, stationary, reported..	3,753	801,070	4,160	803,052
Other compressors (except drivers), reported.....	49,593	108,656	57,808	129,719
Laboratory vacuum pumps (potentially including drivers; reported)....	(D)	(D)	(D)	(D)
Vacuum pumps (except laboratory).....	343,484	229,704	305,943	273,567
Drivers, reported.....	(X)	22,163	(X)	30,162
Except drivers, reported.....	322,999	193,884	305,943	227,087
Estimated from other sources (potentially including drivers).....	20,485	13,657	(D)	16,318
Parts (reported; made by manufacturers of complete compressors)...	(X)	333,306	(X)	361,322

D Withheld to avoid disclosing data for individual companies.

S Does not meet publication standards.

X Not applicable.

**Table 14. Quantity and Value of Shipments of Pumps and Compressors: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3339111 pt.	Pumps and compressors <sup>1</sup> .....	(X)	26,396,312	9,121,946	24,498,030	<sup>†</sup> 8,878,621
3339111401	Industrial pumps (except hydraulic fluid power pumps) .....	(X)	11,931,808	2,924,318	9,771,390	<sup>†</sup> 2,731,723
	Value of drivers <sup>2</sup> .....	98	(X)	<sup>a</sup> 507,833	(X)	354,310
	Centrifugal pumps:					
	Sewage type (nonsubmersible), vertical or horizontal with nonclog impeller .....	(X)	10,703	35,867	12,481	46,386
3339111411	12" and under .....	18	10,577	<sup>a</sup> 33,685	12,192	40,246
3339111412	Over 12" .....	5	<sup>c</sup> 126	<sup>b</sup> 2,182	289	6,140
	Submersible effluent pumps (less than 1" solids handling capacity) .....	(X)	288,707	55,082	<sup>†</sup> 327,185	54,382
3339111424	Less than 1 hp .....	16	273,349	30,854	<sup>†</sup> 312,930	<sup>†</sup> 34,892
3339111425	1 hp and over .....	14	15,358	<sup>c</sup> 24,228	<sup>†</sup> 14,255	19,490
	Submersible solids handling pumps (solids 1" to 2" inclusive) .....	(X)	330,591	73,598	<sup>†</sup> 297,933	<sup>†</sup> 70,214
3339111428	1/2 hp and under .....	14	283,599	46,413	<sup>†</sup> 250,729	<sup>†</sup> 44,403
3339111429	Over 1/2 hp .....	20	46,992	27,185	47,204	25,811
	Submersible nonclog pumps (greater than 2" solids handling capacity) .....	(X)	42,185	77,391	44,407	87,227
333911142C	3" discharge and under .....	13	22,851	15,289	19,998	15,305
333911142E	Discharge more than 3" but less than 7" .....	19	18,439	53,346	23,367	65,704
333911142G	7" discharge and over .....	7	895	8,756	1,042	6,218
	Submersible grinder pumps (incorporating a hardened stainless steel cutter mechanism to macerate the solids into a fine slurry) .....	(X)	41,721	46,780	47,504	50,631
333911142K	2 hp and below .....	9	34,560	36,087	38,228	36,905
333911142M	Over 2 hp .....	5	7,161	10,693	9,276	13,726
	Single and two stage, single and end suction, close coupled with driver .....	(X)	562,192	184,074	584,511	164,483
3339111444	1" discharge and under .....	36	171,084	<sup>a</sup> 44,629	232,182	37,739
3339111445	Discharge more than 1", up to 2" .....	39	323,457	83,060	268,052	70,957
3339111447	Over 2" discharge .....	38	67,651	<sup>a</sup> 56,385	84,277	55,787
	Single and two stage, single suction, in-line, close coupled with driver .....	(X)	1,744,066	51,908	576,400	39,410
3339111449	2" discharge and under .....	11	(D)	(D)	(D)	(D)
333911144A	Over 2" discharge .....	12	(D)	(D)	(D)	(D)
	Single stage, single suction, vertical, in-line frame .....	(X)	368,375	59,230	263,575	63,559
333911144C	2" discharge and under .....	15	358,490	28,593	252,814	32,394
333911144D	Over 2" discharge .....	11	9,885	<sup>a</sup> 30,637	10,761	31,165
	Single stage, single suction, frame or foot mounted, metallic pumps (built to National or International Standards ANSI B73.1 or ISO 2858) .....	(X)	67,118	160,858	76,312	191,187
333911144F	2" discharge and under .....	21	27,956	62,370	36,764	75,708
333911144G	Over 2" discharge .....	20	39,162	98,488	39,548	115,479
	Single stage, single suction, frame or foot mounted, nonmetallic pumps (built to National or International Standards ANSI B73.1 or ISO 2858) .....	(X)	40,953	23,158	44,230	23,851
333911144J	2" discharge and under .....	10	39,695	16,190	42,684	15,814
333911144K	Over 2" discharge .....	6	<sup>b</sup> 1,258	<sup>a</sup> 6,968	1,546	8,037
	Single stage, single suction, frame or foot mounted, non-ANSI, non-ISO, with or without recessed impeller .....	(X)	68,919	94,899	71,081	92,835
333911144M	1" discharge and under .....	19	14,869	4,740	15,945	5,776
333911144N	Discharge more than 1", up to 2" .....	22	<sup>a</sup> 23,207	<sup>a</sup> 15,466	26,877	18,520
333911144R	Over 2" discharge .....	24	<sup>a</sup> 30,843	<sup>b</sup> 74,693	28,259	68,539
	Single stage, single suction, replaceable elastomer lined or hard metal, frame or foot mounted .....	(X)	7,057	66,054	<sup>†</sup> 7,614	62,158
3339111451	1" discharge and under .....	5	(D)	(D)	387	1,440
3339111452	Discharge more than 1", up to 2" .....	7	(D)	(D)	<sup>†</sup> 4,304	20,890
3339111454	Over 2" discharge .....	9	<sup>b</sup> 2,768	<sup>b</sup> 40,734	2,923	39,828
	Single stage, single suction, centerline mounted .....	(X)	28,356	86,838	<sup>†</sup> 31,957	64,211
3339111456	2" discharge and under .....	8	24,774	<sup>a</sup> 24,476	<sup>†</sup> 29,235	<sup>†</sup> 22,165
3339111457	Over 2" discharge .....	9	<sup>b</sup> 3,582	<sup>b</sup> 62,362	2,722	42,046
	Single stage, axially split, double suction .....	(X)	17,040	109,227	17,713	93,654
3339111459	4" discharge and under .....	11	4,383	10,001	4,787	9,394
333911145A	Discharge more than 4", up to 8" .....	15	9,772	<sup>a</sup> 52,318	10,155	50,465
333911145C	Over 8" discharge .....	14	2,885	<sup>a</sup> 46,908	2,771	33,795

See footnotes at end of table.

**Table 14. Quantity and Value of Shipments of Pumps and Compressors: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
	Pumps and compressors—Con.					
	Industrial pumps (except hydraulic fluid power pumps)—Con.					
	Centrifugal pumps—Con.					
	Single stage, radially split, double suction impeller pumps, API-610 compliant	(X)	294	21,519	171	14,028
333911145E	4" discharge and under	4	25	1,561	14	761
333911145F	Discharge more than 4", up to 8"	6	160	12,275	90	7,577
333911145H	Over 8" discharge	5	109	7,683	67	5,690
	Single stage, radially split, double suction impeller pumps, non-API compliant	(X)	(D)	(D)	(D)	(D)
333911145K	4" discharge and under	4	(D)	(D)	(D)	(D)
333911145L	Discharge more than 4", up to 8"	4	(D)	(D)	(D)	(D)
333911145N	Over 8" discharge	2	(D)	(D)	(D)	(D)
	Multistage, single or double suction, diffuser design, radially split case	(X)	20,039	43,168	15,566	29,793
3339111461	4" discharge and under	13	19,783	<sup>a</sup> 28,412	15,413	19,064
3339111464	Discharge more than 4", up to 8"	10	<sup>a</sup> 239	13,105	(D)	(D)
3339111467	Over 8" discharge	3	<sup>c</sup> 17	<sup>c</sup> 1,651	(D)	(D)
	Multistage, single or double suction, volute or diffuser design, axially split case	(X)	1,883	76,443	2,684	70,242
333911146C	4" discharge and under	11	<sup>c</sup> 1,559	<sup>c</sup> 39,455	2,409	43,711
333911146E	Discharge more than 4", up to 8"	6	<sup>c</sup> 310	<sup>c</sup> 34,721	263	25,947
333911146H	Over 8" discharge	4	14	2,267	12	584
	Sealless centrifugal pumps, magnetic drive	(X)	131,850	53,307	86,388	32,943
3339111471	1" discharge and under	12	125,226	26,758	82,322	16,282
3339111474	Discharge more than 1", up to 2"	9	(D)	(D)	3,111	9,496
3339111477	Over 2" discharge	7	(D)	(D)	955	7,165
	Sealless centrifugal pumps, canned motor	(X)	(D)	(D)	(D)	(D)
333911147C	1" discharge and under	7	16,399	10,537	16,602	11,289
333911147E	Discharge more than 1", up to 2"	3	(D)	(D)	(D)	(D)
333911147H	Over 2" discharge	3	(D)	(D)	(D)	(D)
	Propeller and mixed flow, horizontal and vertical, including vertical turbine over 36"	(X)	3,826	81,480	3,697	71,062
3339111481	36" and under	14	<sup>a</sup> 2,267	<sup>b</sup> 45,453	2,098	40,450
3339111484	Over 36"	13	<sup>c</sup> 1,559	<sup>c</sup> 36,027	1,599	30,612
	All other centrifugal pumps	(X)	2,989,116	236,098	2,402,391	202,056
333911148K	6" discharge and under	36	<sup>a</sup> 2,984,608	<sup>a</sup> 200,587	2,399,099	174,689
333911148M	Over 6" discharge	15	<sup>c</sup> 4,508	<sup>b</sup> 35,511	3,292	27,367
	Centrifugal pumps, n.s.k.	12	349,665	42,027	323,178	38,862
	Vertical turbine pumps not exceeding 36" discharge, including deep-well:					
	Pump with submersible motor	(X)	31,246	67,568	27,024	62,091
3339111493	Bowl diameter 6" and under	19	17,413	<sup>a</sup> 31,115	17,213	27,075
3339111498	Bowl diameter over 6"	17	13,833	<sup>a</sup> 36,453	9,811	35,016
333911149F	Pump and bowl assemblies through 36" (all column and shaft lengths, including FM or UL approved vertical turbine fire pumps; deep well and short coupled pumps, except can and pot type)	14	21,389	<sup>a</sup> 103,634	29,614	124,595
333911149N	Can and pot type (pump and bowl assemblies, suction can and pot type)	9	<sup>b</sup> 1,902	<sup>a</sup> 36,062	1,975	33,752
	Vertical turbine pumps, n.e.c.	2	368	2,455	391	2,611
	Reciprocating pumps:					
33391114C3	Direct-acting steam-driven	1	(D)	(D)	(D)	(D)
33391114C7	Driven by electric motor, engine, or steam turbine:					
	Reciprocating piston, plunger or diaphragm (not air operated) pumps	37	<sup>a</sup> 579,076	224,151	575,156	216,306
33391114D5	Diaphragm pumps (air operated)	21	1,877,154	222,730	1,691,417	217,310
	Rotary pumps:					
	100-PSI and under designed pressure	(X)	849,005	260,765	808,393	220,488
33391114R1	10 GPM and under, designed capacity	26	615,206	69,222	551,046	68,699
33391114R3	11 to 99 GPM, designed capacity	20	194,323	133,806	<sup>f</sup> 217,120	82,559
33391114R5	100 to 299 GPM, designed capacity	15	31,110	<sup>b</sup> 29,743	30,322	38,912
33391114R7	300 GPM and over, designed capacity	10	8,366	<sup>b</sup> 27,994	9,905	30,318
	101 to 249 PSI, designed pressure	(X)	192,431	79,607	201,780	80,482
33391114RA	10 GPM and under, designed capacity	11	151,599	29,344	149,471	26,150
33391114RC	11 to 99 GPM, designed capacity	11	26,842	25,848	35,918	26,990
33391114RE	100 GPM, and over, designed capacity	8	13,990	24,415	16,391	27,342

See footnotes at end of table.

**Table 14. Quantity and Value of Shipments of Pumps and Compressors: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
	Pumps and compressors—Con.					
	Industrial pumps (except hydraulic fluid power pumps)—Con.					
	Rotary pumps—Con.					
	250 to 500 PSI, designed pressure:					
33391114RJ	10 GPM and over, designed capacity	8	80,255	9,289	<sup>f</sup> 87,456	9,713
33391114RM	11 GPM, and over, designed capacity	9	5,311	8,074	<sup>f</sup> 5,699	<sup>f</sup> 8,918
33391114RR	Over 500 PSI, designed pressure	6	(D)	(D)	(D)	(D)
33391114T5	Other industrial pumps, n.e.c.	25	1,083,483	<sup>a</sup> 146,745	1,081,144	140,663
	Industrial pumps, n.s.k. <sup>3</sup>	67	70,101	23,367	(D)	(D)
	Domestic water systems, including drivers	(X)	2,337,603	408,882	2,063,189	357,162
3339111167	Nonsubmersible pump systems (jet and nonjet, including drivers)	16	1,078,724	160,400	1,034,794	157,067
	Submersible pump systems, 5 hp and under, including drivers	(X)	1,232,391	244,789	1,021,048	198,144
3339111172	Up to 1 hp	18	914,742	173,307	799,122	147,488
3339111175	Over 1 to 3 hp	14	223,638	<sup>a</sup> 54,155	136,640	34,746
3339111178	Over 3 to 5 hp	13	<sup>c</sup> 94,011	<sup>a</sup> 17,327	85,286	15,910
3339111190	Domestic hand and windmill pumps, pumps jacks, and cylinders (sold separately, including drivers)	3	<sup>b</sup> 21,868	<sup>c</sup> 2,923	(D)	1,278
	Domestic water systems and related pumps, n.s.k.	3	4,620	770	(D)	673
3339111 pt.	Domestic sump pumps, 1 hp and under, including drivers	(X)	2,601,680	145,784	2,741,110	<sup>f</sup> 161,202
3339111235	Pedestal, including drivers	16	270,491	14,132	301,972	16,882
	Submersible, including drivers	(X)	2,324,138	131,257	2,439,138	<sup>f</sup> 143,881
3339111238	1/3 hp and over	17	<sup>a</sup> 2,117,016	112,778	2,258,267	<sup>f</sup> 129,676
3339111239	Over 1/3 hp	9	<sup>b</sup> 207,122	18,479	180,871	14,205
	Domestic sump pumps, n.s.k. <sup>3</sup>	5	7,051	395	(S)	439
3339111330	Oil well and oil field pumps (except boiler feed)	(X)	58,443	362,068	59,369	332,669
3339111335	Value of drivers <sup>2</sup>	9	(X)	110,681	(X)	115,822
3339111341	Subsurface pumps for oil-well pumping	10	<sup>c</sup> 45,786	<sup>b</sup> 150,957	48,227	156,297
3339111352	Mud pumps (slush pumps)	4	<sup>c</sup> 650	72,753	<sup>f</sup> 561	31,880
3339111363	Other oil well and oil field pumps <sup>4</sup>	9	<sup>b</sup> 11,486	<sup>a</sup> 24,422	<sup>f</sup> 10,581	25,684
	Oil well and oil field pumps, n.s.k. <sup>3</sup>	6	521	3,255	(S)	2,986
	Other pumps, n.e.c., including drivers	(X)	5,714,026	253,665	6,360,537	304,413
35618 00	Other pumps (except vacuum pumps, automotive pumps, measuring and dispensing or service station pumps, hand pumps, and hydraulic fluid power pumps), including oil burner and appliance pumps, fire engine pumps, laboratory pumps, packaged pump units, hot water heating circulator pumps, etc.:					
	Reported (or estimated from prior year reports)	23	5,691,932	<sup>a</sup> 252,617	6,334,935	303,155
3339111580	Estimated from other sources <sup>3</sup>	10	22,094	1,048	(S)	1,258
	Parts and attachments for pumps and pumping equipment whose product codes begin with 33911; made by manufacturers of complete units only	(X)	(X)	1,097,375	(X)	1,002,538
3339115144	Aftermarket (spare) parts for centrifugal pumps	47	(X)	<sup>b</sup> 709,690	(X)	695,565
3339115155	Aftermarket (spare) parts for vertical turbine pumps	11	(X)	167,050	(X)	54,942
3339115166	Aftermarket (spare) parts for reciprocating pumps	21	(X)	96,609	(X)	<sup>f</sup> 95,100
3339115199	Other	25	(X)	<sup>a</sup> 124,026	(X)	156,931
3339121 pt.	Air and gas compressors	(X)	3,395,226	2,522,060	<sup>f</sup> 3,182,025	<sup>f</sup> 2,634,859
3339121115	Value of drivers <sup>2</sup>	28	(X)	<sup>a</sup> 252,885	(X)	<sup>f</sup> 277,656
	Air compressors, new:					
	Stationary, reciprocating, single acting	(X)	617,690	304,810	<sup>f</sup> 740,784	<sup>f</sup> 317,272
3339121121	1-1/2 hp and under	16	233,934	<sup>a</sup> 43,399	<sup>f</sup> 337,988	<sup>f</sup> 58,348
3339121124	Over 1-1/2 to 5 hp	20	156,666	100,270	253,490	131,268
3339121127	6 to 25 hp	20	226,343	144,345	<sup>f</sup> 147,959	<sup>f</sup> 110,980
333912112A	26 hp and over	9	<sup>a</sup> 747	<sup>b</sup> 16,796	1,347	16,676
3339121133	Stationary, reciprocating, double acting	12	17,648	<sup>a</sup> 40,964	<sup>f</sup> 27,764	43,575
	Stationary, rotary positive:					
	Discharge pressure 50 PSIG and under, all hp sizes.	9	84,547	32,679	<sup>f</sup> 93,625	<sup>f</sup> 43,835
3339121144	Discharge pressure of 51 PSIG and over	(X)	18,746	313,289	<sup>f</sup> 30,984	<sup>f</sup> 387,398
3339121151	40 hp and under	10	<sup>b</sup> 11,007	<sup>b</sup> 99,795	<sup>f</sup> 12,035	<sup>f</sup> 107,264
3339121154	41-150 hp	12	5,947	117,383	12,663	<sup>f</sup> 172,297
3339121157	151-300 hp	8	1,402	62,145	5,731	<sup>f</sup> 64,023
333912115A	301 hp and over	4	390	33,966	555	43,814

See footnotes at end of table.

**Table 14. Quantity and Value of Shipments of Pumps and Compressors: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3339121 pt.	Pumps and compressors—Con.					
	Air and gas compressors—Con.					
	Air compressors, new—Con.					
3339121166	Stationary, centrifugal and axial .....	8	25,071	242,470	<sup>1</sup> 25,719	276,720
	Portable .....	(X)	2,515,560	631,392	2,201,181	584,611
3339121171	Under 11 CFM .....	11	(D)	(D)	(D)	(D)
3339121174	11 to 74 CFM .....	10	(D)	(D)	(D)	(D)
3339121177	75 to 124 CFM .....	7	<sup>c</sup> 1,318	<sup>c</sup> 7,408	707	4,015
333912117A	125 to 249 CFM .....	9	<sup>c</sup> 12,384	<sup>c</sup> 98,981	12,710	<sup>1</sup> 101,037
333912117E	250 to 599 CFM .....	6	<sup>c</sup> 2,461	<sup>c</sup> 32,529	2,513	<sup>1</sup> 32,637
333912117H	600 CFM and over .....	7	<sup>c</sup> 2,156	<sup>c</sup> 88,281	2,209	<sup>1</sup> 89,255
	Gas compressors, new:					
	Stationary, centrifugal and axial .....	(X)	503	348,067	523	309,736
3339121183	Natural gas .....	5	135	139,913	74	119,060
3339121188	All other gases .....	7	368	208,154	449	190,676
	Stationary reciprocating:					
3339121199	Integral engine, including drivers .....	5	(D)	(D)	230	40,897
	Other than integral engine:					
33391211A1	1,000 hp and over .....	14	1,461	<sup>a</sup> 95,228	1,475	145,559
33391211A9	1,001 hp and over .....	7	(D)	(D)	1,043	260,140
33391211CC	Stationary rotary positive .....	5	659	49,576	889	<sup>1</sup> 46,720
33391211FF	Other compressors (except for refrigeration, air-conditioning, and ice-making), including rebuilt compressors, compressor packages, and packaged compressor units assembled from purchased compressors .....	14	<sup>c</sup> 49,593	108,656	<sup>1</sup> 57,808	129,719
	Air and gas compressors, n.s.k. <sup>3</sup> .....	16	62,618	46,730	(D)	48,677
	Laboratory vacuum pumps .....	(X)	(D)	(D)	(D)	(D)
3391110123	Laboratory vacuum pumps, including drivers and replacement parts .....	4	(D)	(D)	(D)	(D)
	Vacuum pumps, excluding laboratory .....	(X)	343,484	229,704	<sup>1</sup> 305,943	273,567
3339121225	Value of drivers <sup>2</sup> .....	14	(X)	22,163	(X)	<sup>1</sup> 30,162
	Low vacuum, 29.5" mercury vacuum and lower:					
3339121261	Under 5 hp .....	17	254,970	61,129	239,292	<sup>1</sup> 64,426
3339121265	5 hp and over .....	13	<sup>b</sup> 4,539	41,350	5,115	40,405
	High vacuum, 29.6" mercury vacuum and over:					
3339121273	Under 5 hp .....	14	<sup>c</sup> 60,863	61,088	<sup>1</sup> 58,698	<sup>1</sup> 93,375
3339121277	5 hp and over .....	6	<sup>b</sup> 2,627	<sup>b</sup> 30,317	2,838	28,881
	Vacuum pumps, n.s.k. <sup>3</sup> .....	16	20,485	13,657	(D)	16,318
	Parts and attachments for air and gas compressors and vacuum pumps whose product codes begin with 333912; made by manufacturers of complete units only .....	(X)	(X)	333,306	(X)	361,322
3339125111	Parts and attachments for air and gas compressors and vacuum pumps .....	39	(X)	333,306	(X)	361,322

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. n.s.k. Not specified by kind. pt. Part.  
<sup>1</sup>Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

<sup>1</sup>Value includes parts but quantity does not.

<sup>2</sup>Value of drivers (electric motors, internal combustion engines, hydrostatic transmissions, steam turbines, etc.) is not included for most product categories but rather placed in one of four separate "driver" categories within the product class. Drivers may be included in values for products in product classes without separate driver categories.

<sup>3</sup>Not specified by kind or "n.s.k.": Values and quantities for a number of manufacturing establishments (either delinquent or too small to be included in the survey) were estimated from other surveys and records. Estimates were made only to the product class level. Drivers may be included in some cases.

<sup>4</sup>Power pumps for water flooding are reported in product code 3339111363.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>16 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 15. Shipments, Exports, and Imports of Pumps and Compressors: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product description	Manufacturers' shipments <sup>1</sup>		Export shipments <sup>2</sup>		Import shipments <sup>4</sup>	
	Quantity	Value f.o.b. plant	Quantity	Value <sup>3</sup>	Quantity	Value <sup>5</sup>
<b>1998</b>						
Pumps <sup>6</sup> .....	22,643,560	4,094,717	1,977,702	911,730	30,583,320	591,071
Centrifugal pumps, submersible .....	703,204	252,851	256,380	61,867	781,827	35,062
Centrifugal pumps, other <sup>7</sup> .....	6,429,739	1,464,239	141,873	305,934	10,490,822	220,158
Turbine pumps, vertical .....	54,905	209,719	8,603	30,653	82,624	4,310
Reciprocating pumps .....	(D)	(D)	86,787	86,034	646,734	55,830
Diaphragm pumps .....	1,877,154	222,730	161,637	43,165	1,019,134	25,663
Rotary pumps .....	(D)	(D)	60,399	110,259	6,873,392	45,775
Oil well and oil field pumps (except boiler feed) .....	58,443	362,068	6,191	57,964	7,816	17,857
Domestic water systems, including windmill and hand pumps .....	2,337,603	408,882	417,633	25,227	29,986	30,095
Other pumps, including sump pumps, and hot water circulator pumps .....	9,399,189	546,194	838,199	190,627	10,650,985	156,321
Compressors <sup>6</sup> .....	3,332,608	2,475,330	1,905,853	183,405	914,161	258,306
Stationary air compressors:						
Reciprocating, single and double acting <sup>8</sup> .....	635,338	345,774	(NA)	(NA)	393,407	95,044
Rotary positive, centrifugal, and axial <sup>8</sup> .....	128,364	588,438	(NA)	(NA)	357,124	10,935
Portable air compressors <sup>8</sup> .....	2,515,560	631,392	4,433	63,318	3,792,622	101,754
Other air and gas compressors, including gas compressors, and compressor packages .....	53,346	909,726	1,901,420	120,087	4,599,008	50,573
Vacuum pumps .....	(D)	(D)	411,735	105,504	2,227,654	278,270
<b>1997</b>						
Pumps <sup>6</sup> .....	20,995,595	4,889,707	2,366,601	992,187	46,778,165	562,149
Centrifugal pumps, submersible .....	717,029	262,454	287,150	74,143	561,654	29,279
Centrifugal pumps, other <sup>7</sup> .....	4,519,950	1,300,721	159,761	316,085	9,008,684	205,800
Turbine pumps, vertical .....	59,004	223,049	6,126	23,686	19,702	4,987
Reciprocating pumps .....	(D)	(D)	93,411	103,508	448,932	53,775
Diaphragm pumps .....	1,691,417	217,310	191,029	51,984	894,792	22,444
Rotary pumps .....	(D)	(D)	84,470	133,595	1,539,105	40,108
Oil well and oil field pumps (except boiler feed) .....	59,369	332,669	7,048	66,456	59,629	11,458
Domestic water systems, including windmill and hand pumps .....	2,063,189	357,162	395,511	29,569	19,902,006	24,834
Other pumps, including sump pumps, and hot water circulator pumps .....	10,157,189	605,839	1,142,095	193,161	14,343,661	169,464
Compressors <sup>6</sup> .....	3,182,025	2,599,805	1,740,575	192,326	8,843,270	354,414
Stationary air compressors:						
Reciprocating, single and double acting <sup>8</sup> .....	768,548	360,847	(NA)	(NA)	545,505	99,179
Rotary positive, centrifugal, and axial <sup>8</sup> .....	150,328	707,953	(NA)	(NA)	388,073	123,574
Portable air compressors <sup>8</sup> .....	2,201,181	598,234	6,362	97,917	3,466,328	78,268
Other air and gas compressors, including gas compressors and compressor packages .....	61,968	932,771	1,734,213	94,409	4,443,364	53,393
Vacuum pumps .....	(D)	(D)	379,847	116,936	2,718,399	328,417

D Withheld to avoid disclosing data for individual companies. NA Not available.

<sup>1</sup>Manufacturers' shipments generally exclude value of drivers.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Excludes value of drivers.

<sup>4</sup>Source: Census Bureau report IM 145, *U.S. General Imports, and IM 146, U.S. Imports for Consumption*.

<sup>5</sup>Value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

<sup>6</sup>Manufacturers' shipments detail does not add to total because of such factors as drivers, parts, and "n.s.k."; see Table 13.

<sup>7</sup>Manufacturers' shipments include n.s.k. (see Table 13) which is believed not to include submersible pumps.

<sup>8</sup>Export data for three categories of compressors are combined because one harmonized code in third category may be used interchangeably with any of several codes in first two categories.



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**HISTORICAL NOTE**

Data on pumps and compressors have been collected by the Census Bureau since 1960. Data on hydraulic fluid power pumps and motors formerly collected on this survey are now included in the Current Industrial Report, MA35N, Fluid Power Products. Historical data may be obtained from Current Industrial Reports available at your

local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information on these data, contact Keeley Voor, 301-457-4746.

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# ANTIFRICTION BEARINGS—MA332Q (FORMERLY MA35Q)

## INTRODUCTION

These data cover companies engaged in the manufacture of complete antifriction bearings and components, including balls and rollers, in the United States.

The statistics were collected by mail on Census Bureau annual Form MA332Q, Antifriction Bearings. The survey panel includes all known producers of these products, approximately 84 companies.

## SUMMARY OF FINDINGS

The value of shipments of complete antifriction bearings and components, including balls and rollers, was \$5,877.8 million in 1998, an increase of 3 percent over shipments of \$5,723.2 million in 1997. The 1998 total includes complete ball bearings, \$2,110.1 million, an increase of 1 percent over the 1997 value of shipments; complete tapered roller bearings and roller bearing parts (except rollers), \$1,532.4 million, an increase of 8 percent; other complete roller bearings, \$1,171.1 million, an increase of 5 percent; mounted bearings (except plain), \$450.6 million, a decrease of 6 percent; and parts and components for ball and roller bearings, sold separately, \$613.3 million, a decrease of 7 percent.

## EXPLANATION OF TERMS

**Antifriction bearing.** A bearing using rolling elements, i.e., balls or rollers. Plain bearings, i.e., those with no rolling elements, are not included.

**Ball bearings, complete.** An antifriction bearing using balls as rolling elements.

**Annular ball bearing.** An antifriction bearing primarily designed to support load perpendicular to shaft axis. More commonly called "radial" ball bearing.

**Ground or precision.** Excludes all unground ball bearings.

**Single-row conrad-ball bearing.** A deep groove ball bearing with only one row of balls and a cage (i.e., retainer, separator). Included are all standard and special types, all inner race configurations (extended, wide, etc.), and all outer race configurations (spherical outside diameter, cylindrical outside diameter, wide, etc.).

**Miniature ball bearing.** Ball bearing with outside diameter below, but not including, 3/8 in. or 9 mm outside diameter.

**ABEC 1 and ABEC 3.** The "regular" standards of ground ball bearing precision.

**ABEC 5 and up.** The higher or "precision" standards of ground ball bearing precision.

**Single-row maximum capacity type.** Distinguished from the conrad type by a filling slot in both outer and inner rings, which allows the bearing to contain a greater number of larger balls than the corresponding conrad bearing without filling slots. Also known as "max" type, "full complement," or "filling slot" ball bearings.

**Integral shaft and integral spindle ball bearings.** Bearings that have a solid inner race, i.e., a shaft that has the ball raceway(s) ground into the shaft surface, thus making the inner race/shaft integral to the bearing. Examples include, but are not restricted to, water pump bearings, some automotive hub units, and computer spindle bearings.

**Double-row ball bearing.** A unitary bearing with two rows of balls. Includes both angular contact and deep groove types, and both conrad and max types. All ABEC 1 and up of all standard and special configurations are included, but self-aligning, double-row bearings are not included.

**Angular contact ball bearings.** Bearings that have a single row of balls whose internal clearances and ball race locations result in a definite contact angle and predetermined relationship of inner to outer ring faces. All standard and special configurations and all ABEC 1 and up precisions are included.

**All other ground or precision ball bearings (ABEC 1 and up).** All radial ball bearings not covered previously. This category includes only those ground ball bearings, etc., that are not classified above. It includes linear ball bearings.

**Ground ball bearings of less than ABEC 1 precision.** All types of radial (single-row, double-row, angular contact, and other) ball bearings that have ground raceways but are less than the ABEC 1 precision grade.

**Unground, including self-aligning (less than ABEC 1).** Antifriction ball bearings with unground raceways. All radial types, styles, and configurations are included.

**Thrust ball bearings.** Concentric axial loading only, both ground (less than ABEC 1 and up) and unground types, of all configurations. Both single-direction thrust and double-direction thrust ball bearings are included. Angular contact bearings are not included.

**Other ball bearings.** Bearings that do not qualify under any of the previous categories. This category only includes bearings that have not been described previously.

**Tapered roller bearing.** An antifriction bearing using taper-shaped rollers as rolling elements.

**Cup and cone assemblies shipped as a set.** This is a complete tapered roller bearing, which includes the cup and cone and roller assembly, each of which may be sold separately.

**Cups.** Tapered bearing outer races.

**Cone assemblies.** Tapered bearing inner race, with cage and rollers.

**Other parts, except rollers.** Includes cages, spacers, railroad end caps, and other miscellaneous items.

**Cylindrical roller bearing.** An antifriction bearing using cylindrical shaped rollers as the rolling elements. Axes of rollers are parallel to the bearing axis. Regular (ABEC 1 and 3) and precision (ABEC 5 and up) are reported separately, but within each category all types and configurations are included: single-row and multirow, radial and thrust, traction motor, journal, aeroengine, and others, except those classified as needle roller bearings, as defined below.

**Spherical roller bearing.** A self-aligning antifriction bearing using convex (spherical, or barrel-shaped) or concave (hourglass shaped) rollers as the rolling elements.

Within each category of single-row and double-row types, all configurations of radial and thrust, and all precisions are included: geared outer, spherangular, air frame, and all other similar types.

**Needle roller bearing.** An antifriction bearing using "needle" roller elements. Needle rollers are cylindrically shaped, but are long and slim, with a uniform diameter not exceeding 5 mm and having a length of a least three times the diameter. The ends of the rollers may be of several shapes.

**Linear bearings.** A roller bearing designed for linear relative motion between its raceways in the direction of rolling. Only includes linear roller bearings. Those pertaining to ball bearings are included in "All other ground or precision ball bearings (ABEC 1 and Up)" category.

**Other roller bearings not specified above.** This category includes roller bearings not classified above.

**Mounted bearings, except plain.** Antifriction ball or roller bearings that are encased (mounted) in an enclosure (a mounting, or housing closure) that is usually made of iron, steel, or rubber. The enclosure, or housing, may be of one piece (unit) or two-piece (split) construction. Major types included are pillow blocks, flange units, takeup units, "rubber tired" bearings, and any other types of mounted bearings. Loose inserts sold separately are not included here, but are included in appropriate bearing categories above.

**Table 16. Value of Shipments for Complete Antifriction Bearings and Components, Including Balls and Rollers by Product Class: 1989 to 1998**

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
332991	Ball and roller bearings . . . . .	5,877.8	5,723.1	5,488.0	5,205.4	4,693.8	4,331.1	4,011.3	3,778.9	4,064.2	3,965.3
3329911	Ball bearings, complete . . . .	2,110.1	2,095.9	1,989.1	1,896.7	1,676.2	1,616.8	1,484.2	1,406.7	1,469.0	1,420.9
3329913	Tapered roller bearings, cups and cones . . . . .	1,532.4	1,420.9	1,408.8	1,283.1	1,139.2	1,001.0	935.6	876.8	977.3	963.9
3329915	Roller bearings, complete . . .	1,171.3	1,117.2	1,017.4	987.5	935.5	810.4	773.1	794.3	872.4	849.6
3329917	Mounted bearings (except plain) . . . . .	450.6	426.1	458.4	459.7	407.8	439.4	378.0	322.9	362.9	344.9
3329919	Parts and components for ball and roller bearings, including balls and rollers sold separately . . . . .	613.3	663.0	614.3	578.5	535.1	467.0	440.4	378.3	382.6	386.1

<sup>†</sup>Revised by 5 percent or more from previously published data.

**Table 17. Quantity and Value of Shipments of Antifriction Ball and Roller Bearings, Components, and Parts: 1998 and 1997**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
332991	Antifriction bearings and components . . . . .	(X)	(X)	<sup>5</sup> 5,877,759	(X)	5,723,117
3329911	Ball bearings, complete . . . . .	73	612,451	2,110,119	611,911	2,095,937
	Annular, including self-aligning:					
	Ground or precision:					
	Single-row conrad:					
	Miniature (below 9 mm outside diameter):					
3329911001	Regular (ABEC 1 and 3) . . . . .	3	(D)	(D)	(D)	(D)
3329911002	Precision (ABEC 5 and up) . . . . .	5	5,542	22,408	5,905	24,400
	Other regular (ABEC 1 and 3):					
3329911003	9 mm outside diameter through 30 mm outside diameter . . . . .	11	79,228	77,058	81,316	79,467
3329911004	Over 30 mm outside diameter through 52 mm outside diameter . . . . .	21	126,821	194,611	131,945	204,608
3329911005	Over 52 mm outside diameter through 100 mm outside diameter . . . . .	22	36,467	218,163	38,665	212,208
3329911007	Over 100 mm outside diameter . . . . .	22	5,169	191,717	5,299	193,754
	Other precision (ABEC 5 and up):					
3329911009	9 mm outside diameter through 30 mm outside diameter . . . . .	6	5,563	63,844	5,422	69,046
3329911011	Over 30 mm outside diameter through 52 mm outside diameter . . . . .	9	665	46,039	720	46,781
3329911012	Over 52 mm outside diameter through 100 mm outside diameter . . . . .	8	211	36,909	229	36,634
3329911013	Over 100 mm outside diameter . . . . .	8	74	56,892	51	49,183
3329911014	Single-row maximum capacity type . . . . .	10	1,752	25,704	1,520	24,702
3329911018	Integral shaft and integral spindle ball bearings . . . . .	7	21,167	303,253	22,631	331,398
3329911020	Double row . . . . .	14	31,394	213,056	29,047	200,992
	Angular contact:					
3329911019	Regular . . . . .	13	1,066	78,738	1,084	73,031
3329911023	Precision . . . . .	3	<sup>c</sup> 5,652	<sup>b</sup> 77,025	<sup>b</sup> 6,285	<sup>b</sup> 83,081
3329911024	All other ground or precision bearings (ABEC 1 and up) . . . . .	4	(D)	(D)	(D)	(D)
3329911027	Ground bearings of less than ABEC 1 precision . . . . .	6	<sup>b</sup> 11,195	<sup>a</sup> 68,884	<sup>c</sup> 9,614	<sup>b</sup> 53,850
3329911029	Unground, including self-aligning (less than ABEC 1) . . . . .	18	221,210	135,028	217,655	129,535
	Thrust ball bearings:					
3329911033	Ground . . . . .	14	7,786	33,367	7,799	33,156
3329911035	Unground . . . . .	5	<sup>a</sup> 6,244	12,024	<sup>a</sup> 5,919	12,446
3329911055	Other ball bearings . . . . .	20	43,544	243,002	39,080	224,957
3329913	Tapered roller bearings . . . . .	19	263,181	1,532,382	264,622	1,420,860
3329913032	Cup and cone assemblies shipped as a set . . . . .	17	(D)	(D)	(D)	(D)
3329913033	Cups shipped separately . . . . .	14	(D)	(D)	(D)	(D)
3329913034	Cone assemblies shipped separately . . . . .	17	124,328	634,420	125,052	613,967
3329915	Cylindrical, spherical, needle, and other roller bearings . . . . .	41	876,623	1,171,313	<sup>f</sup> 849,063	1,117,246
	Cylindrical roller bearings:					
3329915011	Regular (ABEC 1 and 3) . . . . .	24	131,066	224,865	89,151	<sup>f</sup> 194,550
3329915012	Precision (ABEC 5 and up) . . . . .	7	201	81,013	<sup>f</sup> 198	74,969
	Spherical roller bearings, including hourglass and barrel:					
3329915024	Single-row . . . . .	5	(D)	(D)	(D)	(D)
3329915025	Double-row . . . . .	6	766	177,687	808	190,827
3329915041	Needle roller bearings . . . . .	15	612,089	523,473	<sup>f</sup> 658,099	511,720
3329915093	Other roller bearings not specified above . . . . .	19	(D)	(D)	(D)	(D)

See footnotes at end of table.

Table 17. **Quantity and Value of Shipments of Antifriction Ball and Roller Bearings, Components, and Parts: 1998 and 1997—Con.**

[Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
332991	Antifriction bearings and components—Con.					
3329917	Mounted bearings (except plain) . . . . .	20	9,357	450,632	9,240	426,063
3329917017	Ball bearings, unit and/or split-mounted . . . . .	12	8,172	230,042	8,112	233,464
	Roller:					
3329917053	Unit mounted . . . . .	9	1,005	187,062	1,005	164,210
3329917055	Split-mounted . . . . .	6	181	33,528	123	28,389
3329919	Parts and components for ball and roller bearings, including balls and rollers sold separately . . . . .	66	(X)	613,313	(X)	663,011
3329919011	Balls:					
	Shipments (quantity in millions of units) . . .	21	27,993	221,664	31,022	256,304
3329919021	Production for all purposes (quantity in thousands of units) . . . . .	(X)	(S)	(X)	(S)	(X)
	Other antifriction ball and bearing components and parts, including unassembled ball bearings, cages, housing closures, and races . . . . .	20	(X)	99,237	(X)	104,807
3329919031	Rollers:					
	Shipments (quantity in thousands of units) .	19	15,028	136,616	16,251	140,737
	Production for all purposes (quantity in thousands of units) . . . . .	(X)	(S)	(X)	(S)	(X)
	Other roller bearing parts and components (except rollers):					
3329919035	For tapered roller bearings (except cup and cone assemblies) . . . . .	11	(X)	76,722	(X)	80,919
3329919036	For cylindrical roller bearings . . . . .	6	(X)	21,890	(X)	22,852
3329919037	For spherical roller bearings . . . . .	3	(X)	(D)	(X)	(D)
3329919049	For other roller bearings . . . . .	10	(X)	(D)	(X)	(D)
3329919059	Housing and parts and components for housings, including housing closures, collars, spacers, sleeves, adapters, and other miscellaneous items . . . . .	5	(X)	(D)	(X)	(D)

D Withheld to avoid disclosing data for individual companies.  
S Does not meet publication standards.

† Revised by 5 percent or more from previously published data.

X Not applicable.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>15 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 18. Shipments, Exports, Imports, and Apparent Consumption of Antifriction Bearings and Components, Including Balls and Rollers: 1998 and 1997**

[Quantity in thousands of units. Value and duty in thousands of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Imports for consumption <sup>2</sup>		Apparent consumption <sup>3</sup>	
	Quantity	Value f.o.b. plant	Quantity	Value at port	Quantity	C.i.f. and calculated duty	Quantity	Value
<b>1998</b>								
Radial ball bearings .....	547,740	1,563,864	16,674	134,673	547,625	653,387	1,078,691	2,082,578
Integral shaft and spindle ball bearings .....	21,167	303,253	1,698	19,615	19,676	56,743	39,145	340,381
Other ball bearings .....	43,544	243,002	20,723	109,116	64,242	61,403	87,063	195,289
Tapered roller bearings .....	263,181	1,532,382	16,554	234,753	58,910	195,470	305,537	1,493,099
Cylindrical roller bearings .....	131,267	305,878	2,791	56,691	15,368	114,214	143,844	363,401
Spherical roller bearings .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Needle roller bearings .....	612,089	523,473	14,511	61,092	24,813	36,002	622,391	498,383
Other roller bearings.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Mounted bearings:								
Ball.....	8,172	230,042	603	23,652	3,577	24,655	11,146	231,045
Roller.....	1,186	220,590	158	9,034	933	8,747	775	(287)
Parts for ball and roller bearings:								
Balls (quantity in thousands of units) .	27,993	221,664	(NA)	29,361	(NA)	20,492	27,993	212,795
Rollers (quantity in thousands of units) .	14,938	135,895	(NA)	54,894	(NA)	29,275	14,938	110,276
Other parts for tapered roller and ball bearings .....	(X)	(D)	(NA)	(D)	(NA)	(D)	(NA)	(D)
<b>1997</b>								
Radial ball bearings .....	550,200	1,539,582	18,132	164,027	520,486	629,436	1,052,554	2,004,991
Integral shaft and spindle ball bearings .....	22,631	331,398	1,922	22,630	18,530	51,667	39,239	360,435
Other ball bearings .....	39,080	224,957	20,139	106,972	72,714	75,135	91,655	193,120
Tapered roller bearings .....	264,622	1,420,860	20,606	260,495	65,891	169,870	309,907	1,330,235
Cylindrical roller bearings .....	89,349	269,519	2,038	53,588	10,879	108,743	98,190	324,674
Spherical roller bearings .....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Needle roller bearings .....	658,099	511,720	16,353	63,069	19,899	32,722	661,645	481,373
Other roller bearings.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Mounted bearings:								
Ball.....	8,112	233,464	474	21,335	2,935	22,133	10,573	234,262
Roller.....	1,128	192,599	177	10,356	2,974	13,801	3,925	196,044
Parts for ball and roller bearings:								
Balls (quantity in thousands of units) .	31,008	249,239	(NA)	31,297	(NA)	13,097	31,008	231,039
Rollers (quantity in thousands of units) .	16,251	141,340	(NA)	35,580	(NA)	25,189	16,251	130,949
Other parts for tapered roller and ball bearings .....	(X)	(D)	(NA)	(D)	(NA)	(D)	(NA)	(D)

D Withheld to avoid disclosing data for individual companies. NA Not available. <sup>1</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>Apparent consumption is derived by subtracting exports from manufacturers' shipments plus imports.

**HISTORICAL NOTE**

Data on antifriction bearings have been collected by the Census Bureau since 1972. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Dana Brooks, 301-457-4797.

## MOTORS AND GENERATORS—MA335H (FORMERLY MA36H)

### INTRODUCTION

These data cover firms engaged in the manufacture of electric motors and generators and engine-driven generator sets in the United States. The statistics were collected by mail on Census Bureau annual Form MA335H, Motors and Generators. The survey panel includes all known manufacturers of these products, approximately 256 companies.

### SUMMARY OF FINDINGS

During 1998, the total value of shipments of motors and generators, including interplant transfers, totaled \$10.9 billion, up 3.2 percent from the 1997 value of \$10.5 billion. The 1998 data for individual categories of motors and generators exhibited the following changes: The value

of shipments of fractional horsepower motors decreased 5.3 percent, from the revised value of \$4.7 billion in 1997, to \$4.5 billion in 1998. The integral horsepower motors and generators remained constant at \$2.2 billion. The value of land transportation motors and generators was combined with parts for motors and generators to avoid disclosing data for individual companies. The value of shipments of prime mover generator sets increased 18 percent from the 1997 value of \$1.7 billion, to \$2.0 billion in 1998. Electric motor generator sets decreased 3.1 percent from \$955 million in 1997, to \$925 million in 1998.

### EXPLANATION OF TERMS

For explanation of terms, see "Contact for Data Users" at the end of this subsection.

Table 19. Value of Shipments of Motors and Generators by Product Class: 1993 to 1998

[Millions of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993
335312	Motors and generators . . . . .	10,885.2	10,545.8	10,269.2	10,395.5	9,596.2	9,011.2
3353121	Fractional horsepower motors, excluding hermetics . . . . .	4,466.7	4,715.6	4,358.3	4,766.2	4,469.7	4,242.8
3353123	Integral horsepower motors and generators, other than for land transportation equip- ment . . . . .	2,233.8	2,246.0	2,337.5	2,134.7	1,951.4	1,695.0
3353125	Land transportation motors, generators, and control equipment <sup>1</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)
3353127	Prime mover generator sets (except steam or hydraulic turbine) . . . . .	2,047.2	1,734.8	1,505.1	1,480.6	1,395.6	1,245.9
3353129, 12A	Electric motor-driven generator sets . . . . .	925.0	954.7	1,029.6	944.2	811.4	740.1
335312C	Parts for motors and generators <sup>1</sup> . . . . .	1,212.5	894.8	1,038.6	1,069.8	968.1	1,087.4

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>For years 1993 through 1998, data for industry 3353125 are combined with industry 335312C to avoid disclosing data for individual companies.

**Table 20. Quantity and Value of Shipments of Motors and Generators: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335312	Motors and generators . . . . .	(NA)	(X)	10,885,206	(X)	10,545,797
3353121	Fractional horsepower, excluding hermetics and other rotating equipment . . . . .	(NA)	278,943,318	4,466,725	329,801,231	4,715,550
	Used in automobile accessories (such as heaters, convertible tops, and automatic windows; excluding starter motors and generators), including ac and dc . . . . .	15	108,575,379	1,515,523	131,089,367	1,686,414
	Used in aircraft and spacecraft, excluding generators:					
3353121004	Ac . . . . .	15	118,556	41,591	82,388	30,934
3353121007	Dc . . . . .	17	(D)	(D)	262,782	54,743
3353121011	Used in toys (all sizes) and clock type synch and subsynch timing, ac and dc . . . . .	5	(D)	(D)	7,346,837	50,966
	All other uses:					
	Ac (noncommutated) . . . . .	(NA)	113,515,822	1,670,332	129,912,912	1,684,688
	Single phase or polyphase:					
33531210X2, 0X3	Less than 746 watts, under 1 hp (three-digit FS) <sup>1</sup> . . . . .	(NA)	65,229	9,826	72,953	11,465
	Single phase:					
	Skeleton type shaded pole . . . . .	(NA)	19,891,947	96,142	38,594,974	132,266
3353121013	Less than 2.75-inch diameter at widest point <sup>2</sup> . . . . .	9	(D)	(D)	(D)	(D)
3353121016	2.75-inch diameter and over <sup>2</sup> . . . . .	5	19,891,947	96,142	38,594,974	132,266
	Conventional type shaded pole . . . . .	(NA)	53,398,425	475,405	51,767,636	448,821
3353121019	Less than 2.5-inch diameter . . . . .	6	(D)	(D)	(D)	(D)
	2.5- to less than 3.75-inch diameter:					
3353121022	2 pole . . . . .	8	6,548,677	125,275	5,319,527	90,770
3353121025	4 pole . . . . .	6	16,164,551	140,703	15,091,092	137,618
3353121028	6 pole and over . . . . .	2	(D)	(D)	(D)	(D)
3353121031	3.75- to less than 4.375-inch diameter . . . . .	4	(D)	(D)	(D)	(D)
	4.375- to less than 5.375-inch diameter:					
3353121034	2 and 4 pole . . . . .	7	2,580,448	34,733	3,062,982	40,777
3353121037	6 pole and over . . . . .	4	(D)	(D)	(D)	(D)
3353121041	5.375-inch diameter and over . . . . .	3	(D)	(D)	(D)	(D)
	Permanent split capacitor . . . . .	(NA)	24,791,074	502,935	24,369,582	517,115
3353121043	Less than 2.5-inch diameter <sup>3</sup> . . . . .	4	(D)	(D)	(D)	(D)
	2.5- to less than 3.75-inch diameter:					
3353121046	2 pole <sup>3</sup> . . . . .	8	1,985,928	49,892	2,058,870	55,172
3353121049	4 pole and over . . . . .	10	1,248,221	18,449	2,033,167	33,149
	3.75- to less than 4.375-inch diameter:					
3353121052	2 pole <sup>4</sup> . . . . .	4	(D)	(D)	(D)	(D)
3353121055	4 pole <sup>4</sup> . . . . .	7	(D)	(D)	(D)	(D)
3353121058	6 pole and over <sup>4</sup> . . . . .	3	10,842,191	134,358	9,838,887	119,683
	4.375- to less than 5.375-inch diameter:					
3353121061	2 pole <sup>5</sup> . . . . .	5	(D)	(D)	(D)	(D)
3353121064	4 pole <sup>5</sup> . . . . .	13	3,509,913	62,638	2,783,946	55,515
3353121067	6 pole and over . . . . .	7	494,768	13,247	471,273	14,811
	5.375- to less than 6-inch diameter:					
3353121071	Less than 746 watts, under 1 hp (two-digit FS) . . . . .	19	6,496,716	205,004	6,965,307	221,311
3353123004	746 watts and over, 1 hp and over (two-digit FS) <sup>6</sup> . . . . .	4	(D)	(D)	(D)	(D)
	6-inch diameter and over:					
3353123073	Less than 746 watts, under 1 hp (two-digit FS) . . . . .	9	213,337	19,347	218,132	17,474
3353123007	746 watts and over, 1 hp and over (two-digit FS) <sup>6</sup> . . . . .	6	(D)	(D)	(D)	(D)
	Capacitor start . . . . .	(NA)	2,966,581	141,072	3,136,716	147,401
3353121076	Less than 3.75-inch diameter <sup>7</sup> . . . . .	4	(D)	(D)	(D)	(D)
3353121079	3.75- to less than 4.375-inch diameter <sup>7</sup> . . . . .	1	1,082,284	13,670	1,072,796	14,099
3353121082	4.375- to less than 5.375-inch diameter . . . . .	6	135,415	7,370	138,163	7,280
	5.375- to less than 6-inch diameter:					
3353121085	Less than 746 watts, under 1 hp (two-digit FS) . . . . .	13	989,604	47,957	1,178,221	55,840
3353123011	746 watts and over, 1 hp and over (two-digit FS) <sup>6</sup> . . . . .	5	(D)	(D)	(D)	(D)
	6-inch diameter and over:					
3353121088	Less than 746 watts, under 1 hp (two-digit FS) . . . . .	10	759,278	72,075	747,536	70,182
3353123016	746 watts and over, 1 hp and over (two-digit FS) <sup>6</sup> . . . . .	8	(D)	(D)	(D)	(D)

See footnotes at end of table.



**Table 20. Quantity and Value of Shipments of Motors and Generators: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335312	Motor and generators—Con.					
3353121	Fractional horsepower, excluding hermetics and other rotating equipment—Con.					
	All other uses—Con.					
	Ac (noncommutated)—Con.					
	Single phase or polyphase—Con.					
	Single phase—Con.					
	Split phase .....	(NA)	2,667,591	85,117	3,276,390	106,286
3353121091	Less than 3.75-inch diameter .....	2	(D)	(D)	(D)	(D)
3353121094	3.75- to less than 5.375-inch diameter .....	6	(D)	(D)	(D)	(D)
	5.375-to less than 6-inch diameter:					
3353121097	Less than 746 watts, under 1 hp (two-digit FS)....	13	2,667,591	85,117	3,276,390	106,286
3353123019	746 watts and over, 1 hp and over (two-digit FS) <sup>6</sup> ..	5	(D)	(D)	(D)	(D)
	6-inch diameter and over:					
33531210A1	Less than 746 watts, under 1 hp (two-digit FS)....	8	(D)	(D)	(D)	(D)
3353123022	746 watts and over, 1 hp and over (two-digit FS) <sup>6</sup> ..	4	(D)	(D)	(D)	(D)
	All other single phase .....	11	7,628,354	184,867	<sup>†</sup> 6,892,341	<sup>†</sup> 169,883
33531210A4	Less than 6-inch diameter .....	11	7,628,354	184,867	<sup>†</sup> 6,892,341	<sup>†</sup> 169,883
	6-inch diameter and over:					
33531210A7	Less than 746 watts, under 1 hp (two-digit FS)....	4	(D)	(D)	(D)	(D)
3353123025	746 watts and over, 1 hp and over (two-digit FS) <sup>6</sup> ..	5	(D)	(D)	(D)	(D)
	Polyphase (servo and nonservo) .....	(NA)	2,106,621	174,968	1,802,320	151,451
33531210B1	Synchronous stepper motors.....	8	323,080	10,740	367,818	10,839
	All other polyphase:					
33531210B4	Servo (induction rotor) <sup>8</sup> .....	4	(D)	(D)	(D)	(D)
	Nonservo:					
33531210B7	Less than 5.375-inch diameter <sup>8</sup> .....	12	484,518	34,603	<sup>†</sup> 256,260	26,510
	5.375- to less than 6-inch diameter:					
33531210C1	Less than 746 watts, under 1 hp (two-digit FS)...	13	644,759	63,708	600,270	57,106
3353123028	746 watts and over, 1 hp and over (two-digit FS) <sup>9</sup> .....	6	(D)	(D)	(D)	(D)
	6-inch diameter and over:					
33531210C4	Less than 746 watts, under 1 hp (two-digit FS)...	14	654,264	65,917	577,972	56,996
3353123031	746 watts and over, 1 hp and over (two-digit FS) <sup>9</sup> .....	8	(D)	(D)	(D)	(D)
	Ac (commutated) .....	(NA)	37,200,443	510,194	49,328,544	576,200
	Mechanically commutated (brushes, for example):					
	Cased or sleeved:					
33531210C7	Less than 2.875-inch diameter .....	16	7,708,548	95,528	7,440,021	100,822
33531210E1	2.875- to less than 3.188-inch diameter .....	12	7,907,620	92,864	10,035,116	112,885
33531210E4	3.188- to less than 3.563-inch diameter .....	13	296,496	17,202	245,232	16,051
	3.563-inch diameter and over:					
33531210E7	Less than 746 watts, under 1 hp (two-digit FS).....	10	269,130	31,104	349,185	43,078
3353123034	746 watts and over, 1 hp and over (two-digit FS) <sup>10</sup> .....	8	(D)	(D)	(D)	(D)
	Uncased:					
33531210F1	Less than 2.875-inch diameter <sup>11</sup> .....	9	(D)	(D)	(D)	(D)
33531210F4	2.875- to less than 3.188-inch diameter <sup>11</sup> .....	6	20,722,519	273,496	31,258,990	303,364
33531210F7	3.188- to less than 3.563-inch diameter .....	1	(D)	(D)	(D)	(D)
33531210G1	3.563- to less than 4.375-inch diameter .....	3	(D)	(D)	(D)	(D)
	4.375-inch diameter and over:					
33531210G4	Less than 746 watts, under 1 hp (two-digit FS).....	2	(D)	(D)	(D)	(D)
3353123037	746 watts and over, 1 hp and over (two-digit FS) <sup>10</sup> ..	2	(D)	(D)	(D)	(D)
	Dc or universal motors by case size .....	(NA)	11,879,371	639,261	11,778,401	631,605
	By case diameter:					
33531210M1	Less than 4-inch diameter .....	(S)	(S)	(S)	(S)	(S)
33531210M5	4-inch diameter and over .....	(S)	(S)	(S)	(S)	(S)
	Permanent magnet (brushless):					
	Servo:					
33531210G7	Less than 4-inch diameter .....	20	1,434,195	120,412	1,386,972	129,332
33531210H1	4-inch diameter and over .....	18	126,440	55,294	129,935	54,989
	Nonservo:					
33531210H4	Less than 4-inch diameter .....	22	7,468,349	186,604	7,426,841	177,148
33531210H7	4-inch diameter and over .....	17	527,935	81,882	<sup>†</sup> 491,001	<sup>†</sup> 71,618
33531210J1	Wound field .....	10	119,456	13,965	131,256	15,517
33531210J4	Electronically commutated .....	9	1,967,523	131,058	1,958,600	131,004
	All other:					
33531210J7	Servo .....	13	198,612	41,040	193,887	39,636
33531210K1	Nonservo .....	6	36,861	9,006	59,909	12,361

See footnotes at end of table.

**Table 20. Quantity and Value of Shipments of Motors and Generators: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335312	Motors and generators—Con.					
3353123	Integral horsepower, excluding hermetics and other rotating equipment . . . . .	(NA)	9,014,495	2,233,824	8,733,132	2,245,951
3353123001	Used in aircraft and spacecraft, excluding generators . . . . .	4	(D)	(D)	(D)	(D)
	All other uses:					
	Ac (noncommutated) . . . . .	(NA)	5,166,541	1,608,225	5,047,393	1,627,229
	Motors (single, polyphase induction, and synchronous):					
	Single phase . . . . .	(NA)	1,972,747	197,112	1,919,810	186,226
33531210K4	Less than 746 watts, under 1 hp (three-digit FS) <sup>1</sup> . . . . .	4	(D)	(D)	(D)	(D)
3353123041	746 watts and over, 1 hp and over (three-digit FS) . . . . .	15	281,315	60,800	289,684	61,664
33531230X4	746 watts and over, 1 hp and over (two-digit FS) <sup>6</sup> . . . . .	(NA)	1,691,432	136,312	1,630,126	124,562
	Polyphase induction, excluding synchronous . . . . .	(NA)	3,189,339	1,382,467	3,121,505	1,409,354
	All motors, including Energy Efficient (EE):					
33531210K7	Less than 0.746 watts, less than 1 hp (three-digit FS) <sup>1</sup> . . . . .	7	(D)	(D)	(D)	(D)
33531230X5	746 watts and over, 1 hp and over (two-digit FS) <sup>9</sup> . . . . .	(NA)	1,099,796	121,346	1,069,731	120,591
3353123043	0.746 to 3.371 kW, 1 through 5 hp . . . . .	28	1,215,080	205,448	1,233,811	198,097
3353123046	3.731 to less than 14.921 kW, greater than 5 through 20 hp . . . . .	30	542,583	203,522	516,323	187,173
3353123049	14.921 to less than 37.301 kW, greater than 20 through 50 hp . . . . .	27	214,573	168,474	174,532	166,458
3353123052	37.301 to less than 74.601 kW, greater than 50 through 100 hp . . . . .	24	56,756	129,678	63,571	128,536
3353123055	74.601 to less than 149.201 kW, greater than 100 through 200 hp . . . . .	23	35,891	154,828	35,561	159,043
3353123058	149.601 to less than 373.001 kW, greater than 200 through 500 hp . . . . .	24	19,975	226,040	21,911	236,694
3353123061	373.001 to less than 746.001, greater than 500 through 1,000 hp . . . . .	12	1,633	54,753	2,533	79,301
3353123064	746.001 to less than 1865.001 kW, greater than 1,000 through 2,500 hp . . . . .	5	(D)	(D)	3,267	97,811
3353123067	1,865.001 kW and over, greater than 2,500 hp . . . . .	5	(D)	(D)	265	35,650
	Energy efficient motors, included in product codes 3353123043 to 3353123055 . . . . .	(NA)	445,974	339,926	323,284	265,197
33531230E1	0.746 to 3.371 kW, 1 through 5 hp . . . . .	12	173,656	47,359	130,238	35,113
33531230E3	3.731 to less than 14.921 kW, greater than 5 through 20 hp . . . . .	14	126,512	62,091	101,730	45,637
33531230E5	14.921 to less than 37.301 kW, greater than 20 through 50 hp . . . . .	14	96,671	77,256	52,516	56,078
33531230E7	37.301 to less than 74.601 kW, greater than 50 through 100 hp . . . . .	11	30,784	71,334	23,672	53,041
33531230E9	74.601 to less than 149.201 kW, greater than 100 through 200 hp . . . . .	12	18,351	81,886	15,128	75,328
3353123085	Synchronous (servo and nonservo) . . . . .	6	4,455	28,646	6,078	31,649
	Ac generators (for internal combustion engines) . . . . .	(NA)	140,139	331,212	114,793	315,562
3353123088	Less than 5 kVA <sup>12</sup> . . . . .	3	(D)	(D)	(D)	(D)
3353123091	5 to less than 15 kVA <sup>12</sup> . . . . .	14	105,662	95,861	65,473	65,998
3353123094	15 to less than 75 kVA <sup>13</sup> . . . . .	8	(D)	(D)	(D)	(D)
3353123097	75 to less than 375 kVA <sup>13</sup> . . . . .	8	20,808	49,372	34,614	75,619
33531230A1	375 to less than 750 kVA . . . . .	7	(D)	(D)	8,586	43,772
33531230A4	750 kVA and over . . . . .	4	(D)	(D)	6,120	130,173
	Dc motors and generators, excluding all arc welding and battery charging generators for internal combustion engines . . . . .	(NA)	3,707,815	294,387	3,570,946	303,160
33531230A7	0.746 to less than 3.375 kW, 1 through 5 hp . . . . .	15	3,552,415	144,069	3,367,942	131,613
33531230X6	746 watts and over, 1 hp and over (two-digit FS) <sup>10</sup> . . . . .	(NA)	111,318	63,814	139,854	68,630
33531230B1	3.375 to less than 74.601 kW, 5 through 100 hp . . . . .	7	40,923	36,169	59,835	53,058
33531230B4	74.601 kW and over, greater than 100 hp . . . . .	6	3,159	50,335	3,315	49,859
3353125	Motors and generators for land transportation, including those used in associated control equipment <sup>14</sup> . . . . .	9	(D)	(D)	(D)	(D)
3353127	Prime mover generator sets (except steam or hydraulic turbine and electric motor-driven generator sets) . . . . .	(NA)	657,946	2,047,190	555,331	1,734,768
	Gas/gasoline engine-driven generator sets, ac and dc output . . . . .	(NA)	585,081	506,847	493,527	458,383
3353127001	Under 1.5 kVA <sup>15</sup> . . . . .	3	(D)	(D)	(D)	(D)
3353127004	1.5 to less than 5 kVA <sup>15</sup> . . . . .	19	272,632	120,846	319,136	164,662
3353127007	5 to less than 15 kVA . . . . .	19	298,364	210,871	162,879	163,592
3353127011	15 to less than 50 kVA . . . . .	17	9,674	60,708	7,702	45,455
3353127013	50 to less than 100 kVA . . . . .	14	3,058	39,411	2,789	30,249

See footnotes at end of table.

**Table 20. Quantity and Value of Shipments of Motors and Generators: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
335312	Motors and generators—Con.					
3353127	Prime mover generator sets (except steam or hydraulic turbine and electric motor-driven generator sets)—Con.					
	Gas/gasoline engine-driven generators, ac and dc output—Con.					
3353127016	100 to less than 500 kVA <sup>16</sup> .....	12	(D)	(D)	(D)	(D)
3353127019	500 to less than 1,000 kVA <sup>16</sup> .....	4	(D)	(D)	(D)	(D)
3353127022	1,000 kVA and over <sup>16</sup> .....	2	1,353	75,011	1,021	54,425
	Diesel engine-driven generator sets, ac and dc output .....	(NA)	72,865	1,540,343	61,804	1,276,385
3353127025	Under 15 kVA .....	19	14,208	90,417	20,071	109,428
3353127028	15 to less than 50 kVA .....	28	14,129	123,218	9,961	92,181
3353127031	50 to less than 100 kVA .....	26	12,583	125,191	7,353	85,020
3353127034	100 to less than 200 kVA .....	21	6,697	126,953	5,660	111,878
3353127037	200 to less than 400 kVA .....	20	17,098	349,762	10,495	220,426
3353127041	400 to less than 600 kVA .....	15	4,135	216,109	4,194	196,490
3353127043	600 to less than 800 kVA .....	16	1,015	89,882	934	70,465
3353127046	800 to less than 1,000 kVA .....	13	689	69,760	702	63,295
3353127049	1,000 to less than 2,000 kVA <sup>17</sup> .....	12	(D)	(D)	(D)	(D)
3353127052	2,000 to less than 3,000 kVA <sup>17</sup> .....	5	(D)	(D)	(D)	(D)
3353127055	3,000 kVA and over <sup>17</sup> .....	3	2,311	349,051	2,434	327,202
	Dual fuel (oil and gas) engine-driven generator sets, ac and dc output .....	(NA)	(S)	(S)	(S)	(S)
3353127058	Under 2,000 kVA .....	-	-	-	-	-
3353127061	2,000 kVA and over .....	-	-	-	-	-
3353127064	Other generator set units, excluding electric motor-driven generator sets .....	4	(S)	(S)	(S)	(S)
3353129, 12A	Electric motor-driven generator sets .....	(NA)	22,700,620	924,956	22,480,882	954,738
	Electric motor-driven generator sets, including dynamotors, converters, inverters, and frequency changers:					
335312A001	Synchro converters and double current generators, 746 watts or more <sup>18</sup> .....	2	(D)	(D)	(D)	(D)
	Other motor generator sets:					
3353129001	Ac and dc output rated at less than 746 watts <sup>18</sup> .....	6	10,552	7,977	9,659	6,446
	Ac and dc output rated at 746 watts or more:					
335312A004	Ac output, based on the rating of the largest ac generator <sup>19</sup> .....	8	(D)	(D)	(D)	(D)
335312A007	Dc output, based on the rating of the largest dc generator <sup>19</sup> .....	3	5,288	16,207	5,841	19,881
	Other rotating equipment:					
3353129004	Rate generators, resolvers, and combinations (less than 746 watts) <sup>20</sup> .....	10	(D)	(D)	(D)	(D)
3353129007	Synchro-type components, less than 746 watts <sup>20</sup> .....	6	658,310	152,955	<sup>1</sup> 477,350	135,088
	All hermetic motors:					
3353129011	5.5-inch stator core diameters, and smaller .....	9	12,244,891	278,762	11,576,625	291,346
335312A011	Over 5.5-inch stator core diameters .....	13	9,719,496	399,148	10,339,724	446,505
	All other rotating equipment:					
3353129013	Rated at less than 746 watts .....	8	56,564	23,761	61,930	25,521
335312A013	Rated at 746 watts or more .....	10	5,519	46,146	9,753	29,951
335312C	Parts for motors and generators regardless of output rating <sup>14 21</sup> ..	(NA)	(X)	1,212,511	(X)	894,790
335312C001	Commutators <sup>21</sup> .....	12	(X)	(D)	(X)	(D)
335312C004	Land transportation <sup>21</sup> .....	4	(X)	(D)	(X)	(D)
335312C007	All other parts <sup>21</sup> .....	60	(X)	(D)	(X)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. FS Frame size. NA Not available. <sup>1</sup>Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

<sup>1</sup>Data are included in product code 33531210X2, 0X3.

<sup>2</sup>Product codes 3353121013 and 3353121016 are combined to avoid disclosing data for individual companies.

<sup>3</sup>Product codes 3353121043 and 3353121046 are combined to avoid disclosing data for individual companies.

<sup>4</sup>Product codes 3353121052, 3353121055, and 3353121058 are combined to avoid disclosing data for individual companies.

<sup>5</sup>Product codes 3353121061 and 3353121064 are combined to avoid disclosing data for individual companies.

<sup>6</sup>Data are included in product code 33531230X4.

<sup>7</sup>Product codes 3353121076 and 3353121079 are combined to avoid disclosing data for individual companies.

<sup>8</sup>For 1997, product code 33531210B4 is included with product code 33531210B7 to avoid disclosing data for individual companies.

<sup>9</sup>Data are included in product code 33531230X5.

<sup>10</sup>Data are included in product code 33531230X6.

<sup>11</sup>Product codes 33531210F1 and 33531210F4 are combined to avoid disclosing data for individual companies.

<sup>12</sup>For 1997, product code 3353123088 is included with product code 3353123091 to avoid disclosing data for individual companies.

<sup>13</sup>For 1997, product code 3353123094 is included with product code 3353123097 to avoid disclosing data for individual companies.

Table 20. **Quantity and Value of Shipments of Motors and Generators: 1998 and 1997**—Con.

- <sup>14</sup>Industries 3353125 and 335312C are combined to avoid disclosing data for individual companies.
- <sup>15</sup>Product codes 3353127001 and 3353127004 are combined to avoid disclosing data for individual companies.
- <sup>16</sup>Product codes 3353127016, 3353127019, and 3353127022 are combined to avoid disclosing data for individual companies.
- <sup>17</sup>Product codes 3353127052, 3353127049, and 3353127055 are combined to avoid disclosing data for individual companies.
- <sup>18</sup>Product codes 335312A001 and 3353129001 are combined to avoid disclosing data for individual companies.
- <sup>19</sup>Product codes 335312A004 and 335312A007 are combined to avoid disclosing data for individual companies.
- <sup>20</sup>Product codes 3353129004 and 3353129007 are combined to avoid disclosing data for individual companies.
- <sup>21</sup>Product codes 335312C001, 335312C004, and 335312C007 are combined with industry 335312C to avoid disclosing data for individual companies.

Table 21. **Quantity and Value of Total Shipments and Interplant Transfers of Motors and Generators and Quantity of Motors and Generators Produced and Incorporated Into Other Products at the Same Establishment: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Total shipments, including interplant transfers		Interplant transfers		Produced and incorporated (quantity)
		Quantity	Value	Quantity	Value	
<b>1998</b>						
335312	Motors and generators:					
3353121	Fractional horsepower motors, excluding hermetics . . . . .	278,943,318	4,466,725	23,192,776	328,226	59,854,776
3353123	Integral horsepower motors and generators, excluding hermetics . . . . .	9,014,495	2,233,824	3,168,920	82,366	2,781,807
	Alternating current:					
3353123000	Polyphase, induction greater than 1 hp . . . . .	2,089,543	1,261,121	18,033	26,376	5,941
3353125	Motors and generators for land transportation equipment <sup>1</sup> . . .	(D)	(D)	(S)	(D)	(S)
3353127	Prime mover generator sets (except steam and hydraulic turbine) . . . . .	657,946	2,047,190	(D)	(D)	(D)
3353129	Electric motor generator sets and other rotating equipment, including hermetics with power rating less than 746 watts <sup>2</sup> . . .	(D)	(D)	(D)	(D)	(D)
335312A	Electric motor generator sets and other rotating equipment, including hermetics with a power rating of 746 watts or more <sup>2</sup> . . . . .	22,700,620	924,956	9,780,546	116,855	(D)
335312C	Parts for motors and generators <sup>1</sup> . . . . .	(X)	1,212,511	(X)	151,210	(X)
<b>1997</b>						
335312	Motors and generators:					
3353121	Fractional horsepower motors, excluding hermetics . . . . .	<sup>†</sup> 329,801,231	<sup>†</sup> 4,715,550	<sup>†</sup> 23,405,070	<sup>†</sup> 308,192	<sup>†</sup> 62,612,835
3353123	Integral horsepower motors and generators, excluding hermetics . . . . .	8,733,132	2,245,951	2,955,225	77,686	1,962,537
	Alternating current:					
3353123000	Polyphase, induction greater than 1 hp . . . . .	2,051,774	1,288,763	16,712	22,607	5,819
3353125	Motors and generators for land transportation equipment <sup>1</sup> . . .	(D)	(D)	(S)	(D)	(S)
3353127	Prime mover generator sets (except steam and hydraulic turbine) . . . . .	555,331	1,734,768	(D)	(D)	(D)
3353129	Electric motor generator sets and other rotating equipment, including hermetics with power rating less than 746 watts <sup>2</sup> . . .	(D)	(D)	(D)	(D)	(D)
335312A	Electric motor generator sets and other rotating equipment, including hermetics with a power rating of 746 watts or more <sup>2</sup> . . . . .	22,480,882	954,738	<sup>†</sup> 9,536,067	<sup>†</sup> 121,315	(D)
335312C	Parts for motors and generators <sup>1</sup> . . . . .	(X)	894,790	(X)	<sup>†</sup> 141,999	(X)

D Withheld to avoid disclosing data for individual companies. <sup>†</sup>Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

<sup>1</sup>Industries 3353125 and 335312C are combined to avoid disclosing data for individual companies.

<sup>2</sup>Industries 3353129 and 335312A are combined to avoid disclosing data for individual companies.

**Table 22. Shipments, Exports, Imports, and Apparent Consumption of Motors and Generators: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup> (value at port)	Imports for consumption <sup>2</sup> (value)
		Quantity	Value f.o.b. plant		
<b>1998</b>					
3353121	Fractional horsepower motors and generators (except hermetics) . . . . .	278,943,318	4,466,725	589,520	2,004,015
3353123	Integral horsepower motors and generators . . . . .	9,014,495	2,233,824	700,954	1,108,140
3353125	Motors and generators for land transportation <sup>3</sup> . . . . .	(D)	(D)	(D)	(D)
3353127	Prime mover generator sets (except steam or hydraulic and electric motor driven):				
	Gas/gasoline driven:				
	Less than 5 kVA (3353127001, 004) <sup>4</sup> . . . . .	272,632	120,846	(D)	(D)
	5 kVA and over (3353127007, 011, 013) <sup>4</sup> . . . . .	311,096	310,990	128,609	90,734
	Diesel engine-driven:				
	Less than 400 kVA (3353127025 - 037) <sup>5</sup> . . . . .	64,715	815,541	(D)	(D)
	400 kVA to less than 1,000 kVA (3353127041, 043, 046) <sup>5</sup> . . . . .	5,839	375,751	(D)	(D)
	1,000 kVA and over (3353127049 - 055) <sup>5</sup> . . . . .	2,311	349,051	410,129	121,933
	Other (3353127064) . . . . .	(S)	(S)	476,484	98,683
3353129, 12A	Electric motor-driven generator sets, hermetics, and other rotating equipment:				
	Synchronous converters, double current generators, and electric motor-driven generator sets (335312A001, 3353129001, 335312A004, 007) <sup>6</sup> . . . . .	15,840	24,184	(D)	(D)
	Hermetic motors (3353129011, 335312A011) <sup>6</sup> . . . . .	21,964,387	677,910	(D)	(D)
	Other rotating equipment (3353129007, 013, 335312A013) <sup>6</sup> . . . . .	720,393	222,862	8,245	6,371
335312C	Parts for all electric motors and generators (335312C001, 004, 007) <sup>3</sup> . . . . .	(X)	1,212,511	1,064,250	787,942
<b>1997</b>					
3353121	Fractional horsepower motors and generators (except hermetics) . . . . .	1329,801,231	14,715,550	509,972	1,827,670
3353123	Integral horsepower motors and generators . . . . .	8,733,132	2,245,951	869,256	951,185
3353125	Motors and generators for land transportation <sup>3</sup> . . . . .	(D)	(D)	(D)	(D)
3353127	Prime mover generator sets (except steam or hydraulic and electric motor driven):				
	Gas/gasoline driven:				
	Less than 5 kVA (3353127001, 004) <sup>4</sup> . . . . .	319,136	164,662	(D)	(D)
	5 kVA and over (3353127007, 011, 013) <sup>4</sup> . . . . .	173,370	239,296	74,717	78,878
	Diesel engine-driven:				
	Less than 400 kVA (3353127025 - 037) <sup>5</sup> . . . . .	53,540	618,933	(D)	(D)
	400 kVA to less than 1,000 kVA (3353127041, 043, 046) <sup>5</sup> . . . . .	5,830	330,250	(D)	(D)
	1,000 kVA and over (3353127049 - 055) <sup>5</sup> . . . . .	2,434	327,202	518,377	51,788
	Other (3353127064) . . . . .	(S)	(S)	420,097	19,058
3353129, 12A	Electric motor-driven generator sets, hermetics, and other rotating equipment:				
	Synchronous converters, double current generators, and electric motor-driven generator sets (335312A001, 3353129001, 335312A004, 007) <sup>6</sup> . . . . .	15,500	26,327	(D)	(D)
	Hermetic motors (3353129011, 335312A011) <sup>6</sup> . . . . .	21,916,349	737,851	(D)	(D)
	Other rotating equipment (3353129007, 013, 335312A013) <sup>6</sup> . . . . .	549,033	190,560	15,367	7,844
335312C	Parts for all electric motors and generators (335312C001, 004, 007) <sup>3</sup> . . . . .	(X)	894,790	101,251	741,665

D Withheld to avoid disclosing data for individual companies.      †Revised by 5 percent or more from previously published data.      S Does not meet publication standards.      X Not applicable.

<sup>1</sup>Source: Census Bureau Report, EM 545, *U.S. Exports*.

<sup>2</sup>Source: Census Bureau IM 145, *U.S. Imports for Consumption*.

<sup>3</sup>"Motor and generators for land transportation" and "Parts for all electric motors and generators" are combined to avoid disclosing data for individual companies.

<sup>4</sup>Exports and imports "Gas/gasoline engine-driven, less than 5 kVA" and "Gas/gasoline engine-driven, 5 kVA and over" are combined to avoid disclosing data for individual companies.

<sup>5</sup>Exports and imports for "Diesel engine-driven, less than 400 kVA," "Diesel engine-driven, 400 kVA to less than 1,000 kVA," and "1,000 kVA and over" are combined to avoid disclosing data for individual companies.

<sup>6</sup>Exports and imports for "Synchronous converters, double current generators, and electric motor-driven generator sets," "Hermetic motors," and "Other rotating equipment" are combined to avoid disclosing data for individual companies.

Note: Beginning in 1989, data for exports and imports were classified under a new harmonized system for better comparability.

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**HISTORICAL NOTE**

Data on motors and generators have been collected by the Census Bureau since 1960. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are

also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Tempie Whittington, 301-457-4800.

# Chapter 10.

## Heavy Machinery

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### FARM MACHINERY AND LAWN AND GARDEN EQUIPMENT—MA333A (FORMERLY MA35A)

#### INTRODUCTION

These data cover firms engaged in the manufacture of farm machinery and lawn and garden equipment. Very small firms (generally less than five employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies are excluded.

The statistics were collected by mail on Census Bureau annual Form MA333A, Farm Machinery and Lawn and Garden Equipment. The survey panel includes all known producers of these products, except the very small firms excluded from the scope of the survey. Approximately 751 companies are included. No estimate is derived for the small firms excluded from the survey.

#### SUMMARY OF FINDINGS

During 1998, factory shipments of farm machinery and equipment, including parts and attachments, produced by original equipment manufacturers (OEM), totaled \$14,024.1 million, little change from 1997 shipments of \$14,013.1 million. Shipments of farm dairy machines, sprayers, dusters, elevators, and farm blowers, and parts totaled \$998.1 million, an increase of 18 percent over the 1997 total of \$816.6 million. The value of shipments for harvesting machinery decreased 5 percent, from \$3,259.4 in 1997 to \$3,094.4 in 1998. Haying machinery increased 6 percent, from \$794.8 in 1997 to \$848.0 in 1998.

The value of shipments for commercial turf and ground equipment, including parts, was \$1,355.2 million in 1998, a 9-percent increase over the \$1,238.8 million reported for 1997.

The value of shipments of consumer lawn, garden, and snow equipment, including parts and attachments, was \$6,186.4 million in 1998, a 3-percent increase over the \$5,994.5 million in 1997.

#### EXPLANATION OF TERMS

**Net engine horsepower.** Net engine horsepower (nehp) is defined as net fly wheel performance as measured by the manufacturer, with all standard accessories operated, and corrected to 29.38 inches mercury Hg and temperature of 85 SD Fahrenheit.

**Lawn tractors and riding mowers.** A self-propelled riding vehicle, generally designed for cutting grass, that is not capable of pulling a plow.

**Garden tractors.** A self-propelled riding vehicle designed for general-purpose lawn and garden work. This vehicle is capable of pulling a plow. All attachments for garden tractors are removable.

**Turf tractors.** A self-propelled riding vehicle, typified by a low center of gravity, equipped with wide turf-tread tires.

**Parts for farm machinery and equipment.** Parts are manufactured components essential to the completeness and proper operation of a machine, vehicle, or apparatus. Parts data include only parts sold for replacement and repair. Parts sold to manufacturers for incorporation in their own products are excluded.

**Attachments for farm machinery and equipment.** Attachments are supplementary devices designed to be attached to a vehicle or apparatus. These supplementary devices either (1) vary or extend the function of the basic unit or (2) add to the convenience or effectiveness of the basic unit.

**Table 1. Value of Shipments of Farm Machinery and Lawn and Garden Equipment by Type of Equipment: 1992 to 1998**

[Value in millions of dollars]

Product description <sup>1</sup>	1998	1997	1996	1995	1994	1993	1992
Farm dairy machines, sprayers, dusters, elevators, and farm blowers . . . . .	998.1	816.6	839.2	764.7	709.0	591.1	469.9
Planting, seeding, and fertilizing machinery . . . . .	1,087.2	1,154.6	862.3	852.9	949.1	804.6	634.1
Harvesting machinery . . . . .	3,094.4	3,259.4	2,966.8	2,666.8	2,201.4	2,036.9	1,863.7
Haying machinery . . . . .	848.0	794.8	670.3	729.4	748.6	622.5	558.2
Plows, harrows, rollers, pulverizers, cultivators, and weeders . . . . .	632.2	696.3	542.0	512.5	480.4	404.4	380.8
Commercial turf and grounds care equipment . . . . .	1,355.2	1,238.8	1,118.5	1,120.3	1,022.0	880.8	781.8
Consumer nonriding lawn, garden, and snow equipment . . . . .	2,909.6	3,051.6	2,957.0	3,095.0	3,003.0	2,408.8	2,133.2
Consumer riding lawn, garden and snow equipment . . . . .	3,276.8	2,942.9	2,861.0	2,874.3	2,747.6	2,394.5	2,118.6

<sup>1</sup>Each type of farm machinery, commercial turf and grounds care equipment, and lawn and garden equipment includes parts and attachments.

**Table 2. Manufacturers' Shipments of Farm Machinery and Lawn and Garden Equipment by Type: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
333111	Farm machinery and equipment, including parts and attachments . . . . .	(NA)	(X)	14,024,082	(X)	14,013,089
3331111	Wheel tractors (except contractors' off-highway wheel tractors, garden tractors, turf tractors, and motor tillers) and attachments . . . . .	19	(X)	3,674,744	(X)	3,701,496
	Wheel tractors, farm-type (PTO hp) . . . . .	(NA)	(D)	(D)	(D)	(D)
3331111001	2-wheel drive, including front wheel assist types . . . . .	7	(D)	(D)	(D)	(D)
3331111006	4-wheel drive, including tractors with equal size tires, front and rear . . . . .	5	(D)	(D)	(D)	(D)
3331111011	Attachments for wheel tractors, farm-type . . . . .	12	(X)	39,061	(X)	42,388
333111C116	Parts for wheel tractors, farm-type . . . . .	15	(X)	336,849	(X)	353,460
3331113	Farm dairy machines, sprayers, dusters, elevators, and farm blowers . . . . .	(NA)	(X)	860,965	(X)	699,164
3331113 pt.	Farm dairy machines and equipment . . . . .	16	(X)	110,514	(X)	109,018
	Mechanical installations:					
3331113001	Milking machines, complete, suspended and floor-type bucket, single and double units . . . . .	3	(D)	(D)	(D)	(D)
3331113004	Pipeline milking units, complete, including claws, shells, inflations, and air tubes, with or without pulsator . . . . .	5	(D)	(D)	(D)	(D)
	Other farm dairy machines and equipment . . . . .	13	<sup>a</sup> 27,508	44,768	28,342	<sup>r</sup> 44,472
	Attachments for farm dairy machines and equipment . . . . .	6	(X)	(D)	(X)	(D)
	Parts for farm dairy machines and equipment, replacement units only . . . . .	9	(X)	23,787	(X)	27,371
3331113 pt.	Sprayers and dusters . . . . .	69	(X)	683,590	(X)	519,771
	Power sprayers, field and row crop types only:					
3331113016	Self-propelled . . . . .	16	<sup>b</sup> 5,364	460,826	4,355	306,775
3331113021	Tractor mounted . . . . .	29	<sup>b</sup> 7,005	<sup>a</sup> 16,637	<sup>a</sup> 8,766	<sup>b</sup> 18,127
	Other than tractor mounted:					
3331113024	Power take-off driven, piston pump type . . . . .	11	<sup>b</sup> 688	<sup>b</sup> 4,237	837	5,359
3331113028	Nonpiston pump type . . . . .	18	<sup>c</sup> 3,139	<sup>a</sup> 11,637	<sup>a</sup> 3,362	11,440
3331113032	Other power sprayers, over 4 g.p.m. . . . .	9	<sup>c</sup> 343	<sup>b</sup> 2,095	<sup>a</sup> 497	3,165
	Power sprayers, other than row crop and field types, over 4 g.p.m.:					
3331113036	Power take-off driven . . . . .	8	<sup>a</sup> 594	4,055	<sup>a</sup> 773	3,855
3331113041	Engine-driven . . . . .	14	<sup>a</sup> 3,780	6,594	<sup>c</sup> 4,129	<sup>c</sup> 6,121
3331113044	Air carried type power sprayers (field, row crop, and orchard types) . . . . .	6	<sup>b</sup> 580	<sup>b</sup> 6,232	740	<sup>a</sup> 7,475
3331113048	Foggers and mist sprayers, portable . . . . .	5	(D)	(D)	<sup>b</sup> 10,286	<sup>b</sup> 3,167
3331113052	Hand-pulled and garden-type 4 g.p.m. and under . . . . .	13	<sup>c</sup> 61,875	<sup>c</sup> 7,995	61,493	<sup>r</sup> 9,607

See footnotes at end of table.



**Table 2. Manufacturers' Shipments of Farm Machinery and Lawn and Garden Equipment by Type: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
3331113	Farm dairy machines, sprayers, dusters, elevators, and farm blowers—Con.					
3331113 pt.	Sprayers and dusters—Con.					
	Sprayers, agricultural hand:					
3331113056	Under 1 gallon . . . . .	4	(D)	(D)	692,658	3,698
	1 gallon and over:					
3331113061	Compressed air or gas . . . . .	6	7,647,565	110,895	6,591,679	106,160
3331113064	Other, including knapsack, hose end, and flame sprayers, and sprayer pumps . . . . .	9	11,943,788	16,990	9,229,689	14,732
3331113068	Dusters, power, and hand, all types . . . . .	5	83,842	3,159	82,996	1,066
3331113072	All other sprayers . . . . .	9	(X)	<sup>a</sup> 3,369	(X)	<sup>a</sup> 3,056
3331113076	Attachments for sprayers and dusters . . . . .	19	(X)	<sup>a</sup> 17,888	(X)	<sup>a</sup> 15,968
333111C223	Parts for sprayers and dusters, replacement units only . . . . .	44	(X)	<sup>a</sup> 105,351	(X)	79,791
3331113 pt.	Farm elevators and blowers . . . . .	33	(X)	66,861	(X)	70,375
	Farm elevators, portable:					
3331113081	Single and double chain . . . . .	10	2,178	4,433	<sup>a</sup> 1,855	<sup>c</sup> 3,881
3331113088	Auger type . . . . .	11	12,189	25,007	14,215	27,391
	Other farm portable and stationary augers and elevators . . . . .	11	53,919	<sup>b</sup> 20,244	48,250	<sup>b</sup> 25,082
3331113092	Other farm blowers, including forage blowers, and combination grain and forage blowers . . . . .	6	<sup>b</sup> 1,459	<sup>a</sup> 6,401	988	3,906
	Attachments for farm elevators and blowers . . . . .	11	(X)	<sup>a</sup> 10,776	(X)	<sup>c</sup> 10,115
	Parts for farm elevators and for grain and forage blowers, replacement units only . . . . .	20	(X)	<sup>b</sup> 7,992	(X)	<sup>b</sup> 10,272
3331117	Planting, seeding, and fertilizing machinery . . . . .	121	(X)	971,822	(X)	1,022,686
3331117001	Corn planters, corn and cotton planters, and lister planters, pull-type and mounted (total rows mounted) . . . . .	10	(D)	(D)	(D)	(D)
3331117008	Grain drills (fixed frame), all types . . . . .	13	8,758	152,492	10,551	185,648
3331117011	Transplanters (pull-type or mounted) and broadcast seeders (end-gate, mounted and drawn) . . . . .	9	<sup>b</sup> 12,058	10,285	12,339	8,619
	Fertilizer distributors (pull-type or mounted):					
3331117018	Dry, including lime spreaders . . . . .	34	<sup>a</sup> 8,519	33,187	<sup>a</sup> 5,504	39,652
3331117021	Liquid and anhydrous ammonia . . . . .	16	<sup>b</sup> 7,787	24,121	<sup>c</sup> 9,401	36,752
3331117028	Manure spreaders, rear discharge . . . . .	13	3,065	20,420	4,186	30,540
3331117031	Manure spreaders, side discharge . . . . .	8	2,786	30,590	<sup>f</sup> 2,740	<sup>f</sup> 28,612
3331117038	Manure pumps, liquid . . . . .	9	1,310	5,292	<sup>f</sup> 1,321	<sup>f</sup> 4,848
3331117041	Front and rear tractor-mounted loaders (farm-type), manure and general utility (except beet and sugar cane loaders) . . . . .	13	44,705	123,009	<sup>f</sup> 41,072	<sup>f</sup> 120,982
3331117048	Row crop unit planters (quantity in rows) . . . . .	8	(D)	(D)	55,442	45,424
3331117051	Other planting, seeding, and fertilizing machinery . . . . .	27	<sup>a</sup> 21,298	<sup>a</sup> 234,948	(D)	(D)
3331117058	Attachments for planting, seeding, and fertilizing machinery . . . . .	28	(X)	84,461	(X)	59,445
333111C229	Parts for planting, seeding, and fertilizing machinery, replacement units only . . . . .	66	(X)	115,395	(X)	131,878
3331119	Harvesting machinery . . . . .	78	(X)	2,873,409	(X)	2,950,283
3331119001	Combines (harvester-threshers), grain-types only (self-propelled and pull-type) . . . . .	10	(D)	(D)	(D)	(D)
3331119011	Small grain header for combines, all sizes . . . . .	8	(D)	(D)	(D)	(D)
3331119021	Corn heads, all sizes . . . . .	7	(D)	(D)	7,625	166,675
3331119031	Other grain-type combines . . . . .	2	(D)	(D)	(D)	(D)
	Field forage harvesters:					
3331119041	Shear bar, self-propelled type and pull-type (basic machines) . . . . .	4	1,581	28,483	1,629	28,501
3331119051	Attachments for shear bar type forage harvester . . . . .	4	(X)	7,653	(X)	(D)
3331119061	Flail-type (horizontal knives or vertical free-swinging knives or hammers), including discharge spouts . . . . .	3	<sup>b</sup> 161	<sup>b</sup> 1,551	(D)	(D)
3331119071	Other harvesting machinery, including potato diggers, cane harvesting equipment, and picker-shellers . . . . .	50	<sup>a</sup> 5,272	<sup>a</sup> 353,729	<sup>a</sup> 6,223	<sup>a</sup> 402,994
3331119081	Attachments for harvesting machinery, including platform and seeder, reel, straw spreaders, load levelers, weed stripper, grate unit, knife grinders, and stalk walkers . . . . .	28	(X)	107,038	(X)	114,677
333111C22A	Parts for harvesting machinery, replacement units only . . . . .	57	(X)	221,029	(X)	309,160

See footnotes at end of table.

**Table 2. Manufacturers' Shipments of Farm Machinery and Lawn and Garden Equipment by Type: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
333111A	Haying machinery . . . . .	41	(X)	753,563	(X)	664,717
333111A001	Mowers, cutter bar type, including drum and disc . . . . .	8	5,120	26,751	4,077	20,043
333111A011	Mower-conditioners and windrowers with conditioner auger and draper-type (pull-type and self-propelled) . . . . .	7	14,974	228,722	14,458	196,189
333111A021	Rakes, side delivery, cylinder type, and finger wheel type . . . . .	12	8,620	35,537	9,044	34,065
333111A031	Hay balers, hay stackers (field type), hay bale loaders, and bale throwing attachments . . . . .	17	23,646	405,355	22,565	363,849
333111A041	Other haying machinery . . . . .	15	(D)	(D)	(D)	(D)
333111A051	Other attachments for haying machinery (stripper, bale chute, and knife attachments) . . . . .	8	(X)	(D)	(X)	(D)
333111C22C	Parts for haying machinery, replacement units only . . . . .	24	(X)	94,479	(X)	130,035
333111E	Plows, harrows, rollers, pulverizers, cultivators, and weeders . . . . .	(NA)	(X)	520,060	(X)	573,918
333111E pt.	Plows (primary tillage equipment) . . . . .	66	(X)	159,372	(X)	171,596
333111E001	Subsoilers, deep tillage . . . . .	25	5,184	38,104	4,650	35,205
333111E009	Terracing and ditching plows . . . . .	10	<sup>b</sup> 442	<sup>b</sup> 977	<sup>b</sup> 577	<sup>b</sup> 1,190
	Chisel plows, deep tillage (chisel or sweep type):					
333111E011	Pull-type . . . . .	12	1,263	14,969	1,590	23,171
333111E019	Mounted . . . . .	10	1,016	7,221	<sup>a</sup> 953	2,778
333111E021	Other plows (except snow plows) . . . . .	15	4,609	52,956	5,670	63,702
333111E059	Middlebusters and disc bedders . . . . .	15	3,841	4,967	3,465	4,129
333111E031	Attachments for plows (coulters, jointers, root cutters, subsoilers, fertilizer distributors, etc.), excluding lister planting attachments . . . . .	21	(X)	29,813	(X)	30,807
333111E039	Plowshares (quantity in thousands of pounds) . . . . .	7	<sup>c</sup> 11,629,787	10,365	<sup>c</sup> 12,499,605	10,614
333111C22E	Parts for plows (except plowshares), replacement units only . . . . .	22	(X)	32,830	(X)	34,615
333111E pt.	Harrows, rollers, pulverizers and similar equipment (secondary tillage) . . . . .	90	(X)	221,037	(X)	222,905
333111E041	Spike-tooth harrow sections and spring-tooth and tine-tooth harrow sections . . . . .	21	22,915	<sup>a</sup> 17,203	<sup>a</sup> 25,491	16,563
333111E049	Disc harrows, single, tandem, and offset . . . . .	26	<sup>a</sup> 11,655	96,619	11,679	91,683
333111E051	Combination tillage equipment, roller/harrows, disc or coulters/field cultivators, and disc or coulters/spring tooth . . . . .	28	<sup>a</sup> 14,844	56,475	16,922	<sup>f</sup> 55,277
333111E058	Blade terracers or scrapers (farm-size) . . . . .	35	<sup>a</sup> 50,487	<sup>a</sup> 22,814	<sup>a</sup> 58,130	26,677
333111E061	Land levelers . . . . .	8	1,525	3,423	1,968	3,020
333111E069	Other harrows, rollers, pulverizers, and similar equipment . . . . .	25	5,885	18,044	8,832	24,024
333111E071	Attachments for harrows, rollers, pulverizers, and similar equipment . . . . .	16	(X)	6,459	(X)	5,661
333111C22G	Parts for harrows, rollers, pulverizers, and similar equipment, replacement units only . . . . .	41	(X)	<sup>a</sup> 36,453	(X)	36,664
333111E pt.	Cultivators and weeders . . . . .	50	(X)	139,651	(X)	179,417
333111E079	Corn and cotton type cultivators, shank and sweep type (front and rear mounted) . . . . .	19	6,461	20,764	<sup>f</sup> 8,187	<sup>f</sup> 37,240
333111E081	Rotary cultivators, ground and power driven . . . . .	9	2,218	6,318	2,090	5,834
333111E089	Field cultivators . . . . .	15	<sup>a</sup> 5,482	<sup>a</sup> 67,575	6,856	85,807
333111E091	Other cultivators and weeders, including tool bars (basic units) . . . . .	17	4,329	9,635	<sup>f</sup> 4,569	<sup>f</sup> 10,642
333111E099	Attachments for cultivators and weeders (front mounting frame, disc weeders, rear section, and drawbars) . . . . .	23	(X)	35,359	(X)	39,894
333111C22J	Parts for cultivators and weeders, replacement units only . . . . .	31	(X)	42,820	(X)	51,106
333111G	All other farm machinery and equipment (except parts) . . . . .	(NA)	(X)	1,720,625	(X)	1,711,340
333111G pt.	Stalk shredders and cutters or rotary mowers (PTO) . . . . .	40	114,965	209,328	115,301	196,159
333111G002	Flail type (without spout) . . . . .	14	<sup>b</sup> 1,992	<sup>b</sup> 12,958	1,852	13,390
	Horizontal blade type:					
333111G004	66 inches cutting width and under . . . . .	28	<sup>a</sup> 62,982	<sup>a</sup> 49,821	<sup>a</sup> 65,174	<sup>a</sup> 44,279
333111G006	Over 66 inches up to 100 inches cutting width . . . . .	24	<sup>a</sup> 36,905	<sup>a</sup> 53,711	<sup>b</sup> 35,398	<sup>b</sup> 54,275
333111G008	Over 100 inches cutting width . . . . .	14	<sup>b</sup> 13,086	<sup>b</sup> 92,838	<sup>b</sup> 12,877	<sup>b</sup> 84,215
333111C22L	Parts for stalk shredders, and cutters or rotary mowers (PTO), replacement units only . . . . .	25	(X)	<sup>a</sup> 33,722	(X)	<sup>b</sup> 37,164

See footnotes at end of table.

**Table 2. Manufacturers' Shipments of Farm Machinery and Lawn and Garden Equipment by Type: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
333111G	All other farm machinery and equipment (except parts)—Con.					
333111G pt.	Machines for preparing crops for market or for use	78	(X)	264,320	(X)	324,608
333111G012	Feed grinders and crushers, power	9	1,460	25,696	<sup>a</sup> 1,807	29,497
333111G014	Feed mixers, farm-size, stationary and portable	18	3,269	51,610	2,986	49,514
333111G016	Combination grinder-mixers	7	(D)	(D)	<sup>a</sup> 784	8,032
	Dryers (grain, hay, and seed):					
333111G018	Heated air crop dryers	16	8,328	69,068	13,212	107,717
333111G022	Crop drying fans (over 15,000 c.f.m. at approximately 1-inch pressure)	10	(D)	(D)	<sup>r</sup> 11,469	12,079
333111G024	Other machines for preparing crops for market or for use	35	22,317	93,750	27,542	110,201
333111G026	Attachments for machines for preparing crops for market or for use	15	(X)	6,730	(X)	7,568
333111C22N	Parts for machines for preparing crops for market or for use, replacement units only	43	(X)	29,959	(X)	32,575
333111G pt.	Farm poultry equipment	43	(X)	318,476	(X)	213,384
333111G028	Incubators (quantity represents egg capacity in thousands)	10	(D)	(D)	(D)	(D)
333111G032	Brooders, floor and hanging (gas, electric, oil, coal, wood, and battery)	12	150,294	21,542	152,285	19,072
333111G034	Nests and cages	10	3,575,351	<sup>a</sup> 74,727	<sup>c</sup> 3,155,502	<sup>a</sup> 44,938
333111G036	Poultry feeders (trough, hanging, and mechanical) and waterers (except turkey feeders and waterers)	16	<sup>c</sup> 12,813,470	99,661	<sup>c</sup> 10,116,632	57,533
333111G038	Other farm poultry equipment, including turkey waterers, mechanized egg graders, and egg washers	20	(D)	(D)	(D)	(D)
333111G042	Attachments for farm poultry equipment	12	(X)	12,056	(X)	13,700
333111C22P	Parts for farm poultry equipment, replacement units only	16	(X)	15,122	(X)	15,139
333111G pt.	Hog equipment	47	(X)	211,538	(X)	159,822
333111G044	Feeding equipment	23	120,812	54,586	<sup>a</sup> 134,364	33,273
333111G046	Handling equipment	11	841,001	<sup>a</sup> 81,313	<sup>a</sup> 1,276,144	<sup>a</sup> 71,396
333111G048	Watering equipment	19	539,142	5,025	932,806	<sup>r</sup> 8,238
333111G052	Other hog equipment	24	901,580	69,391	1,658,926	45,234
333111G054	Attachments for hog equipment	11	(X)	1,223	(X)	1,681
333111C22T	Parts for hog equipment, replacement units only	17	(X)	3,191	(X)	3,898
333111G pt.	Other barn and barnyard equipment	94	(X)	149,333	(X)	168,246
333111G056	Silo and grain bin unloaders, forage and grain, including sealed storage unloaders (farm-type)	14	41,258	21,535	48,000	27,084
	Cattle and dairy barn equipment:					
333111G058	Feeding equipment	34	112,958	<sup>a</sup> 27,118	<sup>r</sup> 108,363	31,962
333111G062	Handling equipment	32	<sup>c</sup> 1,108,818	<sup>b</sup> 41,851	<sup>c</sup> 1,063,887	<sup>b</sup> 40,632
333111G064	Water equipment	26	216,431	19,859	<sup>r</sup> 270,367	<sup>r</sup> 23,039
	Other barn and barnyard equipment	39	319,534	32,852	<sup>r</sup> 449,071	<sup>r</sup> 39,833
333111G068	Attachments for barn and barnyard equipment	14	(X)	<sup>a</sup> 6,118	(X)	5,696
333111C22U	Parts for barn and barnyard equipment, replacement units only	29	(X)	<sup>a</sup> 24,110	(X)	27,686
333111G pt.	Farm wagons, and other farm transportation equipment	78	(X)	191,383	(X)	199,296
333111G072	Wagons (chassis only) and trailer gears, excluding motor trucks, 4-wheel	33	14,321	29,149	<sup>a</sup> 17,440	32,745
	Boxes and racks for mounting on wagons and trailer gears:					
333111G074	Manual unloading or dump	11	1,521	11,498	1,658	10,243
333111G076	Gravity unloading, grain-type only	11	<sup>b</sup> 5,678	<sup>b</sup> 19,713	<sup>b</sup> 7,586	<sup>b</sup> 24,830
333111G078	Power unloading	17	<sup>b</sup> 5,915	<sup>b</sup> 54,374	<sup>b</sup> 7,106	<sup>b</sup> 58,149
333111G082	Boxes with integral running gear, grain- and forage-type	13	4,828	31,949	<sup>r</sup> 4,501	<sup>r</sup> 30,394
333111G084	Other farm transportation equipment	19	8,343	42,622	<sup>a</sup> 8,438	<sup>r</sup> 40,635
333111G086	Attachments for farm transportation equipment	14	(X)	<sup>b</sup> 2,078	(X)	<sup>b</sup> 2,300
333111C232	Parts for farm transportation equipment, including operator cabs for farm tractors	38	(X)	100,271	(X)	98,244
333111G pt.	Irrigation systems	18	(X)	376,247	(X)	449,825
333111G088	Self-propelled irrigation systems, center-pivot (quantity in ten-tower equivalents)	8	10,099	340,614	11,809	406,763
333111G092	All other systems using 100-foot flexible hose feeder line and over	10	<sup>c</sup> 4,471	35,633	<sup>c</sup> 5,705	<sup>a</sup> 43,062
333111C22V	Parts for irrigation systems, replacement units only	8	(X)	70,326	(X)	71,663

See footnotes at end of table.

**Table 2. Manufacturers' Shipments of Farm Machinery and Lawn and Garden Equipment by Type: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
333111J	Commercial turf and grounds care equipment, including parts and attachments. . . . .	(NA)	(X)	1,355,208	(X)	1,238,764
333111J pt.	Commercial turf and grounds mowing equipment. . . . .	48	(X)	1,099,497	(X)	983,468
333111J001	Powered nonriding mowers . . . . .	18	84,865	123,548	90,977	125,540
333111J006	Riding reel-type turf mowers, including greens mowers. . .	9	15,974	234,436	15,862	203,753
333111J011	Riding rotary turf mowers. . . . .	22	72,834	507,630	58,087	422,534
333111J016	Gang rotary cutting units, reel and rotary, individual sections . . . . .	7	(D)	(D)	(D)	(D)
333111J021	Flail mower cutting units, including gang . . . . .	5	(D)	(D)	(D)	(D)
333111J026	Other mowing equipment . . . . .	7	16,793	<sup>a</sup> 27,646	<sup>a</sup> 11,048	<sup>a</sup> 23,366
333111J031	Parts for commercial turf and grounds mowing equipment . . . . .	32	(X)	101,340	(X)	99,885
333111J036	Attachments for commercial turf and grounds mowing equipment . . . . .	21	(X)	32,601	(X)	33,957
333111J pt.	Other commercial turf and grounds care equipment. . . . .	52	(X)	255,711	(X)	255,296
333111J041	Sod cutters and sod harvesters . . . . .	3	(D)	(D)	3,484	12,377
333111J046	Seeders, spreaders, and top dresser attachments . . . . .	7	(D)	(D)	60,208	<sup>a</sup> 15,516
333111J051	Aerators, spikers, and pluggers . . . . .	15	<sup>a</sup> 9,509	26,746	<sup>a</sup> 9,778	28,279
333111J056	Dethatchers . . . . .	10	<sup>b</sup> 5,115	<sup>b</sup> 3,802	<sup>c</sup> 5,293	<sup>b</sup> 4,066
333111J061	Power brooms, blowers, vacuums, and sweepers . . . . .	11	17,314	21,116	<sup>b</sup> 24,292	22,984
333111J066	Irrigation systems (except agricultural and residential). . . . .	4	464,206	<sup>b</sup> 26,972	570,519	24,221
333111J071	Other commercial turf and grounds care equipment, including trap rakes, transport trailers, and turf tractors and trucks . . . . .	27	<sup>a</sup> 22,657	<sup>c</sup> 92,550	<sup>c</sup> 54,276	96,028
333111J076	Parts for other commercial turf and ground care equipment. . . . .	24	(X)	18,298	(X)	16,512
333111J081	Attachments for other commercial turf and ground care equipment. . . . .	16	(X)	38,201	(X)	35,313
333112	Lawn and garden equipment . . . . .	(NA)	(X)	6,186,411	(X)	5,994,487
3331121 pt.	Consumer nonriding lawn, garden, and snow equipment . . . . .	48	23,129,967	2,656,508	24,511,254	2,823,177
	Lawnmowers:					
	Push-type: reel (powered and nonpowered) and rotary-gas powered . . . . .	18	3,987,762	530,824	3,916,368	565,018
3331121006	Rotary, self-propelled, gas-powered. . . . .	19	2,423,179	611,847	2,201,758	577,067
3331121021	Electric, all types, including battery-powered . . . . .	5	132,411	34,950	<sup>f</sup> 129,217	<sup>f</sup> 33,376
3331121026	Rotary garden motor tillers. . . . .	12	488,316	185,468	492,028	176,056
3331121031	2-wheel tractors walking type (except rotary tillers) . . . . .	2	(D)	(D)	(D)	(D)
	Snow throwers (snow blowers) (except attachment-type):					
3331121036	Single stage . . . . .	7	247,967	65,867	383,834	103,955
3331121041	Dual stage. . . . .	10	370,815	221,476	512,795	340,397
	Powered lawn edgers/trimmers:					
3331121046	Fixed blade . . . . .	16	866,977	118,728	533,675	66,349
3331121051	Other than fixed blades . . . . .	11	7,742,869	512,639	9,078,746	561,336
3331121056	Shredders and shredder-grinders. . . . .	9	(D)	(D)	(D)	(D)
3331121061	Yard vacuums and blowers . . . . .	13	3,134,594	219,637	2,878,922	202,172
3331121066	Other consumer nonriding lawn, garden, and snow equipment . . . . .	17	3,662,232	<sup>a</sup> 112,659	<sup>a</sup> 4,313,662	<sup>a</sup> 158,802
3331123 pt.	Consumer riding lawn, garden, and snow equipment . . . . .	23	1,841,641	2,630,694	1,760,819	2,413,623
	Lawn tractors and riding mowers, front engine:					
3331123001	Under 10.0 hp (under 7.5 kW) . . . . .	2	(D)	(D)	(D)	(D)
3331123011	10.0 hp and over (7.5 kW and over) . . . . .	9	1,512,936	1,800,915	1,449,664	1,602,655
	Lawn tractors and riding mowers, rear engine:					
3331123021	Under 10.0 hp (under 7.5 kW) . . . . .	7	(D)	(D)	(D)	(D)
3331123031	10.0 hp and over (7.5 kW and over) . . . . .	16	81,508	134,037	86,786	132,442
	Garden tractors:					
3331123041	Under 16.0 hp (under 12.0 kW) . . . . .	6	4,373	12,172	5,530	15,943
3331123051	16.0 hp to 19.9 hp (12.0 kW to 14.9 kW) . . . . .	6	76,992	199,285	93,528	303,567
3331123061	20.0 hp and over (15.0 kW and over) . . . . .	9	74,701	374,532	47,078	245,929
3331123071	Other consumer riding lawn, garden, and snow equipment . . . . .	2	(D)	(D)	(D)	(D)

See footnotes at end of table.

**Table 2. Manufacturers' Shipments of Farm Machinery and Lawn and Garden Equipment by Type: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
333112 3331127 pt.	Lawn and garden equipment—Con. Parts and attachments for consumer lawn, garden, and snow equipment.....	(NA)	(X)	899,209	(X)	757,687
3331127001 3331127011	Nonriding: Parts..... Attachments.....	32 17	(X) (X)	151,606 101,478	(X) (X)	133,071 95,348
3331127021 3331127031	Riding: Parts: For tractors and riding mowers..... For other equipment.....	23 7	(X) (X)	297,623 <sup>c</sup> 10,659	(X) (X)	<sup>f</sup> 249,590 <sup>e</sup> 8,325
3331127041 3331127051 3331127061 3331127071 3331127081 3331127091	Attachments: Rotary mower decks..... Rotary tiller attachments..... Blades, dozer..... Snow throwers..... Carts and wagons..... All other attachments.....	14 10 10 7 10 28	(X) (X) (X) (X) (X) (X)	<sup>a</sup> 107,258 <sup>b</sup> 12,533 24,284 (D) (D) 143,389	(X) (X) (X) (X) (X) (X)	<sup>a</sup> 87,394 <sup>a</sup> 10,312 18,865 (D) (D) 109,282

D Withheld to avoid disclosing data for individual companies. NA Not available. pt. Part. <sup>f</sup>Revised by 5 percent or more from previously published data. X Not applicable.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>10 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 3. Shipments, Exports, and Imports of Farm Machinery and Equipment: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Imports for consumption <sup>2</sup>		Apparent consumption	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>								
Farm-type wheel tractors.....	(D)	(D)	49,854	1,205,472	109,571	1,536,870	(D)	(D)
Sprayers and dusters (except aerial types).....	(X)	665,702	(NA)	31,030	(NA)	19,643	(NA)	654,315
Planting machinery and fertilizer distributors, pull-type or mounted.....	(X)	887,361	21,962	118,533	197,101	65,167	(NA)	833,995
Disc harrows.....	11,655	96,619	1,760	10,158	53,235	35,417	63,130	121,878
Other harrows, rollers, pulverizers, and similar equipment.....	95,656	117,959	13,050	7,492	13,267	7,516	95,873	117,983
Combines.....	(D)	(D)	6,842	550,935	1,193	59,631	(D)	(D)
Other harvesting machines.....	(D)	(D)	3,780	77,451	7,567	40,384	(D)	(D)
Field forage harvesters.....	1,742	30,034	1,428	21,491	525	44,236	839	52,779
Hay mowers, mower-conditioners, and windrowers.....	172,070	464,801	18,949	49,910	33,642	76,474	186,763	491,365
Other haymaking machines.....	(X)	61,382	2,589	47,661	17,732	14,527	(NA)	28,248
Balers, including pickup balers.....	23,646	405,355	5,826	80,937	3,750	23,353	21,570	347,771
Other plows.....	(X)	119,194	3,515	13,123	4,330	4,414	(NA)	110,485
Cultivators and weeders.....	18,490	104,292	28,299	27,022	132,535	53,836	122,726	131,106
Machinery for preparing animal feed....	5,460	85,329	5,798	44,327	25,717	15,068	25,379	56,070

See footnotes at end of table.

**Table 3. Shipments, Exports, and Imports of Farm Machinery and Equipment: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Imports for consumption <sup>2</sup>		Apparent consumption	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998—Con.</b>								
Other machines for preparing crops for market or for use .....	41,444	172,261	4,582	26,769	13,259	1,608	50,121	147,100
Farm poultry incubators and brooders ..	(D)	(D)	27,535	26,881	150,431	8,908	(D)	(D)
Nests and cages (poultry equipment) ...	(X)	74,727	98,108	71,954	116,377	12,973	(NA)	(NA)
Self-propelled irrigation systems, center-pivot .....	10,099	340,614	1,789	10,982	73	121	8,383	329,753
All other self-propelled irrigation systems using 100-foot flexible hose feeder line and over .....	4,471	35,633	(NA)	174,115	(NA)	21,660	(NA)	(NA)
Farm wagons and other farm transportation equipment .....	40,606	189,305	-	-	49,698	7,079	90,304	196,384
Riding turf mowers and flail and gang mowers .....	129,984	814,362	16,543	64,138	13,515	4,577	126,956	754,801
Snowblowers (snowthrowers) .....	618,782	287,343	47,660	25,528	19,477	17,264	590,599	279,079
Powered lawn and hedge trimmers .....	8,609,846	631,367	1,437,184	101,572	2,768,761	134,589	9,941,423	664,384
<b>1997</b>								
Farm-type wheel tractors .....	(D)	(D)	53,118	1,217,018	97,457	1,447,917	(D)	(D)
Sprayers and dusters (except aerial types) .....	(X)	503,803	(NA)	150,656	(NA)	28,420	(NA)	381,567
Planting machinery and fertilizer distributors, pull-type or mounted .....	(X)	963,241	23,566	125,578	148,081	72,839	(NA)	910,502
Disc harrows .....	11,679	91,683	3,579	18,639	63,599	35,029	71,699	108,073
Other harrows, rollers, pulverizers, and similar equipment .....	111,343	125,561	9,445	9,021	17,787	6,948	119,685	123,488
Combines .....	(D)	(D)	9,038	717,799	1,301	43,115	(D)	(D)
Other harvesting machines .....	(D)	(D)	3,323	89,580	11,849	44,336	(D)	(D)
Field forage harvesters .....	1,764	29,653	1,354	19,265	451	33,072	861	43,460
Hay mowers, mower-conditioners, and windrowers .....	172,563	412,391	17,702	48,479	36,191	73,901	191,052	437,813
Other haymaking machines .....	(X)	57,898	2,447	39,333	19,767	17,330	(NA)	35,895
Balers, including pickup balers .....	22,565	363,849	5,495	78,158	3,529	19,645	20,599	305,336
Other plows .....	(X)	130,175	3,498	16,638	5,091	8,807	(NA)	122,344
Cultivators and weeders .....	21,702	139,523	51,773	35,231	50,768	58,781	20,697	163,073
Machinery for preparing animal feed. ...	5,577	87,043	6,398	54,488	21,168	11,376	20,347	43,931
Other machines for preparing crops for market or for use .....	52,223	229,997	7,673	30,281	11,694	4,718	56,244	204,434
Farm poultry incubators and brooders ..	(D)	(D)	30,427	23,006	146,201	7,682	(D)	(D)
Nests and cages (poultry equipment) ...	(X)	44,938	241,283	89,036	37,810	12,383	(NA)	(NA)
Self-propelled irrigation systems, center-pivot .....	11,809	406,763	1,811	49,017	351	430	10,349	358,176
All other self-propelled irrigation systems using 100-foot flexible hose feeder line and over .....	5,705	43,062	(NA)	192,159	(NA)	16,996	(NA)	(NA)
Farm wagons and other farm transportation equipment .....	46,729	196,996	-	-	42,804	5,927	89,533	202,923

See footnotes at end of table.

Table 3. **Shipments, Exports, and Imports of Farm Machinery and Equipment: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1</sup>		Imports for consumption <sup>2</sup>		Apparent consumption	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
<b>1997—Con.</b>								
Riding turf mowers and flail and gang mowers . . . . .	123,336	700,720	21,491	65,170	5,519	2,374	107,364	637,924
Snowblowers (snowthrowers) . . . . .	896,629	444,352	57,068	36,936	33,686	25,575	873,247	432,991
Powered lawn and hedge trimmers . . . . .	9,612,421	627,685	130,295	96,909	2,204,042	110,035	11,686,168	640,811

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. 'Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Source: Census Bureau report EM 545, *U.S. Exports*.  
<sup>2</sup>Source: Census Bureau report IM 146, *U.S. Imports for Consumption*.

Note: For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

**HISTORICAL NOTE**

Data on farm machinery and equipment have been collected by the Census Bureau since 1920; data on lawn and garden equipment since 1978. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal

Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Brian Appert, 301-457-4748.

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## CONSTRUCTION MACHINERY—MA333D (FORMERLY MA35D)

### INTRODUCTION

These data cover firms engaged in the manufacture of selected types of construction machinery. Very small firms (generally less than five employees) for which 1997 Economic Census, Manufacturing sector data were derived from administrative records of other government agencies are excluded. The statistics were collected by mail on Census Bureau annual Form MA333D, Construction Machinery. The survey panel includes all known producers of these types of products covered on the survey, except the very small firms excluded from the scope of the survey. Approximately 260 companies are included. No estimate is derived for the small firms excluded from the survey.

### SUMMARY OF FINDINGS

Value of shipments of the types of construction machinery included in this report, except motor graders and light maintainers, scraper bowls, construction machinery for mounting on trucks, tractors, etc., and winches and other materials-handling equipment for mounting, increased from \$13,084.5 million in 1997 to \$13,962.1 million in 1998, an increase of 7 percent. Shipments of power cranes, draglines, and excavators, including surface mining equipment, and attachments, for 1998 were \$3,362.4 million, up 15 percent from the previous year's total of \$2,927.4 million.

Value of shipments of mixers, pavers, and related equipment also increased from \$1,283.8 million in 1997 to \$1,460.0 million in 1998, an increase of 14 percent. Off-highway trucks, truck-type tractor chassis, trailers, coal haulers, or wagons decreased by 10 percent in value of shipments to \$1,436.1 million in 1998 from \$1,596.3 in 1997.

Shipments of tractor shovel loaders increased from \$3,912.5 million in 1997 to \$3,991.2 million in 1998, an increase of 2 percent. Crawler tractors, contractors' off-highway wheel tractors, dozers, and self-propelled wheeled log skidders increased by 15 percent, from \$1,720.3 million in 1997 to \$1,973.6 million in 1998. Rollers and compactors decreased from \$647.0 million in 1997 to \$532.0 million in 1998, for a total of 18 percent.

Shipments of rough terrain forklifts (integral units only) increase by 34 percent to \$668.2 million in 1998 from \$499.5 million for the prior year. Ditchers and trenchers, self-propelled (integral units only) increased from \$238.7 million in 1997 by 11 percent to \$266.1 million for 1998. Construction machinery for mounting on trucks, tractors, and other prime movers, except winches, hoists, and other materials-handling equipment, moved to \$272.5 million in 1998, from \$258.6 million in 1997, a 5-percent increase.

### EXPLANATION OF TERMS

**Wheel tractors, contractors' off-highway type.** Wheel tractors designed primarily to be used as towing units for scrapers, trailers, wagons, and similar types of towed equipment for use on natural terrain. These units may be 2- or 4-wheel type.

**Loaders.** Wheel type, front-end load, integral design, rear engine mount. Complete machines originally conceived and designed as heavy duty, wheel type, front-end loaders, and not as wheel tractors, to receive shovel loading attachments.

**Off-highway vehicles.** Vehicles designed for operation off public highways to transport materials or equipment on mining, construction, logging, petroleum development, and similar project sites. (Vehicles which provide similar functions on smooth surfaces in and around warehouses, depots, and terminals are excluded from this survey.)

**Excavator.** A commercial earth-moving machine equipped with a bucket-mounted front-end attachment mounted on a 360-degree revolving superstructure.

**Crane.** A machine having a front-end lifting attachment and operating machinery mounted on a revolving superstructure.

**Cable-operated.** A machine with front-end attachment functions performed by wire rope.

**Hydraulic excavator.** A machine with front-end attachment functions performed hydraulically.

**Crawler mounted.** A machine with two parallel continuous crawlers or tread belts.

**Truck-mounted (rubber).** A machine that generally has two engines, one to propel the carrier and another to power the work functions. A truck- or carrier-mounted machine has two operator stations and is designed for on- and off-highway travel.

**Self-propelled (rubber).** A machine which has only one engine and one operator station. The engine may be mounted in either the upper or lower works.

**Net engine horsepower (nehp).** Net flywheel performance as measured by manufacturer, with all standard accessories installed, operated, and corrected to 29.38 inches mercury (Hg) and temperature of 85 degrees Fahrenheit.



**Hydraulic crane.** A crane with 360-degree rotation on which the boom is designed primarily for lifting the load by wire rope and can be extended, retracted, raised, and lowered hydraulically.

**Pinned-on telescopic crane.** A hydraulically powered multipurpose rotating crane with fixed or telescoping booms designed to lift and place materials by winch and load line and which is mounted onto a commercially available vehicle having a platform or body.

**Pinned-on articulated crane.** A stationary or vehicle-mounted hydraulically powered multipurpose knuckle boom crane consisting of an inner and outer boom that can fold to a stowable position. Excluded are those machines commonly known as knuckle boom loaders.

**Unmounted cranes.** These cranes are classified under "Construction machinery for mounting."

**ABBREVIATIONS AND METRIC EQUIVALENTS**

hp	horsepower = .7457 kilowatts (kW)
yd <sup>3</sup>	cubic yard = .7646 cubic meters (m <sup>3</sup> )
kg	kilogram = 2.205 pounds (lb)
ft	feet = .305 meters (m)
st	short ton = .907 metric tons
nehp	net engine horsepower
tph	tons per hour
lb	pounds

**Table 4. Value of Shipments of Selected Construction Machinery: 1994 to 1998**

[Millions of dollars]

Product description	1998	1997	1996	1995	1994
Power cranes, draglines, and excavators, including surface mining equipment, and attachments .....	3,362.4	2,927.4	2,740.3	2,561.4	2,252.5
Mixers, pavers, and related equipment .....	1,460.0	1,283.8	1,145.8	1,168.8	1,079.8
Off-highway trucks, truck-type trailer chassis, trailers, coal haulers, wagons.....	1,436.1	1,596.3	1,632.6	1,326.9	961.9
Track shovel loaders .....	3,991.2	3,912.5	3,340.1	3,041.8	2,632.6
Crawler tractors, contractors' off-highway type wheel tractors, dozers, and self-propelled wheeled log skidders .....	1,973.6	1,720.3	1,697.2	1,597.4	(D)
Motor graders and light maintainers .....	(D)	(D)	588.4	479.9	445.2
Rollers and compactors.....	532.0	647.4	517.6	(S)	361.3
Rough-terrain forklifts.....	668.2	499.5	412.3	355.4	270.9
Scraper bowls .....	(D)	237.5	121.5	142.2	124.9
Self-propelled ditchers and trenchers (integral units) ...	266.1	238.7	209.1	193.5	174.0
Construction machinery for mounting on trucks, tractors, etc.....	(X)	(X)	(X)	(X)	286.6
Construction machinery (except winches and other materials-handling equipment) for mounting on trucks, tractors, etc.....	272.5	258.6	214.5	(D)	(X)
Winches and other materials-handling equipment, for mounting .....	(D)	(D)	(D)	(D)	(X)
Aerial work platforms .....	2,040.3	(D)	(D)	1,131.1	844.9

D Withheld to avoid disclosing data for individual companies.

S Does not meet publication standards.

X Not applicable.

**Table 5. Quantity and Value of Shipments of Selected Types of Construction Machinery: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
33312011	Power cranes, draglines, and excavators, including surface mining equipment, and attachments . . . . .	(X)	179,030	3,362,443	91,400	2,927,410
	Hydraulic operated excavators:					
	Crawler mounted, rated size in metric tons:					
3331201111	Not more than 24 metric tons . . . . .	7	12,240	755,662	9,859	570,341
3331201114	More than 24 but not more than 40 metric tons . . .	6	4,373	773,545	4,437	712,945
3331201117	More than 40 metric tons . . . . .	5	902	243,474	886	287,129
3331201129	Wheel (rubber) mounted, all sizes . . . . .	2	(D)	(D)	(D)	(D)
	Cranes, lattice boom:					
	Crawler mounted, maximum working load:					
3331201132	Not more than 110 metric tons . . . . .	2	(D)	(D)	5	1,965
3331201134	More than 110 metric tons . . . . .	3	(D)	(D)	(D)	(D)
3331201145	Wheel (rubber) mounted . . . . .	3	(D)	(D)	43	38,167
	Cranes, hydraulic operated, telescopic boom:					
	Wheel cranes (integral), multiple control stations (rubber mounted), maximum working load of:					
3331201152	Not more than 18 metric tons . . . . .	4	1,486	63,733	1,358	60,698
3331201154	More than 18 but not more than 27 metric tons . . .	2	(D)	(D)	(D)	(D)
3331201156	More than 27 but not more than 50 metric tons . . .	4	365	94,032	153	42,443
3331201158	More than 50 metric tons . . . . .	4	(D)	(D)	(D)	(D)
3331201167	Pinned on type, telescopic and articulated . . . . .	5	2,723	143,330	2,729	127,308
	Wheel cranes, one control station (self-propelled, rubber mounted), maximum working load of:					
3331201171	Not more than 16 metric tons . . . . .	7	1,258	80,002	1,133	69,888
3331201174	More than 16 metric tons but not more than 22.7 metric tons . . . . .	5	<sup>b</sup> 55	<sup>b</sup> 10,631	285	49,222
3331201177	More than 22.7 metric tons . . . . .	4	1,492	373,485	844	237,944
	All-terrain cranes, maximum work loads of:					
3331201182	Not more than 20 metric tons . . . . .	3	(D)	(D)	(D)	(D)
3331201184	More than 20 metric tons but not more than 35 metric tons . . . . .	-	(X)	(X)	(X)	(X)
3331201186	More than 35 metric tons but not more than 110 metric tons . . . . .	1	(D)	(D)	(D)	(D)
3331201188	More than 110 metric tons . . . . .	-	(X)	(X)	(X)	(X)
	Other cranes and excavators:					
3331201194	Pedestal or shipmounted marine cranes . . . . .	6	<sup>c</sup> 150	<sup>c</sup> 49,253	79	27,572
3331201199	All other cranes, excavators, and draglines, n.e.c. . . .	7	687	<sup>c</sup> 136,940	827	177,549
3331201100	Cranes, excavators, and draglines, n.s.k. . . . .	(X)	(X)	(X)	(X)	(X)
	Attachments for power cranes, draglines, and excavators, sold separately:					
33312011A4	Hoe . . . . .	6	<sup>c</sup> 19,178	<sup>b</sup> 42,344	15,594	33,609
33312011A5	Dragline buckets, all sizes . . . . .	6	<sup>a</sup> 173	12,358	104	9,145
33312011A7	Clamshell/grapple . . . . .	9	794	14,956	606	14,849
33312011AA	All other attachments, n.e.c. . . . .	22	131,937	125,318	51,445	136,876
33312012	Mixers, pavers, and related equipment . . . . .	(X)	121,213	1,459,972	103,778	1,283,812
	For concrete, plaster, or mortar applications:					
3331201222	Concrete mixers (except plaster and mortar), portable, including truck or other mixer or agitator, all sizes . . . . .	17	<sup>b</sup> 9,187	<sup>c</sup> 357,543	8,750	338,592
3331201231	Plaster and mortar mixers, all sizes . . . . .	7	14,114	27,349	11,673	22,585
3331201233	Slipform concrete paving machines, including multi-purpose, automated curb and gutter and concrete slipform pavers, up to and including 34-foot wide . . .	12	547	<sup>a</sup> 72,352	482	61,729
3331201239	Concrete trowels . . . . .	7	15,988	29,602	14,207	25,203
3331201241	Concrete vibrators (electric motor gasoline engine, structural high-cycle, pneumatic, etc.) . . . . .	11	68,984	62,674	57,128	54,649
3331201244	Concrete screeds (hand-propelled or winch type) . . .	7	2,447	5,079	2,814	4,830
3331201247	Concrete batching plants, bin and batch, for concrete aggregate only, and bulk cement . . . . .	13	<sup>c</sup> 649	<sup>b</sup> 74,433	740	82,175
3331201251	Concrete pumps, mobile . . . . .	4	(D)	(D)	(D)	(D)
3331201256	Other concrete, plaster, and mortar mixing and paving machinery . . . . .	5	936	<sup>b</sup> 20,608	892	<sup>f</sup> 19,347
	For asphalt or bituminous applications:					
3331201266	Bituminous distributors . . . . .	7	<sup>a</sup> 664	23,245	576	20,563
3331201271	Bituminous pavers, self-propelled:					
3331201275	21,999 lb gross weight and under (basic unit) . . . .	7	1,110	53,413	974	59,163
	22,000 lb gross weight and over (basic unit) . . . . .	5	807	155,261	626	113,785

See footnotes at end of table.

**Table 5. Quantity and Value of Shipments of Selected Types of Construction Machinery: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
33312012	Mixers, pavers, and related equipment—Con. For asphalt or bituminous applications—Con.					
	Asphalt plants, including cold mix central plants:					
3331201282	Less than 7,500 lb (239 tph) . . . . .	3	47	<sup>b</sup> 25,535	47	28,299
3331201284	7,500 lb and over (240 tph and over) . . . . .	5	<sup>c</sup> 142	<sup>b</sup> 234,872	96	148,566
3331201286	Bituminous stabilization mixing equipment, including central mixing plants and mix-in-place . . . . .	4	<sup>c</sup> 84	<sup>c</sup> 26,190	190	52,737
3331201289	Bituminous cold planers/milling machines (self-propelled) . . . . .	3	(D)	(D)	(D)	(D)
3331201291	Other asphalt and bituminous mixing and paving machinery . . . . .	8	<sup>c</sup> 975	<sup>b</sup> 16,766	889	14,724
3331201295	Other products, for use in either concrete or bituminous applications . . . . .	8	<sup>b</sup> 3,125	63,525	2,428	28,795
33312013	Off-highway trucks, truck-type tractor chassis, trailers, or wagons . . . . .	(X)	6,830	1,436,100	5,806	1,596,289
3331201371	Off-highway rear dump haulers . . . . .	8	3,536	1,271,459	3,184	1,457,466
3331201376	Other . . . . .	8	<sup>a</sup> 3,294	<sup>a</sup> 164,641	2,622	138,823
33312014	Tractor shovel loaders . . . . .	(X)	112,136	3,991,204	103,098	3,912,530
3331201460	Skid steer loaders, 4-wheel drive skid steer, all sizes . . Wheel loaders, rear engine mount, integral design, 4-wheel drive, nonskid steer:	6	<sup>a</sup> 65,958	<sup>a</sup> 1,014,638	62,527	958,511
	Under 79 nehp . . . . .	3	(D)	(D)	(D)	(D)
3331201471	80 through 149 nehp . . . . .	8	<sup>a</sup> 6,325	554,501	6,448	529,000
3331201475	150 through 249 nehp . . . . .	7	4,021	555,474	3,701	513,265
3331201479	250 nehp and over . . . . .	5	2,486	834,806	2,490	860,069
3331201483	Crawler loaders . . . . .	2	(D)	(D)	(D)	(D)
3331201488	Integral design tractor shovel loader/backhoes (wheel tractor-chassis shipped as part of front engine mount contractor tractor) . . . . .	6	<sup>b</sup> 32,258	<sup>b</sup> 953,326	26,878	974,567
3331201495						
33312015	Crawler tractors, contractors' off-highway-type wheel tractors, dozers, and self-propelled wheeled log skidders . . . . .	(X)	12,918	1,973,557	11,630	1,720,279
3331201577	Wheeled log skidders, self-propelled . . . . .	8	2,327	289,291	2,140	240,774
3331201599	Crawler tractors (except crawler loaders) and tracklaying and other contractors' off-highway-type wheel tractors and dozers . . . . .	11	10,591	1,684,266	9,490	1,479,505
33312016 pt.	Motor graders and light maintainers . . . . .	(X)	(D)	(D)	(D)	(D)
3331201661	Under 144 nehp . . . . .	6	(D)	(D)	(D)	(D)
3331201667	145 nehp and over . . . . .	3	(D)	(D)	(D)	(D)
33312016 pt.	Rollers and compactors . . . . .	(X)	55,711	532,024	56,113	647,411
	Static smooth steel wheel rollers, tandem:					
3331201671	Under 3 metric tons . . . . .	5	1,145	12,332	1,297	13,569
3331201673	At least 3 but less than 5.5 metric tons . . . . .	2	(D)	(D)	(D)	(D)
3331201676	5.5 metric tons and over . . . . .	4	(D)	(D)	(D)	(D)
3331201682	Pneumatic tire rollers . . . . .	7	583	26,181	537	22,947
	Vibratory single drum with one or two drive wheels:					
3331201687	Under 5 metric tons . . . . .	6	1,098	31,715	1,197	30,487
3331201689	At least 5 but less than 8 metric tons . . . . .	3	1,065	6,841	970	56,809
3331201692	8 metric tons and over . . . . .	3	(D)	(D)	2,201	153,868
	Vibratory double drum, two drums vibrating:					
3331201696	Under 5 metric tons . . . . .	5	(D)	(D)	(D)	(D)
3331201699	At least 5 but less than 8 metric tons . . . . .	2	(D)	(D)	(D)	(D)
33312016A2	8 metric tons and over . . . . .	3	962	76,766	736	57,414
33312016A6	All other compaction equipment (except handheld); including, embankment and landfill compactors, towed roller and double drum compactors with one drum vibrating . . . . .	4	(D)	(D)	(D)	(D)
33312016 pt.	Rough terrain forklifts (integral units only) . . . . .	(X)	10,778	668,166	8,100	499,503
33312016D1	Vertical mast, 2-wheel drive . . . . .	10	3,104	192,648	2,826	173,402
33312016D3	Vertical mast, 4-wheel drive . . . . .	7	522	16,679	577	19,600
33312016D5	Telescopic handlers, 2- and 4-wheel drive . . . . .	6	<sup>b</sup> 7,152	<sup>b</sup> 458,839	4,697	306,501
33312016E5	Scraper bowls . . . . .	4	(D)	(D)	2,427	237,532

See footnotes at end of table.

**Table 5. Quantity and Value of Shipments of Selected Types of Construction Machinery: 1998 and 1997—Con.**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
33312016 pt.	Ditchers and trenchers, self-propelled (integral units only) .....	(X)	11,009	266,135	10,543	238,663
	Ladder-type digging element:					
33312016J3	Under 2,000 lb gross weight .....	5	(D)	(D)	(D)	(D)
33312016J5	2,000 to 4,999 lb gross weight .....	4	2,413	46,293	2,763	55,799
33312016J7	5,000 lb gross weight and over .....	4	<sup>b</sup> 3,672	<sup>b</sup> 177,275	3,192	146,414
33312016JJ	Wheel-type digging element .....	3	(D)	(D)	(D)	(D)
33312017	Construction machinery for mounting on trucks, tractors, and other prime movers (except winches, hoists, and other materials-handling equipment) .....	(X)	57,832	272,499	61,489	258,564
3331201782	Backhoes, either shipped for mounting separately or already mounted on an integral unit .....	9	17,104	121,802	20,461	121,295
3331201799	All other including sidebooms, pipehandlers, dozers, front-end loaders, shovel loaders, logging arches, rippers, rooters, continuous ditching and trenching attachments, forklift attachments, cranes, cable power control units, hydraulic power control units, etc. ....	30	<sup>b</sup> 40,728	150,697	41,028	137,269
33392372 pt.	Winches and materials-handling equipment for mounting.	(X)	(D)	(D)	(D)	(D)
3339237231	Winches (towing, logging, and oil field types) .....	7	(D)	208,849	(D)	103,691
3339237239	Other equipment .....	2	(D)	(D)	(D)	(D)
33392372 pt.	Aerial work platforms .....	(X)	93,777	2,040,305	(D)	(D)
3339237211	Boom type, self-propelled .....	8	29,296	1,124,805	17,429	852,548
3339237213	Scissors type, self-propelled .....	8	<sup>b</sup> 29,409	<sup>b</sup> 430,175	27,289	406,819
3339237215	Not self-propelled, boom and scissors type .....	5	(D)	(D)	(D)	(D)
3339237217	Truck mounted .....	13	(D)	(D)	12,257	392,240

- Represents zero. D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. nehp Net engine horsepower. n.s.k. Not specified by kind. pt. Part. <sup>1</sup>Revised by 5 percent or more from previously published data. tph Tons per hour. X Not applicable.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>15 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 6. Shipments, Exports, and Imports of Selected Construction Machinery: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Export shipments <sup>2</sup>		Imports for consumption <sup>3</sup>	
	Quantity	Value <sup>1</sup>	Quantity	Value as reported	Quantity	Value <sup>4</sup>
<b>1998</b>						
Wheel tractors, contractors' off-highway type, 2- and 4-wheel for use on natural terrain.....	(D)	(D)	3,791	90,353	3,718	28,358
Rubber-tired dozers .....	(D)	(D)	303	14,275	67	6,119
Wheeled log skidders, self-propelled.....	2,327	289,291	1,183	57,260	1,210	111,288
Crawler tractors (except crawler loaders).....	(D)	(D)	1,624	339,237	6,697	462,704
Wheel loaders, rear engine mount, integral design 4-wheel drive, nonskid steer .....	(D)	(D)	16,049	604,609	6,693	446,318
Skid steer loaders .....	65,958	1,014,638	1,639	67,096	1,215	75,567
Crawler loaders .....	(D)	(D)	274	8,155	1,768	188,473
Excavators, hydraulic operated, crawler mounted .....	17,515	1,772,681	2,280	259,354	14,888	1,053,489
Excavators, hydraulic operated, wheel (rubber) mounted .....	(D)	(D)	102	15,270	1,415	118,331
Cranes, lattice boom, wheel (rubber) mounted .....	(D)	(D)	148	17,303	110	43,562
Cranes, wheel (integral), hydraulic operated, telescopic boom, multiple control stations (rubber mounted), including pinned on type, telescopic and articulated .....	(D)	(D)	453	56,185	192	77,445
Cranes, wheel, hydraulic operated, telescopic boom, one control station (self-propelled, rubber mounted) .....	2,805	464,118	935	89,504	116	20,930
Cranes, pedestal or ship mounted.....	150	49,253	567	7,864	196	11,053
Cranes, other .....	(D)	(D)	247	40,069	677	58,747
Clamshell/grapple attachments.....	794	14,956	3,525	6,280	3,384	7,241
Dragline buckets (attachments) .....	173	12,358	-	-	7,221	3,760
Concrete mixers.....	23,950	459,325	2,323	16,215	48,873	32,953
Concrete pavers, finishers, and spreaders.....	87,966	169,707	1,173	29,166	3,585	2,327
Concrete pumps .....	(D)	(D)	1,297	18,908	4,837	54,640
Bituminous pavers, finishers, and spreaders.....	(D)	(D)	596	34,785	335	628
Asphalt plants and bituminous stabilization mixing equipment .....	273	286,597	967	24,310	20	956
Scraper bowls .....	(D)	(D)	1,503	818	1,954	26,721
Motor graders and light maintainers .....	(D)	(D)	1,493	159,046	1,108	125,312
Self-propelled vibratory compaction equipment.....	(D)	(D)	1,832	61,013	4,504	143,319
Self-propelled static compaction equipment.....	(D)	(D)	1,015	44,201	1,117	26,219
Off-highway rear dump haulers, trucks, and truck trailers, including ridged and articulated.....	3,536	1,271,459	3,422	601,810	533	76,159
Off-highway trucks, truck-type tractor chassis, trailers, and wagons .....	3,294	164,641	1,530	122,932	2,284	315,154
Winches for mounting (towing, logging, and oil field types).....	(D)	208,849	186,426	78,592	3,037,471	80,765
Backhoes for mounting.....	17,104	121,802	9,022	32,456	11,380	2,553
Other construction machinery for mounting .....	(D)	(D)	12,138	28,592	38,191	109,372
Self-propelled continuous ditchers and trenchers (integral units), ladder-type digging element .....	(D)	(D)	1,100	17,926	1	100
Self-propelled continuous ditchers and trenchers (integral units), wheel-type digging element.....	(D)	(D)	352	15,996	206	1,631
<b>1997</b>						
Wheel tractors, contractors' off-highway type, 2- and 4-wheel for use on natural terrain.....	(D)	(D)	3,568	114,369	4,315	29,053
Rubber-tired dozers .....	(D)	(D)	455	23,625	145	4,107
Wheeled log skidders, self-propelled.....	2,140	240,774	1,458	65,798	1,007	87,025
Crawler tractors (except crawler loaders).....	(D)	(D)	1,735	325,441	5,753	393,178
Wheel loaders, rear engine mount, integral design 4-wheel drive, nonskid steer .....	(D)	(D)	17,918	639,114	5,152	357,481
Skid steer loaders .....	62,527	958,511	1,836	86,648	1,090	52,077
Crawler loaders .....	(D)	(D)	202	8,746	1,556	167,062
Excavators, hydraulic operated, crawler mounted .....	15,182	1,570,415	2,495	302,035	9,422	733,016
Excavators, hydraulic operated, wheel (rubber) mounted .....	(D)	(D)	65	7,550	1,327	106,788

See footnotes at end of table.

**Table 6. Shipments, Exports, and Imports of Selected Construction Machinery: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Export shipments <sup>2</sup>		Imports for consumption <sup>3</sup>	
	Quantity	Value <sup>1</sup>	Quantity	Value as reported	Quantity	Value <sup>4</sup>
<b>1997—Con.</b>						
Cranes, lattice boom, wheel (rubber) mounted . . .	43	38,167	192	29,293	216	41,843
Cranes, wheel (integral), hydraulic operated, telescopic boom, multiple control stations (rubber mounted), including pinned on type, telescopic and articulated . . . . .	(D)	(D)	523	72,780	185	52,656
Cranes, wheel, hydraulic operated, telescopic boom, one control station (self-propelled, rubber mounted) . . . . .	2,262	357,054	911	99,271	160	19,302
Cranes, pedestal or ship mounted . . . . .	79	27,572	790	13,266	188	56,284
Cranes, other . . . . .	(D)	(D)	636	120,621	327	54,498
Clamshell/grapple attachments . . . . .	606	14,849	3,997	6,875	3,210	5,623
Dragline buckets (attachments) . . . . .	104	9,145	-	-	1,187	2,235
Concrete mixers . . . . .	21,163	443,352	1,800	14,566	39,748	28,461
Concrete pavers, finishers, and spreaders . . . . .	74,631	146,411	1,412	35,239	2,249	3,813
Concrete pumps . . . . .	(D)	(D)	1,865	20,381	16,731	19,529
Bituminous pavers, finishers, and spreaders . . . . .	(D)	(D)	614	39,328	2,798	3,212
Asphalt plants and bituminous stabilization mixing equipment . . . . .	333	229,602	940	28,180	39	116
Scraper bowls . . . . .	2,427	237,532	3,762	6,217	1,027	11,104
Motor graders and light maintainers . . . . .	(D)	(D)	1,783	178,525	720	73,320
Self-propelled vibratory compaction equipment . . . . .	(D)	(D)	2,262	79,622	3,940	110,436
Self-propelled static compaction equipment . . . . .	(D)	(D)	924	46,650	605	15,254
Off-highway rear dump haulers, trucks, and truck trailers, including rigid and articulated . . . . .	3,184	1,457,466	3,126	412,977	294	51,557
Off-highway trucks, truck-type tractor chassis, trailers, and wagons . . . . .	2,622	138,823	1,950	253,701	1,753	276,124
Winches for mounting (towing, logging, and oil field types) . . . . .	(D)	103,691	440,623	76,430	2,504,578	76,776
Backhoes for mounting . . . . .	20,461	121,295	2,699	9,032	4,322	2,984
Other construction machinery for mounting . . . . .	(D)	(D)	21,143	52,362	57,026	81,801
Self-propelled continuous ditchers and trenchers (integral units), ladder-type digging element . . . . .	(D)	(D)	1,639	22,490	-	-
Self-propelled continuous ditchers and trenchers (integral units), wheel-type digging element . . . . .	(D)	(D)	374	14,194	43	3,067

- Represents zero. D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Value f.o.b. plant.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau reports IM 145, *U.S. General Imports*, and IM 146, *U.S. Imports for Consumption*.

<sup>4</sup>Value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

**HISTORICAL NOTES**

Data on construction machinery have been collected by the Census Bureau since 1942. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal

Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Keeley Voor, 301-457-4746.

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## MINING MACHINERY AND MINERAL PROCESSING EQUIPMENT—MA333F (FORMERLY MA35F)

### INTRODUCTION

These data cover firms engaged in the manufacture of underground mining machinery; mineral processing equipment; crushing, pulverizing, and screening machinery; portable oil and gas and water drilling rigs; and related mining machinery and equipment, including underground drills and breakers, and mine cars.

The statistics were collected by mail on Census Bureau annual Form MA333F, Mining Machinery and Mineral Processing Equipment. The survey panel includes all known manufacturers of mining machinery and mineral processing equipment, approximately 117 companies.

### SUMMARY OF FINDINGS

In 1998, the manufacturers' value of shipments of selected types of mining machinery and related equipment totaled \$1.9 billion, a decrease of 9.5 percent from the 1997 figure of \$2.1 billion. The 1998 total included shipments of \$145.6 million of portable crushing, screening, washing, and combination plants which was a 3.5-percent decrease from the 1997 total of \$150.9 million. Underground mining machinery equipment totaled \$444.2 million in 1998, a 34.7-percent decrease from the 1997 total of \$680.4 million. In 1998, stationary, crushing, pulverizing, and screening machinery totaled \$363.5 million, a 12.6-percent decrease from the \$416.1 million reported in 1997. Drills and other mining machinery totaled \$420.0 million in 1998, a 47.3-percent increase from the \$285.2 million reported in 1997. Portable drilling rigs totaled \$482.3 million in 1998, a 7.1-percent decrease from the \$518.9 million reported in 1997.

### EXPLANATION OF TERMS

**Mining machinery.** Heavy machinery and equipment used by the mining industry in the exploration and development of solid mineral properties. Mining is used here in

the broad sense to include the extraction of solid minerals occurring naturally such as coal and ores. The term mining also includes quarrying, milling (crushing, screening, washing, flotation, etc.), and other preparations customarily done at the mine site or as a part of mining activity. Portable drilling rigs for use in oil and gas fields or for drilling water wells are also included for the purpose of this survey.

**Auger drills.** Machines that use continuous flight auger bits for removing cuttings.

**Bucket drills.** Machines that rotate a bucket and remove cuttings by lifting the bucket to be dumped.

**Cable tools.** Machines using percussion-type tools and those that clean the hole using tubular-type bailing tools.

**Portable drilling rigs.** Drills mounted on a carrier and used on the surface (above ground).

**Pull-back capacity.** Lifting capacity of drawworks or hoisting capacity of taphead.

**Pull-down capacity.** Capacity to apply bit pressure.

**Reverse circulation.** Machines using a rotary drilling process where the drill cuttings and fluid return to the surface inside the drill stem (large diameter holes, 18" or larger).

**Rotary drills.** Machines using rotary drill pipe, continuous fluid, and a mud pump, air compressor, or combination to clear the hole of filling.

**Screens, vibrating.** Machines used for dry or wet screening applications such as sizing, washing, and dewatering of ores, coal, sand, and gravel.

**Unit.** Complete rig, including carrier.

**Table 7. Manufacturers' Shipments of Mining Machinery and Mineral Processing Equipment by Type: 1998 and 1997**

[Quantity in units except as specified. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
33312081	Mining machinery and mineral processing equipment . . . . .	(X)	(X)	1,855,671	(X)	2,051,458
	Portable crushing, screening, washing, and combination plants . . . . .	17	941	145,581	<sup>†</sup> 1,256	<sup>†</sup> 150,854
	Crushing plants (classification based upon the type of crusher first in the processing flow):					
3331208111	Gyratory . . . . .	8	<sup>a</sup> 139	40,601	130	35,164
3331208112	Impact . . . . .	8	<sup>a</sup> 65	<sup>a</sup> 12,585	58	10,964
3331208113	Jaw <sup>1</sup> . . . . .	9	(D)	(D)	(D)	(D)
3331208114	Roll <sup>1</sup> . . . . .	1	<sup>a</sup> 127	30,342	90	24,781
3331208116	Screening, washing, and other plants . . . . .	14	610	62,053	<sup>†</sup> 978	<sup>†</sup> 79,945
33313110	Underground mining machinery (except parts sold separately) . . . . .	26	16,902	444,245	16,763	680,430
3331311001	Continuous mining machines, borer, ripper, auger, and drum, including roadheading machines <sup>2</sup> . . . . .	8	<sup>b</sup> 220	<sup>b</sup> 193,956	(D)	(D)
3331311006	Face haulage vehicles, rubber-tired, self-propelled <sup>2</sup> . . . . .	8	<sup>a</sup> 177	63,142	<sup>a</sup> 488	<sup>a</sup> 306,710
3331311011	Support vehicles, rubber-tired or track-mounted . . . . .	14	363	23,325	336	21,150
3331311016	All other underground mining machinery, n.e.c. . . . .	18	16,142	163,822	15,939	<sup>†</sup> 352,570
33313150	Crushing, pulverizing, and screening (except portable machinery (except parts sold separately)) . . . . .	37	4,512	363,535	4,123	416,074
	Crushers, stationary type, including skid-mounted:					
3331315001	Gyratory . . . . .	6	<sup>c</sup> 283	<sup>c</sup> 92,538	<sup>a</sup> 261	<sup>a</sup> 82,855
3331315006	Impact . . . . .	14	402	45,147	389	<sup>†</sup> 49,015
3331315011	Jaw . . . . .	7	<sup>a</sup> 122	18,379	<sup>a</sup> 111	15,152
3331315016	Roll <sup>3</sup> . . . . .	8	(D)	(D)	(D)	(D)
3331315021	Grinding mills and pulverizers <sup>3</sup> . . . . .	6	264	74,054	<sup>†</sup> 260	<sup>†</sup> 152,354
	Screens, vibrating, stationary:					
3331315026	Horizontal . . . . .	15	<sup>b</sup> 1,036	<sup>a</sup> 47,696	<sup>a</sup> 939	<sup>a</sup> 39,042
3331315031	Inclined . . . . .	17	<sup>a</sup> 1,817	<sup>a</sup> 54,845	<sup>a</sup> 1,743	<sup>a</sup> 56,740
3331315036	Other, including trommell . . . . .	8	<sup>a</sup> 40	<sup>b</sup> 3,171	<sup>a</sup> 139	6,878
3331315041	Other crushing, pulverizing, and screening machinery, n.e.c. . . . .	11	548	27,705	281	14,038
33313171	Drills and other mining machinery, n.e.c. (except parts) . . . . .	27	12,601,726	420,011	<sup>†</sup> 13,562,410	<sup>†</sup> 285,180
	Drills and breakers (rotary and percussion):					
3331317102	Rock drills, air and hydraulic powered <sup>4</sup> . . . . .	3	(D)	(D)	(D)	(D)
3331317106	Coal drills and core drills <sup>4</sup> . . . . .	2	(D)	(D)	(D)	(D)
3331317111	Roof bolters <sup>4</sup> . . . . .	5	10,895,938	98,018	10,741,325	<sup>†</sup> 96,235
3331317116	All other mining machinery and equipment (except parts sold separately) . . . . .	25	1,705,788	321,993	<sup>†</sup> 2,821,085	<sup>†</sup> 188,945
3331327	Portable drilling rigs and parts . . . . .	28	2,631,443	482,299	<sup>†</sup> 3,341,598	<sup>†</sup> 518,920
	Rotary, trailer- and truck-mounted with pull-back capacity:					
3331327116	Up to 14,999 lb . . . . .	5	85	4,600	78	7,024
3331327121	15,000 to 29,999 lb . . . . .	10	166	32,894	122	25,868
3331327126	30,000 to 59,999 lb . . . . .	7	80	31,123	75	24,829
3331327131	60,000 lb and over . . . . .	3	16	9,345	71	35,270
	Rotary blasthole drills, truck-, trailer-, or track-mounted:					
3331327136	Up to 59,999 lb <sup>5</sup> . . . . .	6	436	98,210	(D)	(D)
3331327141	60,000 lb and over <sup>5</sup> . . . . .	4	42	51,219	525	178,627
3331327146	Construction drills . . . . .	9	157	27,174	135	18,869
3331327151	Other portable drilling rigs, including workover (service) rigs <sup>6</sup> . . . . .	5	(D)	(D)	(D)	(D)
3331327256	Parts for portable drilling rigs <sup>6</sup> . . . . .	21	2,630,461	227,734	<sup>†</sup> 3,340,592	228,433

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. <sup>†</sup>Revised by 5 percent or more from previously published data. X Not applicable.

<sup>1</sup>Product codes 3331208113 and 3331208114 are combined to avoid disclosing data for individual companies.  
<sup>2</sup>For 1997, product codes 3331311001 and 3331311006 are combined to avoid disclosing data for individual companies.  
<sup>3</sup>Product codes 3331315016 and 3331315021 are combined to avoid disclosing data for individual companies.  
<sup>4</sup>Product codes 3331317102, 3331317106, and 3331317111 are combined to avoid disclosing data for individual companies.  
<sup>5</sup>For 1997, product codes 3331327136 and 3331327141 are combined to avoid disclosing data for individual companies.  
<sup>6</sup>Product codes 3331327151 and 3331327256 are combined to avoid disclosing data for individual companies

Note: Percent estimation of each item is indicated as follows: <sup>a</sup>15 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.



**Table 8. Shipments, Exports, and Imports of Selected Mining Machinery and Mineral Processing Equipment: 1998 and 1997**

[Value in thousands of dollars]

Product description	Manufacturers' shipments (value f.o.b. plant)	Exports of domestic merchandise <sup>1 2</sup> (value at port)	Value of imports for consumption <sup>1 3 4</sup>
<b>1998</b>			
Portable crushing plants and stationary grinding machines.....	96,883	71,482	63,433
Sorting, screening, separating, or washing machines.....	195,470	76,325	93,224
Rock breaking machines, coal or rock cutters, and tunneling machinery and rock drilling and earth boring tools.....	291,974	119,127	230,167
Mine wagon pushers, locomotive or wagon tracers, wagon tippers, and similar railway wagon handling equipment.....	86,467	17,372	1,003
Stationary crushing machines.....	163,577	24,984	41,326
<b>1997</b>			
Portable crushing plants and stationary grinding machines.....	171,851	82,391	45,728
Sorting, screening, separating, or washing machines.....	196,643	80,676	89,895
Rock breaking machines, coal or rock cutters, and tunneling machinery and rock drilling and earth boring tools.....	332,092	121,213	206,662
Mine wagon pushers, locomotive or wagon tracers, wagon tippers, and similar railway wagon handling equipment.....	92,003	9,086	981
Stationary crushing machines.....	152,306	34,586	36,579

<sup>1</sup>For comparison of North American Industry Classification System (NAICS)-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report FT 446, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>4</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus U.S. import duties.

**HISTORICAL NOTE**

Data on mining machinery and equipment have been collected by the Census Bureau since 1961. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact Larry Blumberg, 301-457-4744.

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## INTERNAL COMBUSTION ENGINES—MA333L (FORMERLY MA35L)

### INTRODUCTION

These data cover manufacturers of internal combustion engines in the United States, except outboard, aircraft, military tank, and nondiesel automotive engines.

The statistics were collected by mail on Census Bureau annual Form MA333L, Internal Combustion Engines. The survey panel includes all known domestic manufacturers of the specified types of internal combustion engines, approximately 38 companies.

### SUMMARY OF FINDINGS

In 1998, a total of 27,522,894 internal combustion engines (except outboard, nondiesel automotive, aircraft and military tank) were shipped or produced and incorporated at the same plant, representing a 10-percent increase from the 25,077,135 produced in 1997. Gasoline or gas-gasoline engines totaled 26,352,042 in 1998, 10 percent above the figure of 23,988,749 for 1997. The number of nonautomotive diesel, semidiesel, and dual-fuel engines produced in 1998 amounted to 296,249, a 1-percent decrease from the 299,699 reported in 1997. There were 850,879 automotive diesel, semidiesel, and dual-fuel engines produced in 1998, 10 percent more than the 777,049 produced in 1997. Production of gas engines (LPG and natural) was 23,724 in 1998, 34 percent more than the 17,688 produced in 1997.

### EXPLANATION OF TERMS

**Total number of engines produced.** Represents all production of engines for sale to other companies, for transfer to other plants of the same company or for the incorporation into other products produced at the plant.

**Shipments to distributors and other companies.** Represents all shipments to affiliated and nonaffiliated distributors, plus all other shipments to nonaffiliated companies.

**Interplant transfers.** Represents the number and value of engines transferred to other plants of the reporting company for incorporation into machinery or equipment in those plants. Shipments to distributors (whether affiliated with the company or not affiliated) are excluded. Transfers to other plants of the same company are reported at market value.

**Produced and incorporated.** Represents engines produced and incorporated into other products in the same plant such as construction and farm machinery (including tractors); engine-driven generator sets; and other products incorporating an engine manufactured in the same plant.

**Horsepower.** A unit for measuring the power of motors or engines, equal to 746 watts or to a rate of 33,000 foot-pounds per minute (the force required to raise 33,000 pounds at the rate of 1 foot per minute).

**Piston displacement.** The volume (measured in cubic inches) displaced by a stroke of a piston (one cubic inch is approximately 16.387 cubic centimeters).

**End application.** The end application or use to which the engine was destined. Engines may not be used ultimately for the specific application intended or supposed by the producer.

**Table 9. Internal Combustion Engines by Type of Engine: 1998 and 1997**

[Engines and quantity in units. Value in thousands of dollars]

Product description	Engines produced <sup>1</sup>	Total shipments and interplant transfers		Shipments to other companies		Interplant transfers		Engines produced and incorporated <sup>2</sup>
		Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	
<b>1998</b>								
<b>Total</b> .....	<b>27,522,894</b>	<b>16,668,448</b>	<b>13,306,762</b>	<b>(D)</b>	<b>9,853,438</b>	<b>(D)</b>	<b>3,453,324</b>	<b>10,854,446</b>
Gasoline (except automotive).....	26,352,042	(D)	2,817,334	(D)	(D)	589,286	(D)	(D)
Nonautomotive diesel.....	296,249	(D)	3,209,928	203,992	1,733,411	(D)	1,476,517	(D)
Automotive diesel.....	850,879	850,879	6,821,054	660,734	5,533,338	190,145	1,287,716	-
Natural gas and liquefied petroleum gas.....	23,724	(D)	458,446	20,909	(D)	(D)	(D)	(D)
<b>1997</b>								
<b>Total</b> .....	<b>25,077,135</b>	<b>15,619,287</b>	<b>11,819,595</b>	<b>(D)</b>	<b>8,767,265</b>	<b>(D)</b>	<b>3,052,330</b>	<b>9,457,848</b>
Gasoline (except automotive).....	23,988,749	(D)	2,408,524	(D)	(D)	544,867	(D)	(D)
Nonautomotive diesel.....	299,649	(D)	3,032,636	208,939	1,654,137	(D)	1,378,499	(D)
Automotive diesel.....	771,049	771,049	5,957,064	596,199	4,823,640	174,850	1,133,424	-
Natural gas and liquefied petroleum gas.....	17,688	(D)	421,371	14,845	(D)	(D)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents total number of engines produced; incorporated into products at same establishment or shipped.

<sup>2</sup>Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

**Table 10. Gasoline Engines by Horsepower Rating: 1998 and 1997**

[Engines and quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Engines produced <sup>1</sup>	Total shipments and interplant transfers		Shipments to other companies		Interplant transfers		Engines produced and incorporated <sup>2</sup>
				Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	
<b>1998</b>										
33361810	Gasoline engines .....	25	26,352,042	(D)	2,817,334	(D)	(D)	589,286	(D)	(D)
3336181011	Under 11 hp.....	16	23,529,191	(D)	(D)	(D)	(D)	348,272	48,909	(D)
3336181013	11 to under 21 hp ...	7	1,965,394	(D)	662,387	1,922,595	(D)	(D)	(D)	(D)
3336181015	21 to under 61 hp ...	10	501,517	(D)	333,623	454,348	(D)	(D)	(D)	(D)
3336181017	61 hp and over .....	9	355,940	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>1997</b>										
33361810	Gasoline engines .....	23	23,988,749	(D)	2,408,524	(D)	(D)	544,867	(D)	(D)
3336181011	Under 11 hp.....	14	21,379,482	(D)	(D)	(D)	(D)	356,732	46,122	(D)
3336181013	11 to under 21 hp ...	6	2,192,033	(D)	740,086	2,147,393	(D)	(D)	(D)	(D)
3336181015	21 to under 61 hp ...	7	137,831	(D)	114,024	(D)	(D)	(D)	(D)	(D)
3336181017	61 hp and over .....	8	279,403	(D)	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents total number of engines produced; incorporated into products at same establishment or shipped.

<sup>2</sup>Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended revolutions per minute (r/min).

**Table 11. Nonautomotive Diesel Engines by Horsepower Rating: 1998 and 1997**

[Engines and quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Engines produced <sup>1</sup>	Total shipments and interplant transfers		Shipments to other companies		Interplant transfers		Engines produced and incorporated <sup>2</sup>
				Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	Quantity	Value f.o.b. plant	
<b>1998</b>										
33361830	Nonautomotive diesel engines.	17	296,249	(D)	3,209,928	203,992	1,797,578	(D)	1,476,517	(D)
3336183011	Under 101 hp . . . . .	9	(D)	(D)	68,063	(D)	53,724	(D)	(D)	(D)
3336183013	101 to under 151 hp . . . . .	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3336183015	151 to under 176 hp . . . . .	6	29,400	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3336183017	176 to under 251 hp . . . . .	8	46,355	(D)	270,411	(D)	142,750	(D)	(D)	(D)
3336183019	251 to under 301 hp . . . . .	6	49,577	(D)	(D)	(D)	234,705	(D)	(D)	(D)
333618301B	301 to under 401 hp . . . . .	6	25,721	(D)	326,304	16,709	213,456	9,008	99,718	(D)
333618301D	401 to under 451 hp . . . . .	5	5,569	5,569	87,725	(D)	(D)	(D)	(D)	-
333618301F	451 to under 601 hp . . . . .	3	9,876	9,876	222,499	(D)	215,170	(D)	(D)	-
333618301H	601 to under 701 hp . . . . .	3	2,517	(D)	64,598	1,764	72,251	(D)	(D)	(D)
333618301J	701 to under 801 hp . . . . .	4	(D)	(D)	(D)	(D)	62,716	(D)	(D)	-
333618301L	801 to under 1,501 hp . . . . .	5	6,205	(D)	(D)	2,576	202,805	(D)	(D)	(D)
333618301M	1,501 hp and over . . . . .	6	3,830	(D)	(D)	1,195	275,671	(D)	(D)	(D)
<b>1997</b>										
33361830	Nonautomotive diesel engines.	18	299,649	(D)	'3,032,636	208,939	'1,654,137	(D)	'1,378,499	(D)
3336183011	Under 101 hp . . . . .	10	(D)	(D)	62,007	(D)	(D)	(D)	(D)	(D)
3336183013	101 to under 151 hp . . . . .	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3336183015	151 to under 176 hp . . . . .	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3336183017	176 to under 251 hp . . . . .	7	42,661	(D)	284,002	(D)	146,249	(D)	(D)	(D)
3336183019	251 to under 301 hp . . . . .	6	46,695	(D)	322,368	(D)	(D)	'8,496	'87,602	(D)
333618301B	301 to under 401 hp . . . . .	6	26,534	(D)	'238,598	'16,149	215,119	10,382	'113,479	(D)
333618301D	401 to under 451 hp . . . . .	5	6,991	(D)	112,605	4,359	75,318	(D)	(D)	(D)
333618301F	451 to under 601 hp . . . . .	3	14,177	14,177	304,047	(D)	222,706	(D)	(D)	-
333618301H	601 to under 701 hp . . . . .	3	'4,222	4,222	125,789	(D)	'103,652	(D)	(D)	-
333618301J	701 to under 801 hp . . . . .	3	3,008	3,008	104,780	(D)	63,493	(D)	(D)	-
333618301L	801 to under 1,501 hp . . . . .	5	'5,794	(D)	(D)	(D)	(D)	(D)	(D)	(D)
333618301M	1,501 hp and over . . . . .	6	'3,588	(D)	(D)	1,061	'171,677	(D)	(D)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. 'Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents total number of engines produced; incorporated into products at same establishment or shipped.

<sup>2</sup>Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended revolutions per minute (r/min).

**Table 12. Automotive Diesel Engines by Horsepower Rating: 1998 and 1997**

[Engines in units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Engines <sup>1</sup>	Value <sup>2</sup>	Engines <sup>1</sup>	Value <sup>2</sup>
33361850	Automotive diesel engines .....	8	850,879	6,821,054	'685,072	'5,051,380
3336185011	Under 226 hp .....	8	(D)	(D)	(D)	(D)
3336185013	226 to under 251 hp .....	7	(D)	(D)	(D)	(D)
3336185015	251 hp and over .....	7	269,505	3,573,112	'233,900	'2,889,110

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents total number of engines produced; incorporated into products at same establishment or shipped.

<sup>2</sup>Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended revolutions per minute (r/min).

**Table 13. Gas Engines (Except Automotive) by Horsepower Rating: 1998 and 1997**

[Engines and quantity in units. Value in thousands of dollars]

Product code	Product description	Number of companies	Engines produced <sup>1</sup>	Total shipments including interplant transfers		Engines produced and incorporated <sup>2</sup>
				Quantity	Value f.o.b. plant	
<b>1998</b>						
33361890	Natural gas and liquefied petroleum gas engines .	12	23,724	(D)	458,446	(D)
3336189011	Under 501 hp .....	11	(D)	(D)	(D)	(D)
3336189013	501 hp and over .....	5	(D)	(D)	(D)	(D)
<b>1997</b>						
33361890	Natural gas and liquefied petroleum gas engines .	12	'17,688	(D)	'421,371	(D)
3336189011	Under 501 hp .....	10	(D)	(D)	(D)	(D)
3336189013	501 hp and over .....	4	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing data for individual companies. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Represents total number of engines produced; incorporated into products at same establishment or shipped.

<sup>2</sup>Represents engines produced and incorporated (in same plant) into products such as construction machinery, farm machinery, tractors, engine-generator sets, and other products.

Note: Horsepower is defined as maximum published horsepower rating at maximum recommended revolutions per minute (r/min).

**Table 14. Engines Produced by Piston Displacement and Fuel System: 1998 and 1997**

Piston displacement	1998	1997
<b>Total</b> .....	<b>27,499,170</b>	<b>25,059,447</b>
Gasoline .....	26,352,042	23,988,749
Under 251 cc .....	(D)	(D)
251 cc and over .....	(D)	(D)
Nonautomotive diesel .....	296,249	299,649
Under 251 cc .....	(D)	(D)
251 to 3,700 cc .....	38,517	(D)
3,701 cc and over .....	(D)	(D)
Automotive diesel .....	850,879	771,049
Under 251 to 3,700 cc .....	(D)	(D)
3,701 cc and over .....	(D)	(D)

cc Cubic centimeters. D Withheld to avoid disclosing data for individual companies.

Table 15. **Engines Produced (Except Outboard, Automotive, and Aircraft) by Type of Engine and End Application: 1998 and 1997**

End application	Gasoline engines		Nonautomotive diesel engines	
	1998	1997	1998	1997
<b>Total</b> .....	<b>26,352,042</b>	<b>23,988,749</b>	<b>296,249</b>	<b>299,649</b>
Oilfield and petroleum-related generating and stationary equipment .....	-	-	(D)	(D)
Other generator sets .....	(D)	(D)	35,081	†32,532
Irrigation .....	(D)	(D)	(D)	(D)
Agricultural vehicular .....	(D)	(D)	(D)	(D)
Off-highway mobile construction equipment .....	41,713	(D)	136,981	126,805
Marine (except outboard) .....	(D)	(D)	13,941	†13,349
Railroad, motive power type .....	-	-	2,306	†1,969
Chain saws .....	2,949,163	2,829,297	-	-
Garden tractors .....	(D)	(D)	-	-
Lawn, home, and recreational equipment .....	17,542,101	15,870,301	-	-
Other general industrial .....	1,884,612	(D)	42,495	44,684

- Represents zero. D Withheld to avoid disclosing data for individual companies. †Revised by 5 percent or more from previously published data.

Table 16. **Production, Exports, and Imports of Internal Combustion Engines: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Manufacturers' production		Exports of domestic merchandise <sup>2</sup>		Imports for consumption <sup>3</sup>	
		Quantity	Value of shipments f.o.b. plant <sup>1</sup>	Quantity	Value at port	Quantity	Value
	<b>1998</b>						
	Total .....	27,522,894	13,306,762	2,163,449	2,407,292	3,451,332	2,105,390
3336185	Automotive diesel engines .....	850,879	6,821,054	43,275	369,261	38,895	20,905
3336183	Nonautomotive diesel engines .....	296,249	3,209,928	120,740	1,675,047	402,021	981,530
3336181	Gasoline engines .....	26,352,042	2,817,334	1,997,788	323,614	2,911,438	1,057,597
3336189	Gas and liquefied petroleum gas engines ...	23,724	458,446	1,646	39,370	98,978	45,358
	<b>1997</b>						
	Total .....	25,077,135	11,819,595	2,061,851	2,590,940	2,571,759	2,002,966
3336185	Automotive diesel engines .....	771,049	5,957,064	81,260	815,651	18,721	143,697
3336183	Nonautomotive diesel engines .....	299,649	3,032,636	102,767	1,390,782	339,928	885,494
3336181	Gasoline engines .....	23,988,749	2,408,524	1,873,972	314,703	2,169,196	948,768
3336189	Gas and liquefied petroleum gas engines ...	17,688	421,371	3,852	69,804	43,914	25,007

<sup>1</sup>Value of shipments f.o.b. plant of production; quantities shipped as engines, including interplant transfers.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. General Imports*. These data include both import value and duty value.

**HISTORICAL NOTE**

Data on internal combustion engines have been collected by the Census Bureau since 1943. Historical data may be obtained from Current Industry Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also

available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact J. Stanis Batton, 301-457-4750.

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## METALWORKING MACHINERY—MQ333W (FORMERLY MQ35W)

### INTRODUCTION

These data cover all companies engaged in the manufacture of industrial type metal cutting and metal forming types of metalworking machinery, including numerical control types.

The statistics were collected by mail on Census Bureau quarterly Form MQ35W, Metalworking Machinery. The survey panel includes all known manufacturers of metal cutting and metal forming machinery. Approximately 401 companies are included.

### SUMMARY OF FINDINGS

Shipments of metalworking machinery during 1998 totaled \$4,817.1 million, a 3.9-percent decrease from the \$5,010.3 million shipments for 1997. Exports during the year were valued at \$643.5 million, a 7.6-percent decrease from exports valued at \$696.6 million during 1997. The value of unfilled orders on December 31, 1998 totaled \$2,140.0 million. The December 31, 1997 unfilled orders were valued at \$2,142.6 million.

Shipments of metal cutting type machine tools in 1998 totaled \$3,481.8 million, a 2.8-percent decrease from the \$3,583.3 million shipped during 1997. For 1998, shipments of lathes accounted for \$472.9 million; grinding and polishing machines, \$535.5 million; milling machines, \$281.1 million; and boring and drilling machines, \$176.5 million. The corresponding figures for 1997 were: lathes, \$480.7 million; grinding and polishing machines, \$595.0 million; milling machines, \$280.2 million; and boring and drilling machines, \$169.4 million.

### EXPLANATION OF TERMS

**Exports.** Includes both shipments for direct export and shipments to agent or exporters for shipment to foreign countries.

**Metal cutting type machine tools.** These are defined as new, industrial type, power-driven, complete machine tools, not supported in the hands of an operator when in use. They are used for removing metal in the form of chips, turnings, and borings. Also included are honing machines, lapping machines, grinders, and machines which cut using electrical techniques. Excluded are machine tools designed primarily for home workshops,

laboratories, garages, and services shops. These are small, low-priced machine tools of light construction. Also excluded are rolling mill machinery, power-driven hand tools, wood working machinery, and rebuilt machinery.

**Metal forming type machine tools.** These are defined as new, industrial type, power-driven, complete machine tools, not supported in the hands of an operator when in use. They are used to press, forge, emboss, hammer, extrude, blank, spin, shear, or bend metal into shape.

### Numerically Controlled Machines by Type:

*Positioning.* Machines equipped with positioning numerical control systems activated by direct data input (DNC); e.g., punched tape, punched cards, magnetic tape, cassette, or manual data input (MDI). Included in this group are all machines that have been equipped with control systems in which point-to-point positioning and cutting or forming (regardless of the number of movement "axes" or auxiliary functions) are controlled automatically via numerical programs inserted into the systems. If a machine has been equipped with a control system that permits positioning and continuous path operations, it is classified as continuous path.

*Continuous path or computer numerical control.* Machine equipped with continuous path numerical program control systems activated by direct data input (CNC); e.g., punched tape, punched cards, magnetic tape, cassette, or manual data input (MDI). Included in this group are all machines equipped with control systems in which, in addition to point-to-point positioning, the path of cutting is automatically controlled by means of numerical programs inserted into the systems. If a machine has been equipped with a control system that permits positioning and continuous path operations, it is classified as continuous path.

*Digital readout systems including dial or plugboard.* Machines equipped with digital readout systems or dial or plugboard type of prerecorded motion program control systems. Included in this group are all machines equipped with control systems in which positioning or continuous path are automatically commanded by numerical programs fed into the system, by an operator, through dials, plugs, switches, or any other numerical method.

**Table 17. Value of Shipments, Including Exports of Metalworking Machinery by Class of Product: 1989 to 1998**

[Thousands of dollars]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
	<b>Metalworking machinery . . . . .</b>	<b>4,817,066</b>	<b>5,010,262</b>	<b>4,607,757</b>	<b>4,547,133</b>	<b>3,780,074</b>	<b>3,222,456</b>	<b>3,073,862</b>	<b>3,171,748</b>	<b>3,426,081</b>	<b>3,514,224</b>
	Metal cutting type <sup>1</sup> . . . . .	3,481,754	3,583,298	3,141,128	3,036,592	2,463,001	2,084,864	1,999,668	2,138,713	2,371,266	2,428,520
3541D	Boring machines <sup>2</sup> . . . . .	73,583	80,161	88,929	172,417	129,835	84,667	97,975	77,655	(D)	(D)
3541D	Drilling machines <sup>2</sup> . . . . .	102,930	89,219	99,453	78,936	51,987	37,076	37,472	37,374	184,118	183,151
35413	Gear cutting machines . . . . .	197,672	213,507	164,258	137,121	100,612	87,662	79,600	115,226	102,678	97,304
35414	Grinding and polishing machines (except gear- tooth grinding, lapping, polishing, and buffing machines) . . . . .	535,508	595,014	541,277	549,580	443,262	360,894	335,121	378,946	433,574	419,754
35415	Lathes <sup>3</sup> . . . . .	472,943	480,672	451,115	478,003	390,407	305,488	258,885	317,087	355,632	343,223
35416	Milling machines <sup>4</sup> . . . . .	281,101	280,158	199,667	194,757	138,852	180,174	210,403	201,137	214,254	206,248
3541A	Machining centers (multifunction numerically controlled machines) . . . .	897,331	931,566	779,433	698,780	552,358	485,375	377,941	361,799	436,999	442,226
3541B	Station type machines . . . . .	571,038	551,870	498,592	477,021	455,138	374,772	434,705	450,366	502,066	562,887
3541C	Other metal cutting machine tools (except those designed primarily for home workshops, laboratories, etc.) . .	344,562	358,299	315,977	246,237	200,114	166,248	166,535	195,654	141,945	173,727
	Metal forming type . . . . .	1,335,312	1,426,964	1,466,629	1,510,541	1,317,073	1,139,581	1,073,994	1,033,035	1,080,181	1,085,704
35421 pt.	Punching and shearing machines . . . .	254,323	319,208	331,382	326,318	294,441	213,402	172,872	180,756	200,050	200,104
35421 pt.	Bending and forming machines . . . . .	262,748	258,479	283,020	256,882	253,219	255,299	270,044	204,357	222,861	217,891
35422	Presses (except forging) . . . . .	399,489	422,396	401,990	379,203	376,398	345,653	288,248	297,889	308,338	316,549
35423 pt.	Forging machines <sup>5</sup> . . . . .	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	73,947	58,478
35423 pt.	Other metal forming type machines <sup>5</sup> . . . . .	418,752	426,881	450,237	548,138	393,015	325,227	342,830	350,033	274,985	292,682

D Withheld to avoid disclosing data for individual companies. pt. Part.

<sup>1</sup>Data for "All lathes, turning machines" and "All milling machines, valued at under \$3,025 each" are included with "Metal cutting type" for 1995 through 1997.

<sup>2</sup>For 1989 and 1990, data for "Boring machines" were combined with "Drilling machines" to avoid disclosing data for individual companies.

<sup>3</sup>For 1991 through 1998, product code 35415, "Lathes," excludes the value for product code 35415 09, "All lathes valued under \$3,025 each."

<sup>4</sup>For 1991 through 1998, product code 35416, "Milling machines," excludes the value for product code 35416 09, "All milling machines valued under \$3,025 each."

<sup>5</sup>For 1991 through 1998 data for "Forging machines" have been combined with "Other metal forming machines" to avoid disclosing data for individual companies.



**Table 18. Total Shipments and Unfilled Orders: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Company count	1998			1997		
			Total shipments		Unfilled orders (value)	Total shipments		Unfilled orders (value)
			Quantity	Value		Quantity	Value	
	Metalworking machinery.....	(X)	205,059	4,817,066	2,139,958	243,920	5,010,262	2,142,586
	Total metal cutting type machine tools.....	(X)	123,583	3,481,754	1,418,250	169,624	3,583,298	1,406,987
	Total metal forming type machine tools.....	(X)	81,476	1,335,312	721,708	74,296	1,426,964	735,599
	Metal cutting type machine tools valued at \$3,025 each or more.....	(X)	37,491	3,434,208	1,415,614	40,168	3,520,170	1,404,777
	Metal cutting type machine tools valued under \$3,025 <sup>1 2 3</sup> .....	(X)	86,092	47,546	2,636	129,456	63,128	2,210
3541D 00	Boring and drilling machines.....	40	5,812	176,513	106,539	6,234	169,380	109,720
3541D 10	All boring machines valued under \$3,025 each....	-	(X)	(X)	(X)	(X)	(X)	(X)
3541D 16	Boring machines valued at \$3,025 each or more: Horizontal boring, drilling, and milling machines, including floor, table, and rail mounted <sup>4 5</sup> .....	6	215	<sup>a</sup> 20,711	(D)	(D)	(D)	<sup>a</sup> 9,509
3541D 40	Precision boring machines, including horizontal and vertical boring machines <sup>4 5 6</sup> .....	7	(D)	(D)	<sup>b</sup> 52,010	(D)	(D)	(D)
3541D 46	Jig boring and all other boring machines (except boring lathes) <sup>5 6</sup> .....	1	745	52,872	(X)	<sup>a</sup> 982	<sup>b</sup> 80,161	46,033
3541D 05	All drilling machines valued under \$3,025 each....	13	<sup>b</sup> 4,067	<sup>a</sup> 7,816	179	4,524	<sup>a</sup> 7,350	<sup>b</sup> 226
3541D 15	Drilling machines valued at \$3,025 each or more: Vertical upright drilling machines, including plain upright and heavy duty.....	10	141	<sup>a</sup> 1,582	434	135	<sup>a</sup> 1,604	1,022
3541D 25	Radial drilling machines, including plain and universal.....	-	(X)	(X)	(X)	(X)	(X)	(X)
3541D 35	Deep hole drilling machines.....	4	<sup>a</sup> 99	<sup>b</sup> 14,380	<sup>a</sup> 933	<sup>b</sup> 92	<sup>b</sup> 11,301	<sup>c</sup> 3,649
	Multiple spindle drilling machines:							
3541D 45	Adjustable joint and fixed center types <sup>7 8</sup> .....	6	(D)	(D)	<sup>b</sup> 743	(D)	(D)	(D)
3541D 55	All other automatic multiple spindle drilling machines.....	6	<sup>c</sup> 273	<sup>b</sup> 14,018	(D)	73	<sup>b</sup> 10,324	<sup>c</sup> 8,226
3541D 65	All other drilling machines, n.e.c. <sup>8 9</sup> .....	7	<sup>a</sup> 272	<sup>a</sup> 65,134	<sup>a</sup> 52,240	<sup>a</sup> 428	<sup>b</sup> 58,640	41,055
35413 00	Gear cutting machines, including gear hobbors, shapers, teeth finishing, bevel gear generators, and all other gear cutting machines.....	9	500	197,672	94,044	619	213,507	126,484
35414 00	Grinding, polishing, buffing, honing, and lapping machines.....	82	68,389	535,508	223,195	112,443	595,014	227,050
35414 10	All grinding, polishing, buffing, honing, and lapping machines valued under \$3,025 each.....	20	61,186	20,768	399	104,506	40,407	1,354
	All grinding, polishing, buffing, honing, and lapping machines valued at \$3,025 each or more:							
	External cylindrical grinding machines:							
35414 11	Plain, including angular wheel types <sup>10</sup> .....	2	(D)	(D)	(D)	(D)	(D)	(D)
35414 13	Universal <sup>10</sup> .....	3	121	24,609	7,939	106	27,308	12,726
35414 14	Roll, chucking, centerless, and other cylindrical grinding machines.....	13	<sup>b</sup> 557	<sup>a</sup> 149,965	123,470	<sup>b</sup> 985	<sup>a</sup> 218,674	95,353
35414 33	Surface grinding machines, rotary table type, horizontal and vertical <sup>11</sup> .....	7	(D)	(D)	(D)	(D)	(D)	(D)
35414 34	Surface grinding machines, reciprocating table type, including face grinders, horizontal and vertical <sup>12</sup> .....	5	(D)	(D)	<sup>c</sup> 432	(D)	(D)	(D)
35414 37	Surface grinding machines, reciprocating table type, including face grinders, hand surface type <sup>12</sup> .....	2	<sup>a</sup> 893	<sup>a</sup> 10,852	<sup>b</sup> 779	1,030	<sup>a</sup> 14,155	1,731
35414 42	All other disc grinders, including bench, floor, snag, double spindle grinders, and abrasive belt grinders <sup>11</sup> .....	4	<sup>b</sup> 1,727	<sup>b</sup> 48,636	<sup>b</sup> 6,338	1,090	<sup>a</sup> 33,429	<sup>b</sup> 17,893
35414 52	Tool and cutter grinding machines.....	13	<sup>a</sup> 653	<sup>a</sup> 115,798	12,294	654	97,783	16,910
35414 53	Drill point grinders <sup>13</sup> .....	4	(D)	(D)	(D)	(D)	(D)	(D)
35414 55	All other grinding machines, n.e.c., including internal cylindrical type, planer type, and thread grinding machines <sup>13</sup> .....	16	<sup>b</sup> 1,912	<sup>b</sup> 92,046	25,290	<sup>b</sup> 2,399	<sup>a</sup> 75,546	38,203
35414 75	Honing and lapping machines, internal, including combination bore, hone, and external <sup>14</sup> .....	5	(D)	(D)	(D)	(D)	(D)	4,835
35414 79	Flat surface lapping machines (except gear lapping) <sup>14</sup> .....	4	888	30,259	<sup>b</sup> 13,285	1,051	46,770	813
35414 84	All other honing and lapping machines or polishing and buffing machines, including speed lathes and multistation type.....	16	452	42,575	32,969	<sup>a</sup> 622	<sup>a</sup> 40,942	37,232

See footnotes at end of table.

Table 18. **Total Shipments and Unfilled Orders: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Company count	1998			1997		
			Total shipments		Unfilled orders (value)	Total shipments		Unfilled orders (value)
			Quantity	Value		Quantity	Value	
	Metalworking machinery—Con.							
	Metal cutting type machine tools valued under \$3,025 and at \$3,025 each or more—Con.							
35415 00	Lathes .....	(X)	5,089	472,943	80,146	5,058	480,672	120,867
	Numerically controlled:							
	Horizontal .....	11	3,829	351,773	34,951	3,679	356,700	49,668
35415 15	Multiple spindle NC turning machine <sup>15 16</sup> .....	2	(D)	(D)	(D)	(D)	(D)	(D)
	Single spindle NC turning machines:							
35415 19	Chuck sizes up to and including 6 inches <sup>15 16</sup> .....	3	(D)	(D)	(D)	(D)	(D)	(D)
35415 21	Chuck sizes over 6 inches but less than 10 inches <sup>15 16</sup> .....	8	2,404	201,496	16,079	(D)	(D)	(D)
35415 11	Chuck sizes from 10 inches but less than 15 inches .....	8	1,013	104,611	7,597	816	94,603	12,311
35415 12	Chuck sizes 15 inches and over <sup>15 16</sup> .....	3	<sup>a</sup> 412	45,666	11,275	2,863	262,097	37,357
35415 22	Vertical NC turning machines .....	7	228	86,902	29,550	228	76,711	49,414
35415 09	Nonnumerically controlled turning machines <sup>1</sup> .....	10	1,032	34,268	15,645	1,151	47,261	21,785
	All lathes (turning machines) valued under \$3,025 each <sup>1</sup> .....	1	(D)	(D)	(D)	(D)	(D)	(D)
	All lathes (turning machines) valued at \$3,025 each or more:							
35415 23	Engine or toolroom lathes, all types <sup>17</sup> .....	3	(D)	(D)	(D)	(D)	(D)	(D)
	Automatic lathes:							
35415 83	Single spindle <sup>17</sup> .....	-	(X)	(X)	(X)	(D)	(D)	(X)
	Multiple spindle:							
35415 88	Bar (screw) machines <sup>17</sup> .....	2	(D)	(D)	(D)	(D)	(D)	(D)
35415 67	Chucking machines <sup>17</sup> .....	-	(D)	(D)	(X)	(D)	(D)	(D)
35415 57	All other horizontal turning machines, including turret lathes and automatic between center lathes <sup>17</sup> .....	4	(D)	(D)	(X)	(D)	(D)	(X)
35415 86	All vertical turning machines <sup>17</sup> .....	1	<sup>b</sup> 1,032	34,268	15,645	<sup>b</sup> 1,151	<sup>a</sup> 47,261	21,785
35416 00	Milling machines <sup>2</sup> .....	25	3,416	281,101	174,928	4,240	280,158	198,989
35416 09	All milling machines valued under \$3,025 each <sup>2</sup> .....	5	(D)	(D)	(D)	(D)	(D)	(D)
	All milling machines valued at \$3,025 or more:							
35416 23	General-purpose, knee milling machines all types <sup>18 19</sup> .....	7	(D)	(D)	(D)	(D)	(D)	(D)
	Automatic:							
35416 32	Single spindle, multiple spindle, and special-purpose machines <sup>19</sup> .....	7	<sup>a</sup> 100	14,103	<sup>b</sup> 5,964	(D)	(D)	3,996
35416 53	Profile machines and duplicators <sup>18 19</sup> .....	4	(D)	(D)	(D)	(D)	(D)	(D)
35416 62	All other milling machines, n.e.c., including planer type and thread milling machines <sup>18 19</sup> .....	12	3,316	<sup>b</sup> 266,998	<sup>c</sup> 168,964	4,240	280,158	194,993
3541A 00	Machining centers .....	26	9,175	897,331	182,012	9,809	931,566	234,849
	Drill, mill, and bore, vertical (automatic tool change):							
3541A 05	Y-axis travel less than 20 inches .....	10	3,775	237,779	10,416	3,882	<sup>b</sup> 234,871	16,905
3541A 07	Y-axis travel 20 inches through 26 inches .....	9	2,899	233,672	13,918	3,440	<sup>b</sup> 281,210	25,188
3541A 09	Y-axis travel over 26 inches .....	8	604	87,100	14,265	537	<sup>b</sup> 77,889	<sup>b</sup> 22,618
	Drill, mill, and bore, horizontal (automatic tool change):							
3541A 12	400mm pallet and smaller <sup>20</sup> .....	4	284	64,643	13,913	310	65,477	(D)
3541A 14	401mm-500mm pallet <sup>20</sup> .....	5	333	84,372	14,224	352	<sup>b</sup> 82,626	25,393
3541A 16	501mm-630mm pallet <sup>21</sup> .....	4	(D)	(D)	(D)	(D)	(D)	(D)
3541A 17	631mm-800mm pallet <sup>21</sup> .....	4	145	78,131	18,746	176	90,835	62,300
3541A 18	801mm-1000mm pallet <sup>22</sup> .....	3	(D)	(D)	4,213	(D)	(D)	7,101
3541A 21	Over 1000mm pallet <sup>22</sup> .....	4	66	69,611	31,743	58	48,885	55,525
3541A 19	All other machining centers including special machining special adapting of standard machining and machining centers with indexing turret .....	7	<sup>b</sup> 1,069	<sup>a</sup> 42,023	<sup>c</sup> 60,574	1,054	49,773	19,819
3541B 00	Station type machines .....	19	422	571,038	499,105	435	551,870	293,901
3541B 31	Dial or rotary, trunnion, and center column .....	10	124	119,210	60,259	152	110,443	71,570
3541B 35	Transfer <sup>23</sup> .....	9	(D)	(D)	(D)	(D)	(D)	(D)
3541B 37	Other station type, n.e.c. <sup>23</sup> .....	4	298	<sup>b</sup> 451,828	<sup>b</sup> 438,846	<sup>a</sup> 283	<sup>c</sup> 441,427	222,331

See footnotes at end of table.

Table 18. Total Shipments and Unfilled Orders: 1998 and 1997—Con.

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Company count	1998			1997		
			Total shipments		Unfilled orders (value)	Total shipments		Unfilled orders (value)
			Quantity	Value		Quantity	Value	
	Metalworking machinery—Con.							
3541C 00	Metal cutting type machine tools valued under \$3,025 and at \$3,025 each or more—Con.							
3541C 41	Other metal cutting machine tools <sup>3</sup> . . . . .	63	25,858	344,562	56,223	28,760	358,299	94,497
	Other metal cutting machine tools, n.e.c., valued under \$3,025 <sup>3</sup> . . . . .	16	<sup>a</sup> 15,917	<sup>c</sup> 13,876	(D)	<sup>b</sup> 18,400	<sup>c</sup> 12,539	(D)
3541C 51	Other metal cutting machine tools, n.e.c., valued at \$3,025 each or more:							
	Broaching machines . . . . .	6	<sup>b</sup> 77	<sup>b</sup> 11,600	<sup>b</sup> 6,851	<sup>c</sup> 72	<sup>a</sup> 9,479	<sup>b</sup> 9,163
	Sawing and cutoff machines:							
3541C 53	Power hack saws <sup>24</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)
3541C 55	Circular cutoff saws (cold) <sup>24</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)
3541C 59	Band saws <sup>25</sup> . . . . .	11	4,401	61,070	<sup>b</sup> 9,177	4,470	63,686	(D)
3541C 61	All other sawing and cutoff machines <sup>24 25</sup> . . . . .	10	908	35,645	9,197	1,078	<sup>a</sup> 46,551	18,309
3541C 64	Spark erosion, ultrasonic, and electrolytic machines, all types . . . . .	6	1,217	93,498	6,330	1,284	83,179	24,235
3541C 91	Miscellaneous metal cutting machine tools . . . . .	25	<sup>c</sup> 3,338	128,873	24,668	<sup>a</sup> 3,456	<sup>a</sup> 142,865	<sup>a</sup> 42,790
	Metal forming type machine tools valued over \$3,025. . . . .	(X)	20,331	1,288,160	719,256	19,898	1,384,291	733,060
	Metal forming type machine tools valued at \$3,025 and under <sup>26</sup> . . . . .	(X)	61,145	47,152	2,452	54,398	42,673	2,539
35421 00	Punching, shearing, bending, and forming machines. . . . .	78	16,353	517,071	176,000	15,559	577,687	167,196
35421 08	All punching and shearing machines valued under \$3,025 each . . . . .	11	<sup>c</sup> 650	<sup>b</sup> 1,218	<sup>b</sup> 107	<sup>c</sup> 775	<sup>b</sup> 1,433	<sup>c</sup> 163
	All punching and shearing machines valued at \$3,025 each or more:							
	Power operated only:							
35421 11	Punches, including combination punching and shearing machines . . . . .	16	<sup>b</sup> 3,976	<sup>a</sup> 48,443	4,086	<sup>a</sup> 3,628	<sup>a</sup> 53,936	4,383
35421 16	Punching machines fixed position and two axes positioning table . . . . .	5	484	108,015	11,947	533	115,197	15,275
	Plate shearing machines:							
35421 12	Mechanical <sup>27</sup> . . . . .	5	(D)	(D)	(D)	(D)	(D)	(D)
35421 14	Hydraulic . . . . .	12	<sup>a</sup> 1,266	26,545	5,381	1,085	22,281	6,856
35421 19	Other power-operated punching and shearing machines <sup>27</sup> . . . . .	12	<sup>b</sup> 1,969	<sup>a</sup> 70,102	43,999	1,766	126,361	33,199
35421 33	All bending and forming machines, power operated, valued under \$3,025 each <sup>26</sup> . . . . .	7	2,456	3,081	(D)	2,300	3,288	421
	All bending and forming machines, power operated, valued at \$3,025 each or more:							
35421 34	Press brakes, all types . . . . .	7	996	66,507	15,515	<sup>a</sup> 1,022	66,810	14,076
35421 37	Bending rolls, sheet, and plate <sup>28</sup> . . . . .	7	<sup>c</sup> 576	<sup>c</sup> 10,378	<sup>a</sup> 2,434	<sup>b</sup> 541	<sup>c</sup> 11,423	(D)
35421 35	Bending rolls, angles, bars, shapes, and tubes <sup>28 29</sup> . . . . .	5	(D)	(D)	(D)	(D)	(D)	(D)
35421 43	Rotary bending and forming machines, including rotary head <sup>28 29</sup> . . . . .	13	<sup>b</sup> 885	81,290	<sup>b</sup> 15,394	<sup>b</sup> 712	69,796	<sup>a</sup> 13,210
35421 47	Ram and press bending machines <sup>30</sup> . . . . .	4	(D)	(D)	(D)	(D)	(D)	(D)
35421 49	Other bending and forming machines, including folders <sup>30</sup> . . . . .	20	3,095	101,492	77,137	3,197	<sup>a</sup> 107,162	<sup>a</sup> 79,613
35422 00	Presses (except forgings) . . . . .	42	12,559	399,489	389,549	12,084	422,396	382,333
35422 01	All presses valued under \$3,025 each <sup>26</sup> . . . . .	6	<sup>b</sup> 9,198	<sup>b</sup> 6,297	(D)	<sup>a</sup> 8,916	6,531	155
	All presses valued at \$3,025 each or more:							
	Mechanical presses:							
	Open back inclinable, gap type:							
35422 12	50 tons and under . . . . .	8	498	<sup>a</sup> 9,424	<sup>a</sup> 2,101	356	6,346	2,893
35422 02	51 tons to 120 tons . . . . .	5	<sup>b</sup> 116	<sup>b</sup> 6,756	<sup>c</sup> 1,935	144	9,025	3,251
35422 03	121 tons and over <sup>31</sup> . . . . .	1	(D)	(D)	(D)	(D)	(D)	(D)
	Vertical straight sided and arch frame single action:							
35422 16	Single point <sup>32</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)
	Two point:							
35422 17	300 tons and under <sup>32</sup> . . . . .	3	109	<sup>a</sup> 23,315	<sup>c</sup> 13,547	108	20,235	10,808
35422 18	301 tons and over <sup>31</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)
35422 45	Automatic presses, strip or coil field <sup>31</sup> . . . . .	8	(D)	(D)	38,809	480	137,779	62,501
35422 53	All other mechanical presses <sup>31</sup> . . . . .	4	554	254,278	278,827	106	132,627	228,878

See footnotes at end of table.

**Table 18. Total Shipments and Unfilled Orders: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product code	Product description	Company count	1998			1997		
			Total shipments		Unfilled orders (value)	Total shipments		Unfilled orders (value)
			Quantity	Value		Quantity	Value	
35422 00	Metalworking machinery—Con. Metal forming type machine tools valued under \$3,025 and at \$3,025 each or more—Con. Presses (except forgings)—Con. All presses valued under \$3,025 and at \$3,025 each or more—Con. Hydraulic presses:							
35422 56	Vertical single action, all tonnages: Housing or straight side type <sup>33</sup> .....	5	(D)	(D)	16,256	62	25,726	(D)
35422 57	Column type (open rod) <sup>33</sup> .....	8	<sup>a</sup> 154	39,338	14,654	103	20,102	50,301
35422 58	Gap or C-frame: 15 tons and under.....	7	766	11,784	870	603	7,339	627
35422 59	16 tons to 35 tons.....	6	118	4,535	1,039	111	5,145	376
35422 60	Over 35 tons.....	7	134	9,595	<sup>b</sup> 6,384	147	12,639	3,978
35422 92	Other hydraulic and pneumatic presses, including horizontal.....	10	<sup>c</sup> 912	<sup>a</sup> 34,167	15,127	<sup>b</sup> 948	<sup>a</sup> 38,902	18,565
35423 20	Forging machines, including forging presses and die stamping presses <sup>34</sup> .....	6	(D)	(D)	(D)	(D)	(D)	(D)
35423 00	All other metal forming type machine tools.....	44	52,564	418,752	156,159	46,653	426,881	186,070
35423 97	All other metal forming type machine tools valued under \$3,025 each.....	5	<sup>a</sup> 48,841	<sup>a</sup> 36,556	1,819	42,407	<sup>a</sup> 31,421	1,800
35423 43	All other metal forming type machine tools valued at \$3,025 each or more:							
35423 43	Thread rolling machinery.....	6	<sup>a</sup> 115	<sup>b</sup> 29,003	5,387	<sup>a</sup> 148	<sup>c</sup> 22,232	7,848
35423 30	Metal container-making machinery <sup>34</sup> .....	6	380	63,558	23,952	(D)	(D)	33,220
35423 55	Die casting machines, all types <sup>34</sup> .....	4	(D)	(D)	(D)	(D)	(D)	(D)
35423 49	Riveting machines.....	10	<sup>a</sup> 1,128	30,830	<sup>b</sup> 2,975	<sup>b</sup> 1,094	<sup>b</sup> 23,252	<sup>b</sup> 1,869
35423 93	All other metal forming type machine tools, n.e.c. <sup>34</sup> .....	22	<sup>b</sup> 2,100	258,805	122,026	<sup>b</sup> 3,004	349,976	141,333

- Represents zero. D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. X Not applicable.

<sup>1</sup>Product code 35415 09 is included in total for "Metal cutting type machine tools valued under \$3,025."

<sup>2</sup>Product code 35416 09 is included in total for "Metal cutting type machine tools valued under \$3,025."

<sup>3</sup>"Unfilled orders (value)" for product code 3541C 41 is included in total for "Metal cutting type machine tools valued under \$3,025."

<sup>4</sup>"Unfilled orders (value)" for product codes 3541D 16 and 3541D 40 for 1998 were combined to avoid disclosing data for individual companies.

<sup>5</sup>Product codes 3541D 16, 3541D 40, and 3541D 46 for 1997 "Total shipments" were combined to avoid disclosing data for individual companies.

<sup>6</sup>Product codes 3541D 40 and 3541D 46, "Total shipments" for 1998 and "Unfilled orders (value)" for 1997 were combined to avoid disclosing data for individual companies.

<sup>7</sup>Product codes 3541D 45 and 3541D 55 "Total shipments" for 1998 were combined to avoid disclosing data for individual companies.

<sup>8</sup>Product codes 3541D 45 and 3541D 65 for 1997 were combined to avoid disclosing data for individual companies.

<sup>9</sup>"Unfilled orders (value)" for product codes 3541D 55 and 3541D 65 for 1998 were combined to avoid disclosing data for individual companies.

<sup>10</sup>Product codes 35414 11 and 35414 13 were combined to avoid disclosing data for individual companies.

<sup>11</sup>Product codes 35414 33 and 35414 42 were combined to avoid disclosing data for individual companies.

<sup>12</sup>Product codes 35414 34 and 35414 37 "Total shipments" for 1997 and 1998 and "Unfilled orders (value)" for 1997 were combined to avoid disclosing data for individual companies.

<sup>13</sup>Product codes 35414 53 and 35414 55 were combined to avoid disclosing data for individual companies.

<sup>14</sup>Product codes 35414 75 and 35414 79 were combined to avoid disclosing data for individual companies.

<sup>15</sup>Product codes 35415 15, 35415 19, and 35415 12 for 1998 were combined to avoid disclosing data for individual companies.

<sup>16</sup>Product codes 35415 15, 35415 19, 35415 21, and 35415 12 for 1997 were combined to avoid disclosing data for individual companies.

<sup>17</sup>Product codes 35415 23, 35415 83, 35415 88, 35415 67, 35415 57, and 35415 86 were combined to avoid disclosing data for individual companies.

<sup>18</sup>Product codes 35416 23, 35416 53, and 35416 62 for 1998 and "Unfilled orders" for 1997 were combined to avoid disclosing data for individual companies.

<sup>19</sup>Product codes 35416 23, 35416 32, 35416 53, and 35416 62 "Total shipments" for 1997 were combined to avoid disclosing data for individual companies.

<sup>20</sup>"Unfilled orders (value)" for product codes 3541A 12 and 3541A 14 for 1997 were combined to avoid disclosing data for individual companies.

<sup>21</sup>Product codes 3541A 16 and 3541A 17 were combined to avoid disclosing data for individual companies.

<sup>22</sup>Product codes 3541A 18 and 3541A 21 "Total shipments" were combined to avoid disclosing data for individual companies.

<sup>23</sup>Product codes 3541B 35 and 3541B 37 were combined to avoid disclosing data for individual companies.

<sup>24</sup>Product codes 3541C 53, 3541C 55, and 3541C 61 were combined to avoid disclosing data for individual companies.

<sup>25</sup>"Unfilled orders (value)" for product codes 3541C 59 and 3541C 61 for 1997 were combined to avoid disclosing data for individual companies.

<sup>26</sup>"Unfilled orders (value)" for product codes 35421 33 and 35422 01 for 1998 are included with "Metal forming type machine tools valued at \$3,025 and under" to avoid disclosing data for individual companies.

<sup>27</sup>Product codes 35421 12, and 35421 19 were combined to avoid disclosing data for individual companies.

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**Table 18. Total Shipments and Unfilled Orders: 1998 and 1997—Con.**

<sup>28</sup>“Unfilled orders (value)” for product codes 35421 37, 35421 35, and 35421 43 for 1997 were combined to avoid disclosing data for individual companies.

<sup>29</sup>Product codes 35421 35 and 35421 43 for 1998 and “Total shipments” for 1997 were combined to avoid disclosing individual company data.

<sup>30</sup>Product codes 35421 47 and 35421 49 were combined to avoid disclosing data for individual companies.

<sup>31</sup>Product codes 35422 03, 35422 18, 35422 45 “Total shipments” for 1998, were combined with product code 35422 53 to avoid disclosing data for individual companies.

<sup>32</sup>Product codes 35422 16 and 35422 17 were combined to avoid disclosing data for individual companies.

<sup>33</sup>Product codes 35422 56 and 35422 57 “Total shipments” for 1998 and “Unfilled orders (value)” for 1997 were combined to avoid disclosing data for individual companies.

<sup>34</sup>Product codes 35423 20, 35423 30 “Total shipments” for 1997, and product codes 35423 55 and 35423 93 were combined to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: <sup>a</sup>15 to 25 percent of this item is estimated. <sup>b</sup>26 to 50 percent of this item is estimated. <sup>c</sup>Over 50 percent of this item is estimated.

**Table 19. Total Shipments of Numerically Controlled Machines and Exports: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product description	1998			1997		
	Shipments of numerically controlled machines		Export shipments (value) <sup>1</sup>	Shipments of numerically controlled machines		Export shipments (value) <sup>1</sup>
	Quantity	Value		Quantity	Value	
Metalworking machinery .....	18,235	2,571,845	643,535	19,414	2,681,441	696,607
Metal cutting type machine tools <sup>2</sup> .....	16,945	2,318,124	424,169	17,844	2,386,843	459,737
Boring and drilling machines <sup>2</sup> .....	118	38,346	(D)	72	38,657	(D)
Gear cutting machines <sup>2</sup> .....	435	180,099	(D)	420	184,320	(D)
Grinding, polishing, buffing, and lapping machines .....	1,276	264,408	58,030	1,336	279,049	63,492
Valued under \$3,025 each, external cylindrical grinding machines (plain and universal) and surface grinding machines, all types .....	1,196	259,563	48,676	1,203	265,201	48,957
Honing, lapping, polishing and buffing machines .....	80	4,845	9,354	133	13,848	14,535
Horizontal NC turning machines, valued at \$3,025 or more .....	3,829	351,773	56,433	3,679	356,700	52,945
Single spindle NC turning machines:						
Chuck sizes up to and including 6 inches <sup>3</sup> ..	(D)	(D)	(D)	(D)	(D)	(D)
Chuck sizes over 6 inches but less than 10 inches <sup>3</sup> .....	2,404	201,496	40,083	(D)	(D)	(D)
Chuck sizes from 10 inches but less than 15 inches .....	1,013	104,611	10,730	816	94,603	10,048
Chuck sizes 15 inches and over, and multiple spindle <sup>3</sup> .....	412	45,666	5,620	2,863	262,097	42,897
Vertical NC turning machines, valued at \$3,025 or more .....	228	86,902	3,529	228	76,711	1,180
Nonnumerically controlled turning machines, valued at \$3,025 or more .....	(X)	(X)	2,124	(X)	(X)	3,265
Milling machines .....	1,127	239,750	20,841	1,461	240,695	29,319
Machining centers <sup>2</sup> .....	9,175	897,331	155,088	9,809	931,566	154,061
Drill, mill, and bore, vertical (automatic tool change) .....	7,278	558,551	102,153	7,859	593,970	83,819
Y-axis travel less than 20 inches .....	3,775	237,779	49,754	3,882	234,871	44,082
Y-axis travel 20 inches through 26 inches .....	2,899	233,672	39,976	3,440	281,210	34,863
Y-axis travel over 26 inches .....	604	87,100	12,423	537	77,889	4,874
Drill, mill, and bore, horizontal (automatic tool change) <sup>4</sup> .....	828	296,757	52,935	896	287,823	70,242
400mm pallet and smaller <sup>4</sup> .....	284	64,643	(D)	310	65,477	(D)
401mm-500mm pallet <sup>4</sup> .....	333	84,372	(D)	352	82,626	(D)
501mm-630mm pallet <sup>4 5</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)
631mm-800mm pallet <sup>4 5</sup> .....	145	78,131	(D)	176	90,835	(D)
801mm-1000mm pallet <sup>4 6</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)
Over 1000mm pallet <sup>4 6</sup> .....	66	69,611	(D)	58	48,885	(D)
All other machining centers <sup>2</sup> .....	1,069	42,023	(D)	1,054	49,773	(D)
Station type machines, and other metal cutting machine tools, n.e.c. ....	757	259,515	52,000	839	279,145	56,905
Metal forming type machine tools .....	1,290	253,721	219,366	1,570	294,598	236,870
Punching, shearing, bending, and forming machines .....	914	168,184	75,608	996	214,035	77,260
Punching and shearing machines .....	529	114,756	29,619	640	163,360	29,772
All bending and forming machines, power operated .....	385	53,428	45,989	356	50,675	47,488
Presses (except forging) .....	207	51,166	30,594	205	57,744	26,422
Forging machines, all other metal forming type machine tools .....	169	34,371	113,164	369	22,819	133,188

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified. X Not applicable.

<sup>1</sup>Data includes value of all types of machines exported, as reported by MQ35W survey panel.

<sup>2</sup>Data included in total for "Metal cutting type machine tools."

<sup>3</sup>Data included in "Chuck sizes 15 inches and over, and multiple spindle."

<sup>4</sup>Data for export shipments included in "Drill mill and bore, horizontal (automatic tool change)."

<sup>5</sup>Data included in "631mm-800mm pallet."

<sup>6</sup>Data included in over "1000mm pallet."

**Table 20. Shipments, Exports, and Imports of Metalworking Machinery: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1 2</sup>		Imports for consumption <sup>1 3</sup>	
	Quantity	Value	Quantity	Value at port	Quantity	Value <sup>4</sup>
<b>1998</b>						
Boring and drilling machines, excluding multifunction NC machines, machining centers:						
Boring machines:						
Valued under \$3,025 each.....	(X)	(X)	6,871	629	3,633	900
Valued at \$3,025 each or more .....	960	73,583	469	22,769	938	103,026
Drilling machines:						
Valued under \$3,025 each.....	4,067	7,816	5,384	4,031	177,669	19,710
Valued at \$3,025 each or more .....	785	95,114	1,055	32,884	1,821	66,547
Gear cutting machines .....	500	197,672	2,257	49,340	1,038	74,222
Grinding, polishing, buffing, honing, and lapping machinery (except gear tooth grinding, lapping, polishing, and buffing machines):						
Valued under \$3,025 each.....	61,186	20,768	41,119	9,493	889,288	33,332
Valued at \$3,025 each or more .....	7,203	514,740	3,656	132,544	10,064	396,261
Lathes (turning machines) under \$3,025 .....	(D)	(D)	1,199	1,949	17,766	14,642
Horizontal NC turning machines.....	3,829	351,773	487	49,334	9,948	935,924
Vertical NC turning machines .....	228	86,902	49	6,966	597	118,795
Nonnumerically controlled turning machines:						
Engine or toolroom lathes, all types <sup>5</sup> .....	(D)	(D)	81	943	5,007	50,184
Single spindle automatic lathes .....	(X)	(X)	44	1,552	253	4,279
Multiple spindle automatic lathes <sup>5</sup> .....	(D)	(D)	22	1,970	106	18,678
All other horizontal turning machines <sup>5</sup> .....	(D)	(D)	403	7,684	700	15,299
All vertical lathes and vertical boring machines <sup>5</sup> .....	1,032	34,268	469	10,814	718	29,338
Milling machines:						
Valued under \$3,025 each.....	(D)	(D)	6,713	9,912	12,349	11,248
Valued at \$3,025 each or more .....	3,416	281,101	1,002	50,473	8,030	129,969
Machining centers (multifunction NC machines):						
Drill, mill, and bore, vertical (automatic tool change):						
Y-axis travel less than 20 inches and 20 inches through 26 inches.....	6,674	471,451	682	81,992	4,796	383,815
Y-axis travel 26 inches and over .....	604	87,100	18	4,324	1,081	140,311
Drill, mill, and bore, horizontal (automatic tool change).....	828	296,757	45	9,649	2,488	628,115
Other machining centers .....	1,069	42,023	516	42,245	124	56,412
Station type machines .....	422	571,038	133	67,369	348	140,315
Other metal cutting machine tools:						
Valued under \$3,025 each.....	15,917	13,876	(NA)	(NA)	(NA)	(NA)
Valued at \$3,025 each or more .....	9,941	330,686	5,456	131,909	8,722	338,266
Punching and shearing machines:						
Valued under \$3,025 each.....	650	1,218	2,935	1,469	8,589	3,691
Valued at \$3,025 each or more .....	7,347	258,598	2,439	110,080	2,539	193,559
Bending and forming machines:						
Valued under \$3,025 each.....	2,456	3,081	9,773	4,611	37,819	5,386
Valued at \$3,025 each or more .....	5,552	259,667	2,798	88,848	9,370	288,626
Presses (except forging presses).....	12,559	399,489	9,073	92,732	22,998	283,981
Forging machines, including presses <sup>6</sup> .....	(D)	(D)	471	88,342	2,061	94,975
All other metal forming type machine tools:						
Valued under \$3,025 each.....	42,407	31,421	(NA)	(NA)	(NA)	(NA)
Machines valued at \$3,025 each or more:						
Die casting machines <sup>6</sup> .....	(D)	(D)	1,543	32,515	5,320	84,688
Thread rolling machines.....	115	29,003	341	9,346	146	15,620
Other metal forming machines <sup>6</sup> .....	2,100	258,805	(NA)	(NA)	(NA)	(NA)

See footnotes at end of table.

Table 20. **Shipments, Exports, and Imports of Metalworking Machinery: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1 2</sup>		Imports for consumption <sup>1 3</sup>	
	Quantity	Value	Quantity	Value at port	Quantity	Value <sup>4</sup>
<b>1997</b>						
Boring and drilling machines, excluding multifunction NC machines, machining centers:						
Boring machines:						
Valued under \$3,025 each.....	(X)	(X)	4,952	741	2,892	1,394
Valued at \$3,025 each or more .....	982	80,161	554	23,512	997	85,549
Drilling machines:						
Valued under \$3,025 each.....	4,524	7,350	12,769	4,529	178,245	20,275
Valued at \$3,025 each or more .....	728	81,869	838	25,314	1,463	72,541
Gear cutting machines .....	619	213,507	1,107	11,321	1,311	66,324
Grinding, polishing, buffing, honing, and lapping machinery (except gear tooth grinding, lapping, polishing, and buffing machines):						
Valued under \$3,025 each.....	104,506	40,407	39,230	9,843	937,554	35,811
Valued at \$3,025 each or more .....	7,937	554,607	1,152	78,808	9,229	387,340
Lathes (turning machines) under \$3,025 .....	(D)	(D)	693	635	14,274	12,058
Horizontal NC turning machines.....	3,679	356,700	603	58,178	7,656	751,327
Vertical NC turning machines .....	228	76,711	57	8,320	481	75,310
Nonnumerically controlled turning machines:						
Engine or toolroom lathes, all types <sup>5</sup> .....	(D)	(D)	74	1,315	4,954	47,162
Single spindle automatic lathes .....	(D)	(D)	13	1,861	286	14,379
Multiple spindle automatic lathes <sup>5</sup> .....	(D)	(D)	35	2,300	80	12,750
All other horizontal turning machines <sup>5</sup> .....	(D)	(D)	555	8,756	410	12,060
All vertical lathes and vertical boring machines <sup>5</sup> .....	1,151	47,261	263	7,010	585	38,451
Milling machines:						
Valued under \$3,025 each.....	(D)	(D)	9,220	13,125	11,132	10,760
Valued at \$3,025 each or more .....	4,240	280,158	1,439	58,780	7,990	144,953
Machining centers (multifunction NC machines):						
Drill, mill, and bore, vertical (automatic tool change):						
Y-axis travel less than 20 inches and 20 inches through 26 inches.....	7,322	516,081	643	75,003	3,775	329,462
Y-axis travel 26 inches and over .....	537	77,889	34	6,259	657	82,960
Drill, mill, and bore, horizontal (automatic tool change).....	896	287,823	51	17,628	1,840	483,408
Other machining centers .....	1,054	49,773	600	46,123	97	37,210
Station type machines .....	435	551,870	135	58,629	855	332,704
Other metal cutting machine tools:						
Valued under \$3,025 each.....	18,400	12,539	(NA)	(NA)	(NA)	(NA)
Valued at \$3,025 each or more .....	10,360	345,760	5,806	143,484	6,773	306,388
Punching and shearing machines:						
Valued under \$3,025 each.....	775	1,433	2,150	1,481	9,473	3,109
Valued at \$3,025 each or more .....	7,012	317,775	2,048	92,401	2,282	164,421
Bending and forming machines:						
Valued under \$3,025 each.....	2,300	3,288	8,230	5,202	28,321	4,614
Valued at \$3,025 each or more .....	5,472	255,191	2,855	113,830	5,303	226,414
Presses (except forging presses).....	12,084	422,396	2,642	2,419	8,233	262,414
Forging machines, including presses <sup>6</sup> .....	(D)	(D)	464	99,549	2,051	139,455

See footnotes at end of table.



Table 20. **Shipments, Exports, and Imports of Metalworking Machinery: 1998 and 1997—Con.**

[Quantity in units. Value in thousands of dollars]

Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1 2</sup>		Imports for consumption <sup>1 3</sup>	
	Quantity	Value	Quantity	Value at port	Quantity	Value <sup>4</sup>
<b>1997—Con.</b>						
All other metal forming type machine tools:						
Valued under \$3,025 each. . . . .	42,407	31,421	(NA)	(NA)	(NA)	(NA)
Machines valued at \$3,025 each or more:						
Die casting machines <sup>6</sup> . . . . .	(D)	(D)	1,056	18,215	1,043	58,029
Thread rolling machines. . . . .	148	22,232	46	1,750	186	12,403
Other metal forming machines <sup>6</sup> . . . . .	3,004	349,976	(NA)	(NA)	(NA)	(NA)

D Withheld to avoid disclosing data for individual companies.    NA Not available.    X Not applicable.

<sup>1</sup>For comparison of SIC-based product codes, schedule B export numbers, and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. General Imports for Consumption*.

<sup>4</sup>Dollar value represents c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

<sup>5</sup>Data included with "All vertical lathes and vertical boring machines."

<sup>6</sup>Data included with "Other metal forming machines."

**HISTORICAL NOTE**

Data on metalworking machinery have been collected by the Census Bureau since 1942. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

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**CONTACT FOR DATA USERS**

For additional information about these data, contact Larry Blumberg, 301-457-4744.

## TRUCK TRAILERS—M336L (FORMERLY M37L)

### INTRODUCTION

These data cover all companies engaged in the manufacture, in the United States, of truck trailers with a rating of 10,000 pounds or more per axle. Truck trailers with a rating of less than 10,000 pounds per axle are excluded.

The statistics were collected by mail on Census Bureau monthly Form M336L, Truck Trailers. The panel for this survey consists of all known manufacturers of truck trailers meeting the required specifications, approximately 156 companies.

Participation in the monthly survey is voluntary. However, annual reports are required from those companies that do not report monthly. The annual summary includes revisions of monthly data originally estimated for companies that only report annually.

### SUMMARY OF FINDINGS

The value of factory shipments of complete truck trailers was \$5,430.4 million in 1998, an increase of 24 percent from shipments of \$4,367.3 million in 1997. Quantity of complete truck trailer shipments for 1998 was 277,419 units, an increase of 20 percent from shipments of 231,555 in 1997.

Complete trailer vans shipped in 1998 increased 23 percent in quantity and 33 percent in value from the 1997 levels. The quantity of tank-type trailers shipped in 1998 increased 25 percent and their value increased 18 percent from the 1997 levels.

### EXPLANATION OF TERMS

**Truck trailers.** A property-carrying vehicle, or chassis thereof, drawn by a truck or truck-tractor and having one or more axles. Only trailers with a rating of 10,000 pounds or more per axle are included in this survey. Trailers that are produced on a purchased or leased chassis are included. The value of these trailers includes the value of the purchased or leased chassis.

**Complete trailers.** A trailer in which the body is permanently attached on the chassis. New trailer chassis shipped with detachable trailers are not included.

**Detachable trailer bodies.** A detachable trailer generally is designed to be used with trailer chassis, except when transported on ships or rail cars (minimum size 8' x 8' x 10'). This includes all trailer bodies that are manufactured separately as trailer bodies without chassis or running gear.

**Detachable trailer chassis and running gear.** Includes all trailer chassis and running gear manufactured for use with detachable trailer bodies, whether shipped with such trailer bodies or not.

**Table 21. Quantity of Shipments of Truck Trailers: 1989 to 1998**

[Number of units]

Product code	Product description	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989
336212	Complete trailers .....	277,419	231,555	202,912	279,144	234,287	185,741	165,268	122,361	149,117	181,478
	Vans .....	199,690	162,557	146,350	215,420	174,237	141,764	127,205	84,626	103,894	130,163
	Tank .....	6,238	4,982	5,386	5,492	4,758	3,877	3,750	4,113	4,444	4,789
	Platform .....	27,843	25,606	18,193	22,797	21,459	16,102	13,432	11,585	13,479	18,411
	All other complete trailers.....	43,648	38,410	32,983	35,435	33,833	23,998	20,881	22,037	27,300	28,115
	Detachable trailer bodies <sup>1</sup> .....	6,208	6,026	6,789	7,757	2,598	12,207	(D)	(D)	(D)	(D)
	Detachable trailer chassis <sup>1</sup> .....	15,859	12,191	27,602	46,979	57,570	25,483	23,408	24,491	17,214	24,779
	Dollies and converter gear.....	2,966	2,480	2,739	4,601	2,986	2,486	3,899	3,097	2,272	2,668

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>Data for "detachable trailer bodies" and "detachable trailer chassis" were combined for 1989 through 1992 to avoid disclosing data for individual companies.

**Table 22. Quantity of Shipments of Truck Trailers by Month and Type of Trailer: 1998**

[Number of units]

Product code	Product description	Number of companies	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Complete trailers and chassis (except detachables) . . . . .	166	277,419	21,052	22,076	23,655	23,247	23,170	23,904	21,429	23,784	24,354	24,412	23,271	23,065
	Vans . . . . .	(NA)	199,690	14,802	15,600	17,010	16,499	16,606	17,164	14,786	17,305	17,958	18,024	17,109	16,827
	Closed top:														
	Insulated (refrigerated) . . . . .	(NA)	48,398	3,632	3,700	4,187	4,182	4,140	3,952	3,690	4,357	4,234	4,263	4,027	4,034
3362121001	Steel <sup>1</sup> . . . . .	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121015	Aluminum <sup>1</sup> . . . . .	9	48,398	'3,632	'3,700	'4,187	'4,182	'4,140	'3,952	'3,690	'4,357	'4,234	'4,263	'4,027	'4,034
3362121061	FRP . . . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Semi-insulated (non-refrigerated) . . . . .	(NA)	1,511	91	79	194	170	129	63	74	198	149	110	111	143
3362121003	Steel <sup>1</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121019	Aluminum . . . . .	6	1,511	'91	'79	'194	'170	'129	'63	'74	'198	'149	'110	'111	'143
3362121063	FRP <sup>2</sup> . . . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Drop frame type (12 inches) . . . . .	(NA)	2,069	152	172	'190	'161	'183	'211	'157	'158	'167	'172	'196	'150
3362121005	Steel <sup>1</sup> . . . . .	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121017	Aluminum . . . . .	6	2,069	'152	'172	'190	'161	'183	'211	'157	'158	'167	'172	'196	'150
3362121065	FRP <sup>2</sup> . . . . .	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Livestock . . . . .	(NA)	6,964	602	435	620	456	586	616	594	610	624	608	606	607
3362121007	Steel <sup>3</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121021	Aluminum <sup>3</sup> . . . . .	9	6,964	'602	'435	'620	'456	'586	'616	594	'610	'624	'608	'606	'607
	All other closed-top dry freight vans, including curtain . . . . .	(NA)	127,007	9,276	10,021	10,790	10,481	10,462	11,125	9,156	10,668	11,448	11,642	11,125	10,813
	Steel . . . . .	(NA)	2,040	160	234	192	155	158	157	157	157	157	161	163	189
3362121009	Less than 30 feet long <sup>4</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362120111	30 feet or greater <sup>4</sup> . . . . .	5	2,040	'160	'234	'192	'155	'158	'157	'157	'157	'157	'161	'163	'189
	Aluminum . . . . .	(NA)	117,705	8,489	9,086	9,934	9,614	9,632	10,354	8,469	9,948	10,752	10,934	10,412	10,081
3362121023	Less than 30 feet long . . . . .	12	5,740	'440	'468	'488	'499	'405	'424	'420	'452	'492	'616	'533	'503
3362121025	30 feet or greater . . . . .	15	111,965	'8,049	'8,618	'9,446	'9,115	'9,227	'9,930	'8,049	'9,496	'10,260	'10,318	'9,879	'9,578
	FRP . . . . .	(NA)	7,262	627	701	664	712	672	614	530	563	539	547	550	543
3362121067	Less than 30 feet long <sup>2</sup> . . . . .	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121069	30 feet or greater <sup>2</sup> . . . . .	8	7,262	'627	'701	'664	'712	'672	'614	'530	'563	'539	'547	'550	'543
	Open tops, including lowside grain and fruit . . . . .	(NA)	13,741	1,049	1,193	1,029	1,049	1,106	1,197	1,115	1,314	1,336	1,229	1,044	1,080
3362121013	Steel <sup>5</sup> . . . . .	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121027	Aluminum <sup>5</sup> . . . . .	18	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121071	FRP <sup>5</sup> . . . . .	2	13,741	'1,049	'1,193	'1,029	'1,049	'1,106	'1,197	'1,115	'1,314	'1,336	'1,229	'1,044	'1,080
	Tanks . . . . .	(NA)	6,238	525	540	564	556	521	541	516	522	517	496	447	493
3362121029	For flammable liquids (except casing head transport, including aircraft refuelers), all material . . . . .	14	1,647	133	124	134	138	131	144	129	147	145	137	141	144
3362121033	Coated for chemicals and acids, all materials <sup>6</sup> . . . . .	11	3,173	261	306	301	264	276	288	274	258	257	257	206	225
3362121031	For asphalt, all materials <sup>6</sup> . . . . .	9	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121035	All other, including noncoated for chemicals and acids, high pressure, food and milk, sanitary, and cryogenics, all materials . . . . .	16	1,418	'131	'110	'129	'154	'114	'109	'113	'117	'115	102	100	124
3362121041	Platform . . . . .	32	27,843	'2,212	'2,242	'2,188	'2,401	'2,306	'2,444	'2,385	2,400	'2,338	2,404	'2,252	'2,271
3362121037	All other trailers . . . . .	(NA)	43,648	3,513	3,694	3,893	3,791	3,737	3,755	3,742	3,557	3,541	3,488	3,463	3,474
	Bulk commodity and dry materials, including pneumatic and mechanical discharge, both tank and hopper types (except van) . . . . .	15	2,694	'222	'226	'227	'227	'224	'224	'224	'221	'225	'223	'226	'225
3362121039	Pole, logging, and pipe . . . . .	13	1,735	'145	'146	'149	'142	'150	'147	'149	'142	'139	'137	'140	'149
	Low-bed heavy haulers, over 10-ton capacity, excluding tilt-bed trailers . . . . .	(NA)	13,980	1,161	1,187	1,279	1,229	1,174	1,158	1,202	1,110	1,140	1,109	1,104	1,127
3362121043	Under 40-ton capacity . . . . .	36	9,309	'797	'806	'910	838	760	'754	'823	'744	'759	'706	'691	'721
3362121045	40-ton capacity and over . . . . .	30	4,671	'364	'381	'369	'391	'414	'404	'379	'366	'381	'403	'413	'406
	Dump trailers and dump chassis, highway type (rear, side, and bottom dump, including nonpneumatic hoppers) . . . . .	(NA)	14,483	1,088	1,212	1,339	1,243	1,300	1,334	1,240	1,183	1,159	1,154	1,129	1,102
3362121047	For materials . . . . .	40	10,924	'831	900	'966	'934	'973	'983	'907	'894	'900	'882	'870	'884
3362121049	For other, including demolition and excavation . . . . .	24	3,559	'257	'312	'373	309	'327	'351	'333	'289	'259	'272	'259	'218

See footnotes at end of table.

Table 22. **Quantity of Shipments of Truck Trailers by Month and Type of Trailer: 1998—Con.**

[Number of units]

Product code	Product description	Number of companies	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
3362121051	All other trailers—Con.														
	Automobile transport trailers <sup>7</sup> . . . . .	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121055	All other trailers and chassis (except detachable trailers and detachable trailer chassis) <sup>7</sup> . . . . .	33	10,756	'897	'923	'899	'950	'889	'892	'927	'901	'878	865	864	'871
3362121057	Detachables trailer bodies (containers), sold separately . . . . .	6	6,208	'515	'516	'497	'523	'515	'509	'542	'507	'526	'534	'504	'520
3362121059	Detachables trailer chassis and running gear, sold separately. . . . .	14	15,859	'894	'1,140	'1,484	'1,301	'1,140	'1,450	'1,372	'1,587	'1,507	'1,266	'1,517	'1,201
3362121053	Dollies and converter gear . . . . .	21	2,966	'219	'251	'223	'395	'287	'274	'251	'317	'235	'200	'167	'147

- Represents zero. D Withheld to avoid disclosing data for individual companies. FRP Fiberglass reinforced plastics/plywood. NA Not available. <sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Product codes 3362121001, 3362121003, and 3362121005 are combined with product code 3362121015 to avoid disclosing data for individual companies.  
<sup>2</sup>Product codes 3362121063, 3362121065, and 3362121067 are combined with product code 3362121069 to avoid disclosing data for individual companies.  
<sup>3</sup>Product code 3362121007 is combined with product code 3362121021 to avoid disclosing data for individual companies.  
<sup>4</sup>Product code 3362121009 is combined with product code 3362121011 to avoid disclosing data for individual companies.  
<sup>5</sup>Product codes 3362121013 and 3362121027 are combined with product code 3362121071 to avoid disclosing data for individual companies.  
<sup>6</sup>Product code 3362121031 is combined with product code 3362121033 to avoid disclosing data for individual companies.  
<sup>7</sup>Product code 3362121051 is combined with product code 3362121055 to avoid disclosing data for individual companies.

**Table 23. Value of Shipments of Truck Trailers by Month and Type of Trailer: 1998**

[Thousands of dollars]

Product code	Product description	Number of companies	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Complete trailers and chassis (except detachables) . . . . .	166	5,430,438	408,176	428,508	461,998	460,611	456,666	469,704	425,782	454,597	476,830	480,074	455,840	451,652
	Vans . . . . .	(NA)	3,590,964	258,679	275,547	305,432	300,640	299,713	307,621	268,611	312,850	324,285	327,530	308,260	301,796
	Closed top:														
	Insulated (refrigerated) . . . . .	(NA)	1,081,433	79,711	80,543	93,420	94,489	92,932	88,575	80,578	97,694	95,351	97,388	90,228	90,524
3362121001	Steel <sup>1</sup> . . . . .	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121015	Aluminum <sup>1</sup> . . . . .	9	1,081,433	'79,711	'80,543	'93,420	'94,489	'92,932	'88,575	'80,578	'97,694	'95,351	'97,388	'90,228	'90,524
3362121061	FRP . . . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Semi-insulated (nonrefrigerated) . . . . .	(NA)	35,671	2,342	2,127	4,163	3,923	3,013	1,847	2,057	4,416	3,618	2,697	2,759	2,709
3362121003	Steel <sup>1</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121019	Aluminum . . . . .	6	35,671	'2,342	'2,127	'4,163	'3,923	'3,013	'1,847	'2,057	'4,416	'3,618	'2,697	'2,759	'2,709
3362121063	FRP <sup>2</sup> . . . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Drop frame type (12 inches) . . . . .	(NA)	37,196	2,729	3,172	3,378	2,842	3,306	3,901	2,819	2,840	2,982	3,110	3,475	2,642
3362121005	Steel <sup>1</sup> . . . . .	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121017	Aluminum . . . . .	6	37,196	'2,729	'3,172	'3,378	'2,842	'3,306	'3,901	'2,819	'2,840	'2,982	'3,110	'3,475	'2,642
3362121065	FRP <sup>2</sup> . . . . .	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Livestock . . . . .	(NA)	124,460	10,438	9,818	10,936	10,623	9,416	10,701	9,780	10,508	11,091	10,421	10,418	10,310
3362121007	Steel <sup>3</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121021	Aluminum <sup>3</sup> . . . . .	9	124,460	'10,438	'9,818	'10,936	'10,623	'9,416	'10,701	'9,780	'10,508	'11,091	'10,421	'10,418	'10,310
	All other closed-top dry freight vans, including curtain . . . . .	(NA)	2,115,279	148,940	163,239	180,023	175,108	175,443	183,819	156,761	178,722	191,579	194,433	186,910	180,302
3362121009	Steel . . . . .	(NA)	32,191	2,464	3,901	3,080	2,367	2,417	2,367	2,454	2,416	2,411	2,715	2,573	3,026
	Less than 30 feet long <sup>4</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362120111	30 feet or greater <sup>4</sup> . . . . .	5	32,191	'2,464	'3,901	'3,080	'2,367	'2,417	'2,367	'2,454	'2,416	'2,411	'2,715	'2,573	'3,026
3362121023	Aluminum . . . . .	(NA)	1,991,750	138,479	150,318	168,473	163,789	164,658	173,795	147,792	169,130	182,465	184,923	177,441	170,487
	Less than 30 feet long . . . . .	12	74,806	'5,566	'6,023	'6,339	'6,295	'5,898	'5,325	'5,816	'5,840	'6,794	'7,978	'7,081	'5,851
3362121025	30 feet or greater . . . . .	15	1,916,944	'132,913	'144,295	'162,134	'157,494	'158,760	'168,470	'141,976	'163,290	'175,671	'176,945	'170,360	'164,636
	FRP . . . . .	(NA)	91,338	7,997	9,020	8,470	8,952	8,368	7,657	6,515	7,176	6,703	6,795	6,896	6,789
3362121067	Less than 30 feet long <sup>2</sup> . . . . .	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121069	30 feet or greater <sup>2</sup> . . . . .	8	91,338	'7,997	'9,020	'8,470	'8,952	'8,368	'7,657	'6,515	'7,176	'6,703	'6,795	6,896	'6,789
	Open tops, including lowside grain and fruit . . . . .	(NA)	232,596	16,861	18,775	17,675	17,578	18,616	20,625	18,673	23,086	23,282	22,178	17,229	18,018
3362121013	Steel <sup>5</sup> . . . . .	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121027	Aluminum <sup>5</sup> . . . . .	18	232,596	'16,861	'18,775	'17,675	'17,578	'18,616	'20,625	'18,673	'23,086	'23,282	'22,178	'17,229	'18,018
3362121071	FRP <sup>5</sup> . . . . .	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121029	Tanks . . . . .	(NA)	268,585	22,056	22,835	23,989	23,283	22,248	23,192	22,578	22,540	22,716	21,586	19,840	21,722
	For flammable liquids (except casing head transport, including aircraft refuelers), all materials . . . . .	14	81,015	6,669	6,404	6,706	6,719	6,499	6,979	6,416	'6,925	'6,952	6,576	'7,244	'6,926
3362121033	Coated for chemicals and acids, all materials <sup>6</sup> . . . . .	11	138,958	11,103	12,919	12,932	11,282	'12,062	12,477	12,312	'11,479	11,780	11,435	9,153	10,024
3362121031	For asphalt, all materials <sup>6</sup> . . . . .	9	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121035	All other, including noncoated for chemicals and acids, high pressure, food and milk, sanitary, and cryogenics, all materials . . . . .	16	48,612	'4,284	'3,512	'4,351	'5,282	'3,687	'3,736	'3,850	'4,136	'3,984	'3,575	'3,443	'4,772
3362121041	Platform . . . . .	32	461,923	'36,168	'36,683	'37,045	'39,917	'37,444	'42,116	'38,878	38,838	38,603	40,736	'37,528	37,967
3362121037	All other trailers . . . . .	(NA)	1,108,966	91,273	93,443	95,532	96,771	97,261	96,775	95,715	80,369	91,226	90,222	90,212	90,167
	Bulk commodity and dry materials, including pneumatic and mechanical discharge, both tank and hopper types (except van) . . . . .	15	103,180	'8,560	'8,718	'8,639	'8,645	'8,513	'8,660	'8,546	'8,546	'8,600	'8,516	'8,646	'8,591
3362121039	Pole, logging, and pipe . . . . .	13	17,295	'1,441	'1,487	'1,476	'1,390	'1,525	'1,465	'1,484	'1,404	'1,383	'1,383	'1,403	'1,454

See footnotes at end of table.

**Table 23. Value of Shipments of Truck Trailers by Month and Type of Trailer: 1998—Con.**

[Thousands of dollars]

Product code	Product description	Number of companies	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	All other trailers —Con.														
	Low-bed heavy haulers, over 10-ton capacity, excluding tilt-bed trailers . . . . .	(NA)	408,686	33,568	32,527	33,197	35,708	36,355	34,524	34,753	33,283	33,639	33,141	33,765	34,226
3362121043	Under 40-ton capacity . . . . .	36	169,113	'13,739	'14,167	'15,044	'15,112	'13,301	'13,549	'15,171	'14,660	'14,173	'12,875	'13,409	'13,913
3362121045	40-ton capacity and over . . . . .	30	239,573	'19,829	'18,360	'18,153	'20,596	'23,054	'20,975	'19,582	'18,623	'19,466	'20,266	'20,356	'20,313
	Dump trailers and dump chassis, highway type (rear, side, and bottom dump, including non-pneumatic hoppers) . . . . .	(NA)	360,082	28,072	30,997	33,276	30,851	31,523	32,794	30,803	29,395	28,740	28,437	27,920	27,274
3362121047	For materials . . . . .	40	258,039	'20,737	'21,702	'23,149	'22,185	'22,909	'22,897	'21,624	'21,050	'20,803	'20,233	'20,299	'20,451
3362121049	For other, including demolition and excavation . . . . .	24	102,043	'7,335	'9,295	'10,127	'8,666	'8,614	'9,897	'9,179	'8,345	'7,937	'8,204	'7,621	'6,823
3362121051	Automobile transport trailers <sup>1</sup> . . . . .	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121055	All other trailers and chassis (except detachable trailers and detachable trailer chassis) <sup>2</sup> . . . . .	33	219,723	19,632	19,714	'18,944	20,177	19,345	'19,332	20,129	7,741	'18,864	'18,745	'18,478	'18,622
3362121057	Detachables trailer bodies (containers), sold separately . . . . .	6	91,997	'7,802	'7,541	'7,030	'8,100	'7,608	'7,283	'8,474	'7,458	'8,041	'8,172	'6,985	'7,503
3362121059	Detachables trailer chassis and running gear, sold separately . . . . .	14	118,246	'6,763	'8,648	'12,824	'9,788	'8,214	'10,489	'9,745	'11,487	'10,934	'9,311	'10,799	'9,244
3362121053	Dollies and converter gear . . . . .	21	20,635	'1,348	'2,346	'1,469	'2,669	'1,929	'1,740	'1,699	'2,129	'1,578	'1,597	'1,132	'999

- Represents zero. D Withheld to avoid disclosing data for individual companies. FRP Fiberglass reinforced plastics/plywood. NA Not available. 'Revised by 5 percent or more from previously published data.

<sup>1</sup>Product codes 3362121001, 3362121003, and 3362121005 are combined with product code 3362121015 to avoid disclosing data for individual companies.  
<sup>2</sup>Product codes 3362121063, 3362121065, and 3362121067 are combined with product code 3362121069 to avoid disclosing data for individual companies.  
<sup>3</sup>Product code 3362121007 is combined with product code 3362121021 to avoid disclosing data for individual companies.  
<sup>4</sup>Product code 3362121009 is combined with product code 3362120111 to avoid disclosing data for individual companies.  
<sup>5</sup>Product codes 3362121013 and 3362121071 are combined with product code 3362121027 to avoid disclosing data for individual companies.  
<sup>6</sup>Product code 3362121031 is combined with product code 3362121033 to avoid disclosing data for individual companies.  
<sup>7</sup>Product code 3362121051 is combined with product code 3362121055 to avoid disclosing data for individual companies.

**Table 24. Quantity of Shipments of Truck Trailers by Month and Type of Trailer: 1997**

[Number of units]

Product code	Product description	Number of companies	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Complete trailers and chassis (except detachables)	165	231,555	17,331	17,808	19,013	19,312	19,704	19,585	18,490	20,206	20,767	19,013	19,352	20,974
	Vans	(NA)	162,557	11,977	12,357	13,126	13,231	13,477	13,522	12,959	14,560	15,067	13,126	13,955	15,200
	Closed top:														
	Insulated (refrigerated)	(NA)	32,448	2,297	2,353	2,656	2,822	2,731	2,750	2,578	2,738	2,905	2,656	2,923	3,039
3362121001	Steel <sup>1</sup>	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121015	Aluminum <sup>1</sup>	9	32,448	'2,297	'2,353	'2,656	'2,822	'2,731	'2,750	'2,578	'2,738	'2,905	'2,656	'2,923	'3,039
3362121061	FRP	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Semi-insulated (non-refrigerated)	(NA)	1,494	136	107	152	228	90	87	66	82	159	152	123	112
3362121003	Steel <sup>1</sup>	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121019	Aluminum	7	1,494	'136	'107	'152	'228	'90	'87	'66	'82	'159	'152	'123	'112
3362121063	FRP <sup>2</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Drop frame type (12 inches)	(NA)	976	49	123	'79	'70	'92	'98	'54	'75	'79	'79	'136	'42
3362121005	Steel <sup>1</sup>	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121017	Aluminum	8	976	'49	'123	'79	'70	'92	'98	'54	'75	'79	'79	'136	'42
3362121065	FRP <sup>2</sup>	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Livestock	(NA)	7,078	587	576	589	585	571	612	598	607	597	589	582	585
3362121007	Steel <sup>3</sup>	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121021	Aluminum <sup>3</sup>	8	7,078	'587	'576	'589	'585	'571	'612	'598	'607	'597	'589	'582	'585
	All other closed-top dry freight vans, including curtain	(NA)	107,632	7,881	8,184	8,647	8,564	9,005	8,870	8,548	9,818	10,025	8,647	9,157	10,286
	Steel	(NA)	849	55	54	63	68	75	93	56	57	68	63	78	119
3362121009	Less than 30 feet long <sup>1</sup>	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362120111	30 feet or greater <sup>4</sup>	7	849	'55	'54	'63	'68	'75	'93	'56	'57	'68	'63	'78	'119
	Aluminum	(NA)	99,806	7,303	7,476	8,033	7,974	8,426	8,237	7,908	9,189	9,134	8,033	8,547	9,546
3362121023	Less than 30 feet long	12	5,531	'374	'353	'367	'476	'408	'684	'482	'681	'632	'367	'326	'381
3362121025	30 feet or greater	20	94,275	'6,929	'7,123	'7,666	'7,498	'8,018	'7,553	'7,426	'8,508	'8,502	'7,666	'8,221	'9,165
	FRP	(NA)	6,977	523	654	551	522	504	540	584	572	823	551	532	621
3362121067	Less than 30 feet long <sup>2</sup>	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121069	30 feet or greater <sup>2</sup>	9	6,977	'523	'654	'551	'522	'504	'540	'584	'572	'823	'551	'532	'621
	Open tops including low-side grain and fruit	(NA)	12,929	1,027	1,014	1,003	962	988	1,105	1,115	1,240	1,302	1,003	1,034	1,136
3362121013	Steel <sup>2</sup>	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121027	Aluminum <sup>5</sup>	18	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121071	FRP <sup>5</sup>	1	12,929	'1,027	'1,014	'1,003	'962	'988	'1,105	'1,115	'1,240	'1,302	'1,003	'1,034	'1,136
	Tanks	(NA)	4,982	376	370	400	397	415	407	417	447	431	400	442	480
3362121029	For flammable liquids (except casing head transport, including aircraft refuelers), all materials	15	1,511	123	119	118	127	128	126	130	134	130	118	129	129
3362121033	Coated for chemicals and acids, all materials <sup>8</sup>	11	2,410	183	158	200	172	186	203	211	226	213	200	224	234
3362121031	For asphalt, all materials <sup>6</sup>	8	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121035	All other, including non-coated for chemicals and acids, high pressure, food and milk, sanitary, and cryogenics, all materials	18	1,061	'70	'93	'82	'98	'101	'78	'76	'87	'88	82	89	117
3362121041	Platform	35	25,606	'2,068	'2,065	'2,178	'2,098	'2,356	'2,355	'1,890	2,087	'2,214	2,178	'2,023	'2,094
3362121037	All other trailers	(NA)	38,410	2,910	3,016	3,309	3,586	3,456	3,301	3,224	3,112	3,055	3,309	2,932	3,200
	Bulk commodity and dry materials, including pneumatic and mechanical discharge, both tank and hopper types (except van)	16	2,556	'209	'211	'217	'211	'212	'209	'214	'214	'213	'217	'215	'214
3362121039	Pole, logging, and pipe	17	1,767	'154	'151	'142	'151	'148	'149	'142	'147	'144	'142	'149	'148
	Low-bed heavy haulers, over 10-ton capacity, excluding tilt-bed trailers	(NA)	13,271	949	1,014	1,122	1,242	1,167	1,194	1,136	1,048	1,144	1,122	1,051	1,082
3362121043	Under 40-ton capacity	39	8,896	'642	'699	'737	842	789	'805	'777	'696	'712	'737	'707	'753
3362121045	40-ton capacity and over	33	4,375	'307	'315	'385	'400	'378	'389	'359	'352	'432	'385	'344	'329

See footnotes at end of table.

Table 24. **Quantity of Shipments of Truck Trailers by Month and Type of Trailer: 1997—Con.**

[Number of units]

Product code	Product description	Number of companies	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	All other trailers —Con.														
	Dump trailers and dump chassis, highway type (rear, side, and bottom dump, including nonpneumatic hoppers) . . . . .	(NA)	13,410	1,009	1,082	1,144	1,285	1,249	1,150	1,094	1,113	1,024	1,144	981	1,135
3362121047	For materials . . . . .	43	10,195	'786	837	'906	'978	'955	'880	'797	'829	'746	'906	'729	'846
3362121049	For other, including demolition and excavation . . . . .	20	3,215	'223	'245	'238	307	'294	'270	'297	'284	'278	'238	'252	'289
3362121051	Automobile transport trailers <sup>7</sup> . . . . .	8	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121055	All other trailers and chassis (except detachable trailers and detachable trailer chassis) <sup>7</sup> . . . . .	30	7,406	'589	'558	'684	'697	'680	'599	'638	'590	'530	684	536	'621
3362121057	Detachables trailer bodies (containers), sold separately . . . . .	11	6,026	'496	'520	'503	'511	'526	'513	'517	'484	'510	'471	'500	'475
3362121059	Detachables trailer chassis and running gear, sold separately . . . . .	16	12,191	'1,015	'1,056	'1,048	'1,089	'713	'715	'991	'1,101	'992	'1,048	'1,162	'1,261
3362121053	Dollies and converter gear . . . . .	22	2,480	'192	'183	'193	'187	'236	'270	'210	'229	'195	'193	'189	'203

- Represents zero. D Withheld to avoid disclosing data for individual companies. FRP Fiberglass reinforced plastics/plywood. NA Not available. 'Revised by 5 percent or more from previously published data.

<sup>1</sup>Product codes 3362121001, 3362121003, and 3362121005 are combined with product code 3362121015 to avoid disclosing data for individual companies.  
<sup>2</sup>Product codes 3362121063, 3362121065, and 3362121067 are combined with product code 3362121069 to avoid disclosing data for individual companies.  
<sup>3</sup>Product code 3362121007 is combined with product code 3362121021 to avoid disclosing data for individual companies.  
<sup>4</sup>Product code 3362121009 is combined with product code 3362120111 to avoid disclosing data for individual companies.  
<sup>5</sup>Product codes 3362121013 and 3362121027 are combined with product code 3362121071 to avoid disclosing data for individual companies.  
<sup>6</sup>Product code 3362121031 is combined with product code 3362121033 to avoid disclosing data for individual companies.  
<sup>7</sup>Product code 3362121051 is combined with product code 3362121055 to avoid disclosing data for individual companies.



**Table 25. Value of Shipments of Truck Trailers by Month and Type of Trailer: 1997**

[Thousands of dollars]

Product code	Product description	Number of companies	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Complete trailers and chassis (except detachables)	165	4,367,269	321,256	331,358	352,476	364,774	371,464	367,514	352,056	381,459	392,663	352,476	375,373	404,400
	Vans	(NA)	2,705,761	195,543	202,257	214,677	221,214	227,643	225,468	215,728	241,493	249,080	214,677	238,640	259,341
	Closed top:														
	Insulated (refrigerated)	(NA)	725,963	51,475	51,790	59,837	63,897	60,507	61,327	56,361	60,930	65,204	59,837	66,113	68,685
3362121001	Steel <sup>1</sup>	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121015	Aluminum <sup>1</sup>	9	725,963	'51,475	'51,790	'59,837	'63,897	'60,507	'61,327	'56,361	'60,930	'65,204	'59,837	'66,113	'68,685
3362121061	FRP	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Semi-insulated (non-refrigerated)	(NA)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121003	Steel <sup>1</sup>	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121019	Aluminum	7	32,594	3,068	2,267	'3,532	'4,142	'1,958	'1,977	'1,595	'1,929	'3,440	'3,532	'2,678	'2,476
3362121063	FRP <sup>2</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Drop frame type (12 inches)	(NA)	20,421	1,012	2,664	1,622	1,505	2,025	2,049	1,124	1,545	1,660	1,622	2,819	774
3362121005	Steel <sup>1</sup>	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121017	Aluminum	8	20,421	'1,012	'2,664	'1,622	'1,505	'2,025	'2,049	'1,124	'1,545	'1,660	'1,622	'2,819	'774
3362121065	FRP <sup>2</sup>	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Livestock	(NA)	111,039	9,229	8,748	9,168	8,997	8,541	10,025	9,615	9,914	9,503	9,168	8,993	9,138
3362121007	Steel <sup>3</sup>	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121021	Aluminum <sup>3</sup>	8	111,039	'9,229	'8,748	'9,168	'8,997	'8,541	'10,025	'9,615	'9,914	'9,503	'9,168	'8,993	'9,138
	All other closed-top dry freight vans, including curtain	(NA)	1,637,685	117,075	122,468	128,220	131,581	141,234	133,537	130,234	148,612	150,994	128,220	143,398	162,112
	Steel	(NA)	16,346	1,029	983	1,130	1,275	1,435	1,852	1,063	1,064	1,376	1,130	1,552	2,457
3362121009	Less than 30 feet long <sup>4</sup>	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362120111	30 feet or greater <sup>4</sup>	7	16,346	'1,029	'983	'1,130	'1,275	'1,435	'1,852	'1,063	'1,064	'1,376	'1,130	'1,552	'2,457
	Aluminum	(NA)	1,551,918	111,105	114,956	121,564	125,282	135,023	126,369	123,502	141,740	141,265	121,564	136,717	152,831
3362121023	Less than 30 feet long	12	74,822	'4,914	'4,821	'5,066	'6,398	'5,789	'8,136	'6,791	'8,506	'8,515	'5,066	'4,971	'5,849
3362121025	30 feet or greater	20	1,477,096	'106,191	'110,135	'116,498	'118,884	'129,234	'118,233	'116,711	'133,234	'132,750	'116,498	'131,746	'146,982
	FRP	(NA)	69,421	4,941	6,529	5,526	5,024	4,776	5,316	5,669	5,808	8,353	5,526	5,129	6,824
3362121067	Less than 30 feet long <sup>2</sup>	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121069	30 feet or greater <sup>2</sup>	9	69,421	'4,941	'6,529	'5,526	'5,024	'4,776	'5,316	'5,669	'5,808	'8,353	'5,526	5,129	'6,824
	Open tops, including lowside grain and fruit	(NA)	210,653	16,752	16,587	15,830	15,234	15,336	18,530	18,394	20,492	21,719	15,830	17,317	18,632
3362121013	Steel <sup>5</sup>	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121027	Aluminum <sup>5</sup>	18	210,653	'16,752	'16,587	'15,830	'15,234	'15,336	'18,530	'18,394	'20,492	'21,719	'15,830	'17,317	'18,632
3362121071	FRP <sup>5</sup>	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Tanks	(NA)	227,592	17,624	17,087	18,477	17,555	19,363	18,763	18,972	20,149	19,917	18,477	19,960	21,248
3362121029	For flammable liquids (except casing head transport, including aircraft refuelers), all materials	15	76,406	6,124	6,149	6,288	6,236	6,966	6,317	6,258	'6,598	'6,453	6,288	'6,355	'6,374
3362121033	Coated for chemicals and acids, all materials <sup>5</sup>	11	105,068	8,316	7,281	8,653	7,291	'7,934	8,911	9,320	'9,690	9,525	8,653	9,643	9,851
3362121031	For asphalt, all materials <sup>6</sup>	8	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121035	All other, including non-coated for chemicals and acids, high pressure, food and milk, sanitary, and cryogenics, all materials	18	46,118	'3,184	'3,657	'3,536	'4,028	'4,463	'3,535	'3,394	'3,861	'3,939	'3,536	'3,962	'5,023
3362121041	Platform	35	420,418	'33,707	'33,920	'35,112	'35,208	'36,303	'36,303	'31,955	36,307	35,571	35,112	'34,977	35,943
3362121037	All other trailers	(NA)	632,597	74,382	78,094	84,210	90,797	88,155	86,980	85,401	83,510	88,095	84,210	81,796	87,868
	Bulk commodity and dry materials, including pneumatic and mechanical discharge, both tank and hopper types (except van)	16	86,609	'7,026	'7,232	'7,305	'7,194	'7,093	'7,112	'7,294	'7,270	'7,195	'7,305	'7,313	'7,270
3362121039	Pole, logging, and pipe	17	19,030	'1,840	'1,637	'1,498	'1,601	'1,553	'1,578	'1,508	'1,569	'1,542	'1,498	'1,589	'1,617
	Low-bed heavy haulers, over 10-ton capacity, excluding tilt-bed trailers	(NA)	380,901	26,144	27,089	31,735	33,834	32,848	34,176	32,479	32,258	39,368	31,735	30,078	29,157
3362121043	Under 40-ton capacity	39	161,675	'12,012	'12,321	'12,962	'14,100	'13,891	'14,676	'14,520	'13,788	'14,097	'12,962	'13,187	'13,159
3362121045	40-ton capacity and over	33	219,226	'14,132	'14,768	'18,773	'19,734	'18,957	'19,500	'17,959	'18,470	'25,271	'18,773	'16,891	'15,998

See footnotes at end of table.

**Table 25. Value of Shipments of Truck Trailers by Month and Type of Trailer: 1997—Con.**

[Thousands of dollars]

Product code	Product description	Number of companies	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	All other trailers —Con.														
	Dump trailers and dump chassis, highway type (rear, side, and bottom dump), including nonpneumatic hoppers . . . . .	(NA)	348,979	25,176	28,099	28,569	31,636	30,700	29,751	29,156	28,334	26,249	28,569	28,434	34,306
3362121047	For materials . . . . .	43	247,375	18,829	21,199	21,371	23,060	22,254	21,477	19,550	19,962	18,260	21,371	18,091	21,951
3362121049	For other, including demolition and excavation . . . . .	20	101,604	6,347	6,900	7,198	8,576	8,446	8,274	9,606	8,372	7,989	7,198	10,343	12,355
3362121051	Automobile transport trailers <sup>7</sup> . . . . .	8	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3362121055	All other trailers and chassis (except detachable trailers and detachable trailer chassis) <sup>7</sup> . . . . .	30	177,979	14,196	14,037	15,103	16,532	15,961	14,363	14,964	14,079	13,741	15,103	14,382	15,518
3362121057	Detachable trailer bodies (containers), sold separately . . . . .	11	90,847	7,291	7,886	7,330	7,846	8,271	7,757	7,784	6,747	7,718	7,330	8,111	6,776
3362121059	Detachable trailer chassis and running gear, sold separately . . . . .	16	93,589	8,701	9,393	7,605	8,151	5,509	5,565	7,184	8,364	7,542	7,605	8,645	9,325
3362121053	Dollies and converter gear . . . . .	22	19,106	1,432	1,490	1,510	1,460	2,116	1,719	1,624	1,618	1,533	1,510	1,527	1,567

- Represents zero. D Withheld to avoid disclosing data for individual companies. FRP Fiberglass reinforced plastics/plywood. NA Not available. <sup>7</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>Product codes 3362121001, 3362121003, and 3362121005 are combined with product code 3362121015 to avoid disclosing data for individual companies.  
<sup>2</sup>Product codes 3362121063, 3362121065, and 3362121067 are combined with product code 3362121069 to avoid disclosing data for individual companies.  
<sup>3</sup>Product code 3362121007 is combined with product code 3362121021 to avoid disclosing data for individual companies.  
<sup>4</sup>Product code 3362121009 is combined with product code 3362121011 to avoid disclosing data for individual companies.  
<sup>5</sup>Product codes 3362121013 and 3362121071 are combined with product code 3362121027 to avoid disclosing data for individual companies.  
<sup>6</sup>Product code 3362121031 is combined with product code 3362121033 to avoid disclosing data for individual companies.  
<sup>7</sup>Product code 3362121051 is combined with product code 3362121055 to avoid disclosing data for individual companies.

**Table 26. Quantity and Value of Shipments of Truck Trailers and Vans by Type of Material: 1998 and 1997**

[Quantity in units. Value in thousands of dollars]

Month	Total		FRP and steel <sup>1</sup>		Aluminum	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>						
<b>Total.....</b>	<b>199,690</b>	<b>3,626,635</b>	<b>28,873</b>	<b>478,979</b>	<b>170,817</b>	<b>3,147,656</b>
January.....	14,802	261,021	2,434	39,779	12,368	221,242
February.....	15,600	277,674	2,425	42,304	13,175	235,370
March.....	17,010	309,595	2,512	41,119	14,498	268,476
April.....	16,499	304,563	2,384	41,518	14,115	263,045
May.....	16,606	302,726	2,552	42,240	14,054	260,486
June.....	17,164	309,468	2,423	39,517	14,741	269,951
July.....	14,786	270,668	2,341	38,496	12,445	232,172
August.....	17,305	317,266	2,372	39,042	14,933	278,224
September.....	17,958	327,903	2,344	38,473	15,614	289,430
October.....	18,024	330,227	2,350	38,686	15,674	291,541
November.....	17,109	311,019	2,354	38,614	14,755	272,405
December.....	16,827	304,505	2,382	39,191	14,445	265,314
<b>1997</b>						
<b>Total.....</b>	<b>162,557</b>	<b>2,738,355</b>	<b>17,796</b>	<b>262,675</b>	<b>144,761</b>	<b>2,475,680</b>
January.....	11,977	198,611	1,396	20,405	10,581	178,206
February.....	12,357	204,524	1,524	21,791	10,833	182,733
March.....	13,126	218,209	1,447	21,370	11,679	196,839
April.....	13,231	225,356	1,425	21,306	11,806	204,050
May.....	13,477	229,601	1,410	20,987	12,067	208,614
June.....	13,522	227,445	1,459	21,825	12,063	205,620
July.....	12,959	217,323	1,484	21,784	11,475	195,539
August.....	14,560	243,422	1,504	22,932	13,056	220,490
September.....	15,067	252,520	1,709	24,056	13,358	228,464
October.....	13,126	218,209	1,447	21,370	11,679	196,839
November.....	13,955	241,318	1,426	21,012	12,529	220,306
December.....	15,200	261,817	1,565	23,837	13,635	237,980

<sup>1</sup>FRP and steel vans are combined to avoid disclosing data for individual companies.

**HISTORICAL NOTE**

Data on truck trailers have been collected by the Census Bureau since 1942. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact J. Christian Savage, 301-457-1307.

# Chapter 11.

## Aerospace Industry

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### **AEROSPACE INDUSTRY (ORDERS, SALES, AND BACKLOG)—M336G (FORMERLY M37G AND MA37D)**

#### **INTRODUCTION**

The data in Tables 1 through 4 cover the manufacture of complete civilian aircraft and aircraft engines in the United States. Parts sold separately are excluded.

The data in Tables 5 through 8 cover establishments primarily engaged in the development and/or manufacture of aerospace products, including aircraft, aircraft engines, aircraft parts and accessories, missiles and space vehicle systems, missile and space vehicle engines or propulsion units, and parts and subassemblies for missiles and space vehicles. An establishment is "primarily engaged" in aerospace if the value of aerospace products and services produced by that establishment exceeds the value of the establishment's production of other goods and services. Company plants or divisions in which the primary activity is other than the development and/or manufacture of aerospace products and services are not included in this survey.

#### **SUMMARY OF FINDINGS**

In 1998, the value of complete civil aircraft shipments increased by 32 percent to \$40.1 billion, from the 1997 level of \$30.4 billion. Shipments of complete civil aircraft engines increased by 46 percent to \$7.9 billion, from the 1997 level of \$5.4 billion.

The backlog of orders for aircraft, missiles, space vehicles, and engines, as of December 31, 1998, was \$206.6 billion. This was a 6-percent decrease from the 1997 backlog of \$218.9 billion.

New orders received during 1998 were \$111.2 billion, a 7-percent decrease from the \$118.9 billion received in 1997. Net sales, receipts, and/or billings in 1998 totaled \$120.7 billion, a 5-percent increase from the \$114.9 billion reported in 1997.

#### **EXPLANATION OF TERMS**

**Shipments (or net sales).** Represents consolidated company sales, receipts, or billings, net after discounts and allowances. For firms reporting only for specific aerospace divisions or plants, it includes the value of the division or plant sales only. It includes all sales from aerospace production and receipts for research and

development performed for others. Transfers to other reporting units (for example, separate aerospace divisions of the same company) are included. For commercial aircraft and aircraft engines, shipments represents physical shipments from domestic establishments. All products sold, transferred to other plants of the same company, or shipped on consignment are included whether for domestic use or export. Products bought and resold without further manufacture are excluded.

Work performed under a fixed price contract is reported as a shipment if the product is delivered during the year. Work done on a cost-plus contract reflects cost incurred plus a portion of the profits for the contract (value of work done) during the year. Value of work done may be based on (a) multiplying the estimated percentage of work completed during the year by the contract price, or (b) net billings for work done during the year.

**Aircraft.** Includes lighter-than-air aircraft (balloons and airships), as well as heavier-than-air aircraft, however propelled, but does not include spacecraft.

**Civil.** This term refers to all aircraft and aircraft engines not built for military applications. All civil (including general aviation and commercial type) aircraft, regardless of end use, are included.

**Fixed-wing (powered) aircraft.** Aircraft having wings fixed to the airplane fuselage, which are outspread in flight and powered by engines.

**Rotary lift aircraft.** Any heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors (helicopters, auto-giros, etc.).

**Turbofan.** A turbojet engine whose thrust has been increased by the addition of a low pressure compressor (fan). The turbofan engine can have an oversized low-pressure compressor at the front with part of the flow bypassing the rest of the engine (front fan or forwardfan) or it can have a separate fan driven by a turbine stage (aft-fan).

**Turbojet.** Jet engines incorporating a turbine-driven air compressor to take in and compress the air for the combustion (or the heated air) being used both to rotate the turbine and to create a thrust-producing jet.

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**Turboprop.** Engines in which the main propulsive force is supplied by a gas turbine-driven conventional propeller. Additional propulsive force may be supplied from the discharge turbine exhaust gas.

**Net new orders.** Includes (a) the sales value of orders received during the current reporting period for products and services to be delivered at some future date; (b) the sales value of orders for immediate delivery that have resulted in sales or shipments during the current reporting period; and (c) the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. The sales value of cancellations of existing orders is deducted. Only those orders that are supported by binding legal documents, such as signed contracts or letter contracts, are included as orders. In the case of letter contracts, the full amount of sales value is included if the parties concerned are in substantial agreement on this amount; otherwise, only the funds specifically authorized to be expended are included.

**Backlog, end of year (unfilled orders).** Includes all orders as defined above that have not yet been reflected as shipments. Generally, unfilled orders at the end of the reporting period are equal to unfilled orders at the end of the prior period, plus net new orders received, less net shipments.

**Prime contracts and subcontracts.** Separate dollar values are reported for prime contracts and those received under subcontracts. All subcontracts, including those where it is known that the prime contract was let by a government, are reported as subcontracts received from "other customers."

**Military and nonmilitary.** The term "military" refers to complete aircraft, aircraft engines, missile systems, space vehicle systems, engines and/or propulsion units for missile systems or space vehicles, and other aerospace related activities for military applications, whether for tactical, strategic, or support functions. The term "nonmilitary" refers to the same products not built to military specifications.

#### **TYPE OF CUSTOMER**

**U.S. Government (military).** Includes contracts with the Department of Defense (DOD) and other U.S. Government agencies for products built to military specifications. Contracts for which the ultimate customer is a foreign customer such as contracts made under the Foreign Military Assistance Program, are excluded.

**Other governments (military).** Includes contracts for products built to military specifications for governments other than the United States. It includes contracts through DOD or other U.S. Government agencies for which the ultimate customer is a foreign government. Contracts for foreign governments not to military specifications are classified as "nonmilitary" to other customers.

**U.S. Government (nonmilitary).** Includes contracts with any U.S. Government agency for products not built to military specifications.

**Other customers (nonmilitary).** Includes contracts for products not built to military specifications for all customers other than U.S. Government agencies. It includes both domestic and foreign commercial customers, as well as foreign governments.

**Table 1. Quantity and Value of Shipments of Complete Civil Aircraft: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	Number of companies	1998		1997	
			Quantity	Value	Quantity	Value
37215	Complete civil aircraft.....	34	4,605	40,124,817	3,846	30,395,909
	Civil aircraft (fixed wing, powered).....	13	2,752	39,851,297	2,037	30,156,990
37215 04	Unladen weight not exceeding 2,000 kg (4,409 lb) ..	12	1,785	996,696	1,220	926,394
37215 05	Unladen weight exceeding 2,000 kg (4,409 lb) but not exceeding 15,000 kg (33,069 lb) <sup>1</sup> .....	5	(D)	(D)	(D)	(D)
37215 07	Unladen weight exceeding 15,000 kg (33,069 lb) <sup>1</sup> ..	2	967	38,854,601	817	29,230,596
	Helicopters (rotary wing) .....	6	456	243,513	412	208,326
37215 32	Unladen weight not exceeding 2,000 kg (4,409 lb) <sup>2</sup> .....	5	(D)	(D)	(D)	(D)
37215 34	Unladen weight exceeding 2,000 kg (4,409 lb) <sup>2</sup> ....	2	456	243,513	412	208,326
37215 30	Other civil aircraft (nonpowered) and kits.....	8	1,397	30,007	1,397	30,593
37242	Complete civil aircraft engines .....	15	16,482	7,986,520	13,680	5,444,742
37242 01	Spark-ignition reciprocating or rotary internal combustion <sup>3</sup> .....	7	(D)	(D)	(D)	(D)
	Turbojet and turbofan:					
37242 03	Of a thrust not exceeding 25 kN (5,620 lb) <sup>3</sup> .....	3	(D)	(D)	(D)	(D)
37242 05	Of a thrust exceeding 25 kN (5,620 lb) <sup>3</sup> .....	5	(D)	(D)	(D)	(D)
	Turboshaft (turbo propeller):					
37242 07	Of a power not exceeding 1,100 kW (820 hp) <sup>3</sup> ..	5	(D)	(D)	(D)	(D)
37242 09	Of a power exceeding 1,100 kW (820 hp) <sup>3</sup> .....	4	(D)	(D)	(D)	(D)
37242 14	Other, including auxiliary power units excluding missiles and space engines <sup>3</sup> .....	1	16,482	7,986,520	13,680	5,444,742

D Withheld to avoid disclosing data for individual companies. kN Kilonewtons. kW Kilowatts.

<sup>1</sup>Product code 37215 05 is combined with 37215 07 to avoid disclosing data for individual companies.

<sup>2</sup>Product code 37215 32 is combined with 37215 34 to avoid disclosing data for individual companies.

<sup>3</sup>Product codes 37242 01, 37242 03, 37242 05, 37242 07, and 37242 09 are combined with product code 37242 14 to avoid disclosing data for individual companies.

**Table 2. Quantity and Value of Shipments of Complete Civil Aircraft by Month: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Year and month	Civil aircraft, unladen weight greater than 15,000 kg <sup>1</sup>		Helicopters (rotary wing)		Other civil aircraft (nonpowered)	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>1998</b>						
January .....	'151	'2,242,817	39	'24,146	'113	'2,459
February.....	'176	'2,587,733	'37	'24,914	'111	'2,522
March .....	'267	3,806,957	36	'19,914	'115	'2,527
April.....	'193	'2,558,399	48	'25,801	'120	'2,653
May .....	'204	'2,697,809	'38	'16,882	'117	'2,518
June .....	'318	'3,795,258	'33	'19,402	'113	'2,420
July .....	'195	'2,884,077	'44	'25,507	'114	'2,400
August .....	'224	'2,496,938	'24	'14,842	'112	'2,359
September .....	'304	3,897,980	38	'20,149	'114	'2,443
October .....	'211	3,258,106	'35	'23,431	'134	'2,431
November .....	'233	'3,860,095	'36	'16,358	'113	'2,873
December .....	'276	5,765,128	'48	'19,583	'121	'2,402
<b>1997</b>						
January .....	'85	'1,453,681	26	'11,890	'118	'2,566
February.....	'97	'1,909,601	'25	'11,817	'115	'2,565
March .....	'162	'3,298,750	32	'13,330	'116	'2,562
April.....	'133	'3,058,683	40	'14,610	'117	'2,564
May .....	'159	'3,090,642	34	'13,902	'115	'2,565
June .....	'228	'3,253,336	36	'13,857	'115	'2,564
July .....	'139	'3,173,727	38	'13,998	'118	'2,565
August .....	'146	'2,018,752	25	'12,658	'116	'2,563
September .....	'221	2,740,138	34	'14,235	'116	'2,565
October .....	'149	1,492,937	'38	'27,367	'116	'2,564
November .....	'188	'1,582,915	'43	'29,171	'116	'2,564
December .....	'349	'3,903,516	40	'31,485	'119	'2,386

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>"Unladen weight less than 2,000 kg" and "Unladen weight between 2,000 kg and 15,000 kg" are combined with "Unladen weight greater than 15,000 kg" to avoid disclosing data for individual companies.

**Table 3. Quantity and Value of Shipments of Complete Civil Aircraft Engines: 1998 and 1997**

[Quantity in number of units. Value in thousands of dollars]

Year and month	Complete civil aircraft engines <sup>1</sup>	
	Quantity	Value
<b>1998</b>		
January . . . . .	'1,319	'432,476
February . . . . .	'1,358	'574,034
March . . . . .	'1,492	922,599
April . . . . .	1,452	538,010
May . . . . .	'1,321	'693,552
June . . . . .	'1,360	'767,019
July . . . . .	'1,328	'573,613
August . . . . .	'1,370	'752,345
September . . . . .	'1,451	'812,400
October . . . . .	'1,350	'747,018
November . . . . .	'1,284	'555,203
December . . . . .	'1,397	'617,755
<b>1997</b>		
January . . . . .	'1,045	'319,682
February . . . . .	'1,045	'473,162
March . . . . .	'1,094	'485,558
April . . . . .	'1,115	'411,324
May . . . . .	'1,091	'360,650
June . . . . .	'1,017	'431,083
July . . . . .	'1,160	'399,328
August . . . . .	'1,094	'434,910
September . . . . .	'1,195	'524,877
October . . . . .	'1,350	'558,544
November . . . . .	'1,178	'453,022
December . . . . .	'1,296	'759,051

<sup>1</sup>Revised by 5 percent or more from previously published data.

<sup>1</sup>"Spark-ignition reciprocating or rotary internal combustion," "Turbojet and turboprop," and "Turbo propellers" are combined to avoid disclosing data for individual companies.



**Table 4. Shipments, Exports, and Imports of Complete Civil Aircraft and Aircraft Engines: 1998**

[Quantity in number of units. Value in thousands of dollars]

Product code <sup>1</sup>	Product description	Manufacturers' shipments		Exports of domestic merchandise <sup>1 2</sup>		Imports for consumption <sup>1 3</sup>	
		Quantity	Value (f.o.b. plant)	Quantity	Value at port	Quantity	Value
37215 02	Civil aircraft (fixed wing, powered): Unladen weight not exceeding 2,000 kg (4,409 lb) .....	1,785	996,696	312	67,351	220	15,143
37215 05	Unladen weight exceeding 2,000 kg (4,409 lb), but not exceeding 15,000 kg (33,069 lb) <sup>4</sup> .....						
37215 07	Unladen weight exceeding 15,000 kg (33,069 lb) <sup>4</sup> .....	(D)	(D)	(D)	(D)	(D)	(D)
37215 31	Helicopters (rotary wing) .....	456	243,513	238	148,117	274	537,294
37242 00	Complete civil aircraft engines .....	16,482	7,986,520	5,323	3,096,335	3,555	4,030,876

D Withheld to avoid disclosing data for individual companies.

<sup>1</sup>For comparison of SIC-based codes with Schedule B export numbers and HTSUSA import numbers, see "Contact for Data Users" at end of this subsection.

<sup>2</sup>Source: Census Bureau report EM 545, *U.S. Exports*.

<sup>3</sup>Source: Census Bureau report IM 145, *U.S. Imports for Consumption*.

<sup>4</sup>Product codes 37215 05 and 37215 07 are combined to avoid disclosing data for individual companies.

**Table 5. Value of Backlog of Orders, and Net Sales Reported by Manufacturers of Complete Aircraft, Space Vehicles, Missiles, and Selected Parts: 1990 to 1998**

[Millions of dollars]

Year	Net new orders during year <sup>1</sup>	Net sales during year	Backlog, end of year
1998 .....	111,183	120,682	206,571
1997 .....	118,993	114,946	218,951
1996 .....	126,267	103,115	229,871
1995 .....	109,109	102,797	202,638
1994 .....	88,706	104,296	192,561
1993 .....	79,770	109,926	211,814
1992 .....	100,306	118,736	236,076
1991 .....	122,485	123,862	245,241
1990 .....	145,965	136,646	250,079

<sup>1</sup>These totals represent new orders received during the year, less terminations during the year.

**Table 6. Value of Net New Orders, Net Sales, and Backlog of Orders of Complete Aircraft, Space Vehicles, Missiles, and Selected Parts by United States Government and Other Customers: 1994 to 1998**

[Millions of dollars]

Year	Net new orders <sup>1</sup> (prime contracts and subcontracts)			Net sales, receipts, or billings			Backlog, end of year		
	Total	United States Government <sup>2</sup>	Other customers	Total	United States Government <sup>2</sup>	Other customers	Total	United States Government <sup>2</sup>	Other customers
1998 .....	111,183	40,118	71,065	120,682	44,553	76,129	206,571	62,637	143,934
1997 .....	118,993	48,194	70,799	114,946	51,374	63,572	218,951	67,662	151,290
1996 .....	126,267	57,245	69,022	103,115	51,390	51,725	229,891	81,399	148,472
1995 .....	109,109	46,546	62,562	106,829	51,909	50,888	202,638	67,936	134,702
1994 .....	88,706	50,444	38,262	104,296	57,141	47,155	192,561	68,660	123,901

<sup>1</sup>These data represent new orders received during the year, less terminations during the year.

<sup>2</sup>These data represent prime contracts only. All subcontracts, including those where it is known that the prime contract was let by the U.S. Government, are reported as subcontracts from "Other customers."

Note: Detail items may not add to total because of independent rounding.

**Table 7. Value of Net New Orders, Net Sales, and Backlog of Orders of Complete Aircraft, Space Vehicles, Missiles, and Selected Parts by Military and Nonmilitary: 1994 to 1998**

[Millions of dollars]

Year	Net new orders <sup>1</sup> (prime contracts and subcontracts)			Net sales, receipts, or billings			Backlog, end of year		
	Total	Military	Nonmilitary	Total	Military	Nonmilitary	Total	Military	Nonmilitary
1998 .....	111,183	38,356	72,828	120,682	44,918	75,764	206,571	70,039	136,532
1997 .....	118,993	47,802	71,192	114,946	50,648	64,298	218,951	78,870	140,082
1996 .....	126,267	62,127	64,140	103,115	53,153	49,962	229,871	89,500	140,371
1995 .....	109,109	49,350	59,759	106,829	49,350	50,321	202,638	82,309	120,329
1994 .....	88,706	53,268	35,438	104,296	58,012	46,284	192,561	84,445	108,116

<sup>1</sup>These data represent new orders received during the year, less terminations during the year.

Note: Detail items may not add to total because of independent rounding.

**Table 8. Value of Net New Orders, Net Sales, and Backlog of Orders of Complete Aircraft, Space Vehicles, Missiles, and Selected Parts: 1998 and 1997**

[Millions of dollars]

Product description	Number of companies	Net new orders			Shipments (or net sales)	Backlog, end of year
		Total	Prime contract <sup>1</sup>	Subcontract <sup>1</sup>		
<b>1998</b>						
<b>Total</b> .....	<b>56</b>	<b>111,183</b>	<b>111,002</b>	<b>182</b>	<b>120,682</b>	<b>206,571</b>
Military .....	(NA)	38,356	38,356	(NA)	44,918	70,039
U.S. Government .....	41	33,064	33,064	(NA)	34,809	54,492
Other governments .....	26	5,292	5,292	(NA)	10,109	15,547
Nonmilitary .....	(NA)	72,828	72,646	182	75,764	136,532
U.S. Government .....	17	7,054	7,054	(NA)	9,744	8,145
Other customers .....	45	65,773	65,591	182	66,020	128,387
Complete aircraft and parts .....	(NA)	50,925	50,791	134	62,864	127,816
Military .....	(NA)	14,086	14,086	(NA)	20,395	33,854
Nonmilitary .....	(NA)	36,839	36,705	134	42,470	93,962
Aircraft engines and parts .....	(NA)	13,041	13,041	(NA)	12,825	15,087
Military .....	(NA)	2,922	2,922	(NA)	2,789	3,174
Nonmilitary .....	(NA)	10,119	10,119	(D)	10,035	11,913
Missile systems and parts, excluding propulsion units .....	(NA)	4,724	4,724	(NA)	4,043	6,259
Military .....	(NA)	4,724	4,724	(NA)	4,043	6,259
U.S. Government .....	10	3,153	3,153	(NA)	3,126	3,983
Other governments .....	5	1,571	1,571	(NA)	917	2,277
Space vehicle systems and parts, excluding propulsion units .....	(NA)	16,976	16,976	(NA)	14,008	24,920
Military .....	(NA)	4,003	4,003	(NA)	4,360	8,143
Nonmilitary .....	(NA)	12,973	12,973	(NA)	9,648	16,777
U.S. Government .....	8	3,753	3,753	(NA)	5,624	2,976
Other customers .....	7	9,220	9,220	(NA)	4,023	13,801
Engines and/or propulsion units for missile systems and space vehicles, including parts <sup>2</sup> .....	(NA)	2,568	2,568	(D)	2,651	5,619
Military .....	(NA)	655	655	(NA)	496	1,102
Nonmilitary .....	(NA)	1,913	1,913	(D)	2,155	4,516
Other aircraft, space vehicle, and missile activities <sup>3</sup> .....	(NA)	7,617	7,570	47	9,051	10,319
Military .....	(NA)	4,245	4,245	(NA)	5,010	7,296
U.S. Government .....	(NA)	3,035	3,035	(NA)	3,681	5,819
Other governments .....	(NA)	1,210	1,210	(NA)	1,329	1,477
Nonmilitary .....	(NA)	3,371	3,324	47	4,042	3,023
Research and development (under contract) .....	(NA)	5,843	5,841	2	4,995	5,053
Military .....	(NA)	4,733	4,733	(NA)	4,014	4,155
U.S. Government .....	23	4,645	4,645	(NA)	3,899	4,107
Other governments .....	6	88	88	(NA)	114	48
Nonmilitary .....	11	1,110	1,108	2	981	898
All other products and services .....	(NA)	9,491	9,491	(NA)	10,244	11,499
Military .....	(NA)	2,988	2,988	(NA)	3,811	6,056
U.S. Government .....	20	2,868	2,868	(NA)	3,510	5,556
Other governments .....	12	120	120	(NA)	300	501
Nonmilitary .....	(NA)	6,503	6,503	(D)	6,433	5,442
U.S. Government .....	11	1,630	1,630	(NA)	1,948	3,022
Other customers .....	28	4,872	4,872	(D)	4,485	2,420

See footnotes at end of table.

**Table 8. Value of Net New Orders, Net Sales, and Backlog of Orders of Complete Aircraft, Space Vehicles, Missiles, and Selected Parts: 1998 and 1997—Con.**

[Millions of dollars]

Product description	Number of companies	Net new orders			Shipments (or net sales)	Backlog, end of year
		Total	Prime contract <sup>1</sup>	Subcontract <sup>1</sup>		
<b>1997</b>						
<b>Total</b> .....	<b>54</b>	<b>118,993</b>	<b>118,788</b>	<b>206</b>	<b>114,946</b>	<b>218,951</b>
Military .....	(NA)	47,802	47,802	(NA)	50,648	78,870
U.S. Government .....	44	39,218	39,218	(NA)	40,302	57,388
Other governments .....	26	8,584	8,584	(NA)	10,346	21,482
Nonmilitary .....	(NA)	71,192	70,986	206	64,298	140,082
U.S. Government .....	19	8,977	8,977	(NA)	11,072	10,273
Other customers .....	42	62,215	62,009	206	53,227	129,808
Complete aircraft and parts .....	(NA)	60,541	60,432	109	54,503	140,584
Military .....	(NA)	19,102	19,102	(NA)	21,297	40,562
Nonmilitary .....	(NA)	41,439	41,330	109	33,206	100,022
Aircraft engines and parts .....	(NA)	10,560	10,560	(NA)	12,054	14,963
Military .....	(NA)	2,322	2,322	(NA)	2,647	3,053
Nonmilitary .....	(NA)	8,237	8,237	(D)	9,408	11,909
Missile systems and parts, excluding propulsion units .....	(NA)	4,239	4,239	(NA)	4,024	5,828
Military .....	(NA)	4,239	4,239	(NA)	4,024	5,828
U.S. Government .....	12	2,626	2,626	(NA)	3,099	3,621
Other governments .....	6	1,613	1,613	(NA)	924	2,207
Space vehicle systems and parts, excluding propulsion units .....	(NA)	15,078	15,078	(D)	14,644	23,189
Military .....	(NA)	4,584	4,584	(NA)	4,919	8,848
Nonmilitary .....	(NA)	10,494	10,494	(D)	9,724	14,341
U.S. Government .....	10	5,147	5,147	(NA)	6,281	4,534
Other customers .....	9	5,348	5,348	(D)	3,444	9,807
Engines and/or propulsion units for missile systems and space vehicles, including parts <sup>2</sup> .....	(NA)	2,009	2,009	(D)	2,687	5,568
Military .....	(NA)	477	477	(NA)	558	1,023
Nonmilitary .....	(NA)	1,532	1,532	(D)	2,129	4,545
Other aircraft, space vehicle, and missile activities <sup>3</sup> .....	(NA)	9,700	9,635	65	9,404	12,231
Military .....	(NA)	6,606	6,606	(NA)	6,535	8,258
U.S. Government .....	(NA)	5,049	5,049	(NA)	5,176	6,280
Other governments .....	(NA)	1,557	1,557	(NA)	1,359	1,978
Nonmilitary .....	(NA)	3,095	3,030	65	2,868	3,973
Research and development (under contract) .....	(NA)	6,772	6,740	32	6,839	4,648
Military .....	(NA)	5,742	5,742	(NA)	5,785	3,867
U.S. Government .....	26	5,707	5,707	(NA)	5,689	3,661
Other governments .....	8	35	35	(NA)	96	207
Nonmilitary .....	13	1,030	998	32	1,054	781
All other products and services .....	(NA)	10,096	10,096	(NA)	10,792	11,942
Military .....	(NA)	4,731	4,731	(NA)	4,883	7,431
U.S. Government .....	23	4,616	4,616	(NA)	4,525	6,730
Other governments .....	14	115	115	(NA)	358	702
Nonmilitary .....	(NA)	5,365	5,365	(D)	5,909	4,511
U.S. Government .....	15	2,300	2,300	(NA)	2,524	3,377
Other customers .....	28	3,065	3,065	(D)	3,385	1,134

D Withheld to avoid disclosing data for individual companies. NA Not available.

<sup>1</sup>“Net new orders under subcontract” are included with “Prime contract net new orders” to avoid disclosing data for individual companies.

<sup>2</sup>Data for “Engines and/or propulsion units for space vehicles, including parts” are included with data for “Engines and/or units for missile systems, including parts.”

<sup>3</sup>Data for “Other missile activities” are included with data for “Other aircraft and space vehicles.”

Note: Net new orders represent new orders received during the year, less terminations during the year. In some cases current backlog will not equal backlog for previous period, plus current net new orders, minus current shipments. This is primarily due to respondents changing their accounting procedures from one year to the next. Data for these respondents were not changed to force a balance. Significant imbalances due to reporting errors were investigated and corrected. Detail items may not add to total because of independent rounding.

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**HISTORICAL NOTE**

Data on civilian aircraft and aircraft engines have been collected by the Census Bureau since 1946. Data on the development and production of aerospace products have been collected by the Census Bureau since 1948. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your

local Federal Depository Library. Historical data are also available on microfiche; contact Customer Services, 301-457-4100.

**CONTACT FOR DATA USERS**

For additional information about these data, contact J. Christian Savage, 301-457-1307.

# Appendix A. Survey Scope and Methodology

Survey	Publication period <sup>1</sup>	Reporting requirement (V/M) <sup>2</sup>	Title	Survey panel (number)	Received coverage rate <sup>3</sup> /range <sup>4</sup>	Active response rate <sup>5</sup> /range <sup>4</sup>	Data collected and/or published <sup>6</sup>
MQ311A (MQ20A)	Q	V	Flour Milling Products .....	259	9	7	P, I
MA311D (MA20D)	A	V	Confectionery .....	371	9	4	S
M311J (M20J)	M	M	Fats and Oils: Oilseed Crushings .....	173	9	9	P, SQ
M311K (M20K)	M	M	Fats and Oils: Production, Consumption, and Stocks ..	1110	9	8	P, I, C
MQ313D (MQ22D)	Q	V	Consumption on the Woolen System and Worsted Combing .....	103	4	7	C, P
MA313F (MA22F)	A	M	Yarn Production .....	507	7	5	P
MA313K (MA22K)	A	M	Knit Fabrics Production .....	452	3	2	P, M
M313P (M22P)	M	M	Consumption on the Cotton System and Stocks .....	600	8	9	C, I, M, SH
MA314Q (MA22Q)	A	M	Carpet and Rugs .....	151	8	6	S
MQ313T (MQ22T)	Q	M	Broadwoven Fabrics (Gray) .....	330	7	7	P, M, LH
MQ315A (MQ23A)	Q	M	Apparel .....	820	7	7	P, SV
MA315D (MA23D)	A	M	Gloves and Mittens .....	161	4	4	S
MQ314X (MQ23X)	Q	M	Bed and Bath Furnishings .....	149	4	7	S, P, I, UO
MA316A (MA31A)	A	M	Footwear .....	273	9	7	S, P
MQ316A (MQ31A)	Q	V	Footwear .....	371	5	1	S, P
MA321T (MA24T)	A	M	Lumber Production and Mill Stocks .....	2000	6	0	P, I
MA327C (MA32C)	A	M	Refractories .....	248	8	5	S
MQ327D (MQ32D)	Q	V	Clay Construction Products .....	228	7	6	S, P
MQ332E (MQ34E)	Q	V	Plumbing Fixtures .....	72	1	6	S, I
MA325A (MA28A)	A	M	Inorganic Chemicals .....	830	8	7	S, P, PC
MQ325A (MQ28A)	Q	V	Inorganic Chemicals .....	502	5	7	P, I
MA325B (MA28B)	A	M	Inorganic Fertilizer Materials and Related Products ...	234	9	9	S, P, PC, I
MQ325B (MQ28B)	Q	V	Fertilizer Materials .....	307	5	7	P, QS, I
MA325C (MA28C)	A	M	Industrial Gases .....	1105	7	7	S, P
MQ325C (MQ28C)	Q	V	Industrial Gases .....	636	2	0	P
MA325F (MA28F)	A	M	Paint, Varnish, and Lacquer .....	791	9	7	S
MQ325F (MQ28F)	Q	V	Paint, Varnish, and Lacquer .....	257	9	5	S
MA325G (MA28G)	A	M	Pharmaceutical Preparations, Except Biologicals .....	541	8	6	SV
MA327A (MA32A)	A	M	Flat Glass .....	6	9	9	PC, I, S, P
MA327E (MA32E)	A	M	Consumer, Scientific, Technical, and Industrial Glassware .....	282	8	6	S
M327G (M32G)	M	V	Glass Containers .....	14	8	0	SQ, P, I
MA331A (MA33A)	A	M	Iron and Steel Castings .....	521	7	9	S
MA331B (MA33B)	A	M	Steel Mill Products .....	592	8	7	C, S, R
M331D (M33D)	M	V	Aluminum Ingot and Mill Products .....	140	0	1	SQ, R, I
MA331E (MA33E)	A	M	Nonferrous Castings .....	729	9	6	S
M331J (M33J)	M	V	Inventories of Steel Producing Mills .....	11	2	9	SQ, I
MA335J (MA33L)	A	M	Insulated Wire and Cable .....	223	9	7	S
MA334R (MA35R)	A	M	Computers and Office and Accounting Machines .....	905	8	2	S
MA335A (MA36A)	A	M	Switchgear, Switchboard Apparatus, Relays, and Industrial Controls .....	884	8	5	S
MQ335C (MQ36C)	Q	V	Fluorescent Lamp Ballasts .....	14	9	7	S
MA335K (MA36K)	A	M	Wiring Devices and Supplies .....	504	8	7	S
MA335L (MA36L)	A	V	Electric Lighting Fixtures .....	409	7	1	S
MA334P (MA36P)	A	M	Communication Equipment .....	1473	3	2	S
MA334Q (MA36Q)	A	M	Semiconductors, Printed Circuit Boards, and Related Equipment .....	3340	8	4	S
MA334B (MA38B)	A	M	Selected Instruments and Related Products .....	2715	8	4	S
MA334S (MA38R)	A	M	Electromedical and Irradiation Equipment (Including X-Ray) .....	299	8	7	S
MA335E (MA36E)	A	M	Electric Housewares and Fans .....	72	8	7	S
MA335F (MA36F)	A	M	Major Household Appliances .....	110	8	6	S
MA334M (MA36M)	A	M	Consumer Electronics .....	208	8	4	S
MA332K (MA34K)	A	V	Steel Shipping Drums and Pails .....	59	8	6	S

See footnotes at end of table.

Survey	Publication period <sup>1</sup>	Reporting requirement (V/M) <sup>2</sup>	Title	Survey panel (number)	Received coverage rate <sup>3</sup> /range <sup>4</sup>	Active response rate <sup>5</sup> /range <sup>4</sup>	Data collected and/or published <sup>6</sup>
MA333J (MA35J)	A	M	Selected Industrial Air Pollution Control Equipment ...	127	8	5	NOQ, NOV, S, UO, UOQ
MA333M (MA35M)	A	M	Air-Conditioning and Refrigeration Equipment .....	317	8	5	S
MA333N (MA35N)	A	V	Fluid Power Products, Including Aerospace .....	482	8	4	S
MA333P (MA35P)	A	M	Pumps and Compressors .....	454	6	3	S
MA332Q (MA35Q)	A	M	Antifriction Bearings .....	143	8	7	S
MA335H (MA36H)	A	M	Motors and Generators .....	382	9	6	S
MA333A (MA35A)	A	M	Farm Machinery and Lawn and Garden Equipment ...	775	8	5	S
MA333D (MA35D)	A	M	Construction Machinery .....	257	6	5	S
MA333F (MA35F)	A	M	Mining Machinery and Mineral Processing Equipment .	132	8	6	S
MA333L (MA35L)	A	M	Internal Combustion Engines .....	67	8	6	PC, IPT, S, CC, P
MQ333W (MQ35W)	Q	M	Metalworking Machinery .....	402	5	3	S, UO
M336L (M37L)	M	V	Truck Trailers .....	209	9	5	S
M336G (MA37D)	A	M	Aerospace Orders .....	58	9	6	NOV, R, UO
M336G (M37G)	M	V	Civil Aircraft and Engines .....	93	6	6	S

<sup>1</sup>Publication period: A = Annual; M = Monthly (data reflects twelfth month); Q = Quarterly (data reflects fourth quarter).

<sup>2</sup>Reporting requirement will be either voluntary or mandatory, V or M, respectively.

<sup>3</sup>Received coverage rate is ratio of value of shipments of establishments responding to survey to total value of shipments of that survey. For example, 85 to 89 percent response in M37G survey accounts for between 95 and 98 percent of total value of shipments of products collected in that survey.

<sup>4</sup>Coverage and response rate ranges:

Response rate	Range (percent)
9	99+
8	95 to 98
7	90 to 94
6	85 to 89
5	80 to 84
4	75 to 79
3	70 to 74
2	65 to 69
1	60 to 64
0	59 or less

<sup>5</sup>Active response rate is ratio of number of establishments responding to survey to total active establishments of that survey. For monthly and quarterly surveys this is calculated on monthly or quarterly portion rather than mandatory annual counterpart. Both response rate and coverage rate would be higher if the annual portion were included.

<sup>6</sup>Data collected and/or published:

Code	Description	Code	Description
C	Consumption	SV	Shipments (value)
I	Inventory (stock)	UO	Unfilled (backlog) orders (value)
NOQ	New orders (quantity)	UOQ	Unfilled (backlog) orders (quantity)
NOV	New orders (value)	M	Machinery in place
P	Production (quantity)	EX	Exports
PC	Produced and consumed (quantity)	IPT	Interplant transfers
PV	Production (value)	T	Total (shipments and exports)
R	Receipts (value)	CC	Total (commercial shipments)
S	Shipments (quantity and value)	LH	Loom hours
SQ	Shipments (quantity)	SH	Spindle hours

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