

# All Other Industrial Machinery Manufacturing

# 1997

Issued October 1999

EC97M-3332H

## 1997 Economic Census

*Manufacturing*

Industry Series



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

*Helping You Make Informed Decisions*

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



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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following 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)

(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 retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.



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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>333298</b>	<b>All other industrial machinery mfg</b>	<b>1 632</b>	<b>1 678</b>	<b>52 883</b>	<b>2 027 817</b>	<b>30 732</b>	<b>61 737</b>	<b>940 861</b>	<b>4 524 038</b>	<b>4 160 892</b>	<b>8 716 993</b>	<b>314 130</b>
355930	Special industry machinery, n.e.c. (pt)	N	1 672	D	D	D	D	D	D	D	D	D
363910	Household appliances, n.e.c. (pt)	N	6	D	D	D	D	D	D	D	D	D

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>333298, ALL OTHER INDUSTRIAL MACHINERY MFG</b>												
<b>United States</b>	<b>2</b>	<b>1 678</b>	<b>590</b>	<b>52 883</b>	<b>2 027 817</b>	<b>30 732</b>	<b>61 737</b>	<b>940 861</b>	<b>4 524 038</b>	<b>4 160 892</b>	<b>8 716 993</b>	<b>314 130</b>
Alabama	3	18	9	1 308	38 698	806	1 419	18 575	85 271	58 076	144 333	5 248
Arizona	5	19	5	398	11 911	234	417	5 923	26 800	19 666	44 797	1 390
Arkansas	5	7	3	140	5 462	92	159	2 815	7 987	7 383	15 791	376
California	3	186	72	6 211	232 792	3 735	7 779	105 171	554 734	462 603	997 416	35 145
Colorado	2	26	6	387	11 995	206	323	4 969	29 279	23 038	52 603	1 571
Connecticut	1	42	15	1 604	72 351	744	1 573	25 652	198 350	154 047	356 629	5 035
Florida	2	44	16	1 187	38 327	745	1 599	20 213	90 588	79 258	172 142	16 190
Georgia	4	36	14	1 326	46 164	795	1 550	21 147	88 609	82 251	172 508	6 428
Illinois	1	89	34	3 534	142 974	2 186	4 146	70 215	391 291	353 109	751 965	23 090
Indiana	2	51	16	1 335	49 828	861	1 660	28 413	87 604	108 201	201 426	8 401
Kansas	-	8	6	859	31 370	572	1 003	17 676	72 519	97 271	172 506	4 511
Kentucky	-	14	5	282	10 547	160	322	4 895	23 328	25 287	48 028	499
Louisiana	5	11	4	316	13 231	205	368	6 749	24 491	20 897	45 781	1 214
Maine	-	7	2	118	4 724	60	122	1 765	9 052	5 619	15 225	80
Massachusetts	4	54	17	2 119	99 917	921	1 985	36 312	226 970	150 837	379 812	36 331
Michigan	-	149	44	4 142	203 356	2 252	4 694	91 472	367 363	521 169	936 582	22 922
Minnesota	3	46	9	848	27 642	543	1 029	13 684	62 770	43 325	103 174	4 158
Missouri	1	28	11	680	19 912	450	850	9 030	47 939	38 796	87 621	1 775
Nebraska	2	6	2	123	3 751	55	107	1 469	5 722	6 072	11 429	260
New Hampshire	-	5	3	200	6 799	84	182	2 417	17 286	12 167	29 390	364
New Jersey	1	75	29	1 847	76 132	1 095	2 212	36 389	147 124	122 677	269 334	8 849
New York	1	89	28	2 087	83 240	1 159	2 299	34 486	172 040	185 722	355 832	7 807
North Carolina	2	51	22	1 265	46 021	792	1 586	22 827	104 062	86 717	186 097	6 543
Ohio	2	121	50	4 610	173 459	2 894	6 387	90 901	351 324	305 043	653 748	17 125
Oklahoma	-	24	13	1 219	41 598	842	1 564	24 032	122 278	120 452	244 122	3 545
Oregon	-	28	7	752	34 523	339	648	13 062	93 393	68 653	158 777	4 218
Pennsylvania	1	86	34	3 120	121 137	1 705	3 401	55 739	246 678	221 846	472 556	18 680
Rhode Island	2	16	4	204	7 272	92	160	2 859	11 769	14 199	25 647	795
South Carolina	6	16	4	396	15 648	140	283	4 632	38 155	36 441	72 798	2 747
Tennessee	4	28	12	793	25 817	479	792	10 828	55 101	49 952	104 923	2 851
Texas	4	114	39	3 529	114 538	2 246	4 697	58 202	264 072	245 597	498 811	18 901
Virginia	-	24	13	886	33 961	564	1 144	17 311	107 175	110 119	219 459	4 632
Washington	-	27	4	811	35 154	459	831	16 778	52 599	65 687	120 383	3 045

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>333298, ALL OTHER INDUSTRIAL MACHINERY MFG</b>		<b>333298, ALL OTHER INDUSTRIAL MACHINERY MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 1 632	Value added .....	\$1,000.. 4 524 038
All establishments .....	number.. 1 678	Total inventories, beginning of year .....	\$1,000.. 1 688 139
Establishments with 1 to 19 employees .....	number.. 1 088	Finished goods inventories, beginning of year .....	\$1,000.. 456 464
Establishments with 20 to 99 employees .....	number.. 466	Work-in-process inventories, beginning of year .....	\$1,000.. 629 936
Establishments with 100 employees or more .....	number.. 124	Materials and supplies inventories, beginning of year .....	\$1,000.. 601 739
All employees .....	number.. 52 883	Total inventories, end of year .....	\$1,000.. 1 680 695
Total compensation <sup>2</sup> .....	\$1,000.. 2 486 420	Finished goods inventories, end of year .....	\$1,000.. 496 742
Annual payroll .....	\$1,000.. 2 027 817	Work-in-process inventories, end of year .....	\$1,000.. 557 595
Total fringe benefits .....	\$1,000.. 458 603	Materials and supplies inventories, end of year .....	\$1,000.. 626 358
Production workers, average for year .....	number.. 30 732	Gross book value of total assets at beginning of year .....	\$1,000.. 2 052 626
Production workers on March 12 .....	number.. 30 546	Total capital expenditures (new and used) .....	\$1,000.. 314 130
Production workers on May 12 .....	number.. 30 792	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 61 337
Production workers on August 12 .....	number.. 30 731	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 252 793
Production workers on November 12 .....	number.. 30 859	Total retirements <sup>2</sup> .....	\$1,000.. 94 159
Production-worker hours .....	1,000.. 61 737	Gross book value of total assets at end of year .....	\$1,000.. 2 272 597
Production-worker wages .....	\$1,000.. 940 861	Total depreciation during year <sup>2</sup> .....	\$1,000.. 160 693
Total cost of materials .....	\$1,000.. 4 160 892	Total rental payments <sup>2</sup> .....	\$1,000.. 109 174
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 3 185 208	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 55 979
Cost of resales .....	\$1,000.. 592 555	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 53 195
Cost of fuels .....	\$1,000.. 16 289	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 14 891
Cost of purchased electricity .....	\$1,000.. 46 873	Response coverage ratio <sup>4</sup> .....	percent.. 76
Cost of contract work .....	\$1,000.. 319 967	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 23 186
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 740 481	Response coverage ratio <sup>4</sup> .....	percent.. 76
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. S	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 22 535
Total value of shipments .....	\$1,000.. 8 716 993	Response coverage ratio <sup>4</sup> .....	percent.. 76
Primary products value of shipments .....	\$1,000.. 7 226 118	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 16 273
Secondary products value of shipments .....	\$1,000.. 445 916	Response coverage ratio <sup>4</sup> .....	percent.. 76
Total miscellaneous receipts .....	\$1,000.. 1 044 959	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 12 133
Value of resales .....	\$1,000.. 855 579	Response coverage ratio <sup>4</sup> .....	percent.. 76
Contract receipts .....	\$1,000.. 95 857	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 31 220
Other miscellaneous receipts .....	\$1,000.. 93 523	Response coverage ratio <sup>4</sup> .....	percent.. 76
Primary products specialization ratio .....	percent.. 94	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 12 373
Value of primary products shipments made in all industries .....	\$1,000.. 7 724 165	Response coverage ratio <sup>4</sup> .....	percent.. 76
Value of primary products shipments made in this industry .....	\$1,000.. 7 226 118	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 5 350
Value of primary products shipments made in other industries .....	\$1,000.. 498 047	Response coverage ratio <sup>4</sup> .....	percent.. 76
Coverage ratio .....	percent.. 93		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>333298, ALL OTHER INDUSTRIAL MACHINERY MFG</b>												
<b>All establishments</b> .....	<b>2</b>	<b>1 678</b>	<b>590</b>	<b>52 883</b>	<b>2 027 817</b>	<b>30 732</b>	<b>61 737</b>	<b>940 861</b>	<b>4 524 038</b>	<b>4 160 892</b>	<b>8 716 993</b>	<b>314 130</b>
Establishments with 1 to 4 employees .....	8	547	—	1 117	33 627	723	1 034	15 525	78 816	71 706	152 112	5 626
Establishments with 5 to 9 employees .....	6	266	—	1 758	56 843	982	1 511	25 043	124 065	100 990	224 928	7 385
Establishments with 10 to 19 employees .....	3	275	—	3 751	131 315	2 372	4 194	64 920	271 937	221 566	494 680	14 153
Establishments with 20 to 49 employees .....	2	323	323	10 091	370 974	6 072	12 016	175 519	763 807	638 750	1 399 643	56 427
Establishments with 50 to 99 employees .....	1	143	143	9 940	375 268	5 682	11 013	168 625	806 079	736 633	1 531 106	41 738
Establishments with 100 to 249 employees .....	2	95	95	13 758	569 573	7 540	16 142	248 997	1 254 911	1 244 617	2 516 740	75 684
Establishments with 250 to 499 employees .....	2	21	21	7 254	294 925	4 501	9 299	149 252	631 437	723 721	1 381 285	47 869
Establishments with 500 to 999 employees .....	1	7	7	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> .....	9	623	—	2 183	59 964	1 288	1 712	27 204	132 022	117 170	249 827	9 771

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>333298</b>	<b>All other industrial machinery mfg</b> .....	<b>1 678</b>	<b>52 883</b>	<b>2 027 817</b>	<b>30 732</b>	<b>61 737</b>	<b>940 861</b>	<b>4 524 038</b>	<b>4 160 892</b>	<b>8 716 993</b>	<b>314 130</b>
3332981	Chemical manufacturing machinery, equipment, and parts .....	98	7 211	270 169	3 644	7 200	119 123	676 565	492 501	1 175 591	39 045
3332983	Foundry machinery and equipment, excluding patterns and molds .....	59	2 846	112 125	1 624	3 363	49 768	220 700	206 594	426 400	10 869
3332985	Printed circuit board manufacturing machinery, except testing .....	96	7 407	253 864	4 655	10 041	117 013	577 483	509 860	1 075 053	56 588
3332987	Special industry machinery and equipment, nec .....	477	27 128	1 123 137	15 968	33 064	528 604	2 472 243	2 440 393	4 947 051	165 161

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>333298</b>	<b>All other industrial machinery and equipment .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>7 724 165</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3332981	Chemical manufacturing machinery, equipment, and parts .....	N	X	X	1 117 017	N	X	X	818 758
33329811	Chemical manufacturing mixing, kneading, crushing, grinding, sifting, homogenizing (except dairy), emulsifying, or stirring machines .....	N	X	X	156 479	N	X	X	N
3332981121	Chemical manufacturing mixing, kneading, crushing, grinding, sifting, homogenizing (except dairy), emulsifying, or stirring machines .....	44	X	X	156 479	41	X	X	161 320
33329812	Other chemical manufacturing machines and equipment .....	N	X	X	816 574	N	X	X	N
3332981201	Chemical manufacturing distilling, rectifying, or fractionating machinery and equipment .....	12	X	X	78 382	14	X	X	37 800
3332981206	Chemical manufacturing heat exchange units .....	13	X	X	99 142	19	X	X	65 241
3332981211	Chemical manufacturing dryers .....	24	X	X	82 280	24	X	X	64 036
3332981216	Chemical manufacturing gas or air liquefying machinery .....	5	X	X	95 507	7	X	X	77 961
3332981226	Other chemical manufacturing machines and equipment .....	47	X	X	461 263	51	X	X	214 143
33329813	Parts for chemical manufacturing machinery and equipment .....	N	X	X	122 447	N	X	X	N
3332981331	Parts for chemical manufacturing distilling, rectifying, fractionating, heat exchange, dryers, gas or air liquefying machinery and equipment .....	14	X	X	34 413	22	X	X	103 790
3332981336	Parts for other chemical manufacturing machinery and equipment .....	35	X	X	88 034	28	X	X	50 181
3332981Y	Chemical manufacturing machinery, equipment, and parts, nsk .....	N	X	X	21 517	N	X	X	N
3332981YVV	Chemical manufacturing machinery, equipment, and parts, nsk .....	N	X	X	21 517	N	X	X	44 286
3332983	Foundry machinery and equipment, excluding patterns and molds .....	N	X	X	353 683	N	X	X	319 026
33329831	Foundry machinery and equipment, including converters, excluding patterns and molds .....	N	X	X	265 286	N	X	X	N
3332983101	Foundry pouring equipment, including ladles, crucibles, and pouring machines .....	16	X	X	23 754	12	X	X	22 604
3332983106	Foundry molding and core-making machines .....	11	X	X	31 493	N	X	X	N
3332983111	Foundry casting machines, except die casting machines, patterns, and molds .....	10	X	X	20 144	5	X	X	13 956
3332983116	Foundry blast cleaning machines (hydraulic, pneumatic, and airless) .....	13	X	X	61 646	14	X	X	70 402
3332983121	Other foundry machinery and equipment, including converters, excluding patterns and molds .....	31	X	X	128 249	N	X	X	N
33329832	Parts for foundry machinery and equipment .....	N	X	X	80 750	N	X	X	N
3332983226	Parts for foundry blast cleaning machines .....	7	X	X	9 337	N	X	X	N
3332983231	Other parts for foundry machinery and equipment .....	31	X	X	71 413	N	X	X	N
3332983Y	Foundry machinery and equipment, excluding patterns and molds, nsk .....	N	X	X	7 647	N	X	X	N
3332983YVV	Foundry machinery and equipment, excluding patterns and molds, nsk .....	N	X	X	7 647	N	X	X	22 004
3332985	Printed circuit board manufacturing machinery, except testing .....	N	X	X	986 927	N	X	X	575 522
33329851	Through-hole printed circuit board manufacturing machinery, except testing .....	N	X	X	250 236	N	X	X	N
3332985106	Through-hole printed circuit board manufacturing machinery, except testing .....	34	X	X	250 236	35	X	X	203 281
33329852	Other printed circuit board manufacturing machinery and equipment, and parts, accessories, and attachments, except testing .....	N	X	X	616 835	N	X	X	N
3332985201	Surface mount printed circuit board manufacturing machinery, except testing .....	55	X	X	360 263	32	X	X	176 862
3332985211	Other printed circuit board manufacturing machinery and equipment, except testing .....	43	X	X	256 572	43	X	X	116 834

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>333298</b>	<b>All other industrial machinery and equipment—Con.</b>								
3332985	Printed circuit board manufacturing machinery, except testing—Con.								
33329853	Parts, attachments, and accessories for printed circuit board manufacturing machinery and equipment, except testing .....	N	X	X	85 631	N	X	X	N
3332985316	Parts, attachments, and accessories for printed circuit board manufacturing machinery and equipment, except testing .....	28	X	X	85 631	25	X	X	46 505
3332985Y	Printed circuit board manufacturing machinery, except testing, nsk .....	N	X	X	34 225	N	X	X	N
3332985YVV	Printed circuit board manufacturing machinery, except testing, nsk .....	N	X	X	34 225	N	X	X	32 040
3332987	Special industry machinery and equipment, nec @ .....	N	X	X	4 350 135	N	X	X	N
33329871	Other special industry machines, including petroleum refining, ammunition, grinding or polishing machines for glass working, and other machines, nec .....	N	X	X	1 056 696	N	X	X	N
3332987101	Petroleum refining, distilling, or fractionating machinery and equipment .....	13	X	X	207 505	N	X	X	N
3332987106	Petroleum refining heat exchange units .....	1	X	X	D	N	X	X	N
3332987111	Other petroleum refining machinery .....	2	X	X	D	N	X	X	N
3332987121	Ammunition and explosive loading machinery, except parts .....	3	X	X	6 480	9	X	X	19 461
3332987131	Tobacco processing machinery, except parts .....	10	X	X	37 710	14	X	X	39 200
3332987141	Sawing machines for working stone, ceramics, or like materials (including glass) .....	7	X	X	14 678	5	X	X	8 685
3332987146	Grinding or polishing machines for glass working .....	4	X	X	D	3	X	X	1 821
3332987151	Grinding or polishing machines for working stone, ceramics, or like materials (except glass) .....	8	X	X	16 358	10	X	X	15 666
3332987156	Other special industry glass working machines .....	6	X	X	42 840	11	X	X	59 701
3332987161	Other special industry machines for working stone, ceramics, or like materials (except glass) .....	6	X	X	11 899	17	X	X	33 744
3332987171	Clay products forming equipment (brick, tile, ceramic), except parts .....	5	X	X	12 500	13	X	X	30 730
3332987181	Concrete block forming equipment, except parts .....	3	X	X	D	5	X	X	32 031
3332987186	Other concrete products forming equipment, except parts .....	11	X	X	44 525	10	X	X	18 479
3332987196	Cement making machinery, except parts .....	5	X	X	48 931	5	X	X	D
33329871B6	Cotton ginning machinery, except parts .....	8	X	X	63 890	7	X	X	66 373
33329871C6	Fuel fired kilns for cement, wood, and chemical processing and parts thereof .....	7	X	X	61 460	12	X	X	35 616
33329871G6	Distilling or rectifying equipment for desalination .....	1	X	X	D	N	X	X	N
33329871H1	Heat exchange units for desalination .....	2	X	X	D	N	X	X	N
33329871H6	Filtering or purifying machinery and apparatus for desalination .....	8	X	X	103 469	N	X	X	N
33329871J1	Other desalination equipment .....	2	X	X	D	N	X	X	N
33329871K1	Footwear manufacturing or repairing machinery, and parts thereof (except shoe sole stitching machines) .....	8	X	X	15 405	N	X	X	N
33329871K6	Industrial sewing machine heads (including shoe sole stitching machine heads) .....	12	X	X	45 003	N	X	X	N
33329871M1	Automatic industrial sewing machinery .....	13	X	X	58 995	N	X	X	N
33329871M6	Nonautomatic industrial sewing machinery .....	7	X	X	15 004	N	X	X	N
33329871N1	Industrial sewing machine furniture and other parts and attachments .....	17	X	X	53 452	N	X	X	N
33329871N6	Machines for insulating electrical wire for cable and parts thereof .....	2	X	X	D	5	X	X	20 736
33329871P1	Electric battery manufacturing machinery, except parts .....	10	X	X	43 541	12	X	X	23 945
33329871R1	Household sewing machines (including heads for sale with cabinets or cases, and heads for sale separately) .....	-	X	X	D	N	X	X	N
33329871R6	Parts for household sewing machines .....	4	X	X	19 105	N	X	X	N

See footnotes at end of table.



**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>333298</b>	<b>All other industrial machinery and equipment—Con.</b>								
3332987	Special industry machinery and equipment, nec @—Con.								
33329872	Parts for special industry machinery and equipment.....	N	X	X	374 101	N	X	X	N
3332987216	Parts for petroleum refining machinery .....	4	X	X	D	11	X	X	99 703
3332987226	Parts for ammunition and explosive loading machinery .....	—	X	X	—	2	X	X	D
3332987236	Parts for tobacco processing machinery .....	6	X	X	13 326	9	X	X	10 014
3332987266	Parts for machines for working stone, ceramics, or like materials (including glass).....	10	X	X	11 809	15	X	X	21 261
3332987276	Parts for clay products forming equipment (brick, tile, ceramic).....	4	X	X	17 794	5	X	X	15 789
3332987291	Parts for concrete products forming equipment.....	7	X	X	58 186	8	X	X	53 589
33329872A1	Parts for cement making machinery .....	5	X	X	9 176	4	X	X	D
33329872B1	Parts for glassmaking machinery and equipment.....	19	X	X	137 688	14	X	X	83 089
33329872C1	Parts for cotton ginning machinery .....	8	X	X	18 992	6	X	X	24 540
33329872D6	Parts for electroplating equipment .....	8	X	X	8 368	6	X	X	7 834
33329872F6	Parts for metal finishing equipment .....	12	X	X	7 551	14	X	X	12 645
33329872J6	Parts of desalinization equipment .....	2	X	X	D	N	X	X	N
33329872P6	Parts for electric battery making machines .....	8	X	X	8 033	6	X	X	8 152
33329873	Metal finishing, degreasing, and metal plating equipment, except rolling mill equipment, and parts .....	N	X	X	294 706	N	X	X	N
33329873D1	Electroplating equipment (except rolling mill lines and parts) .....	13	X	X	56 997	20	X	X	45 952
33329873E1	Vibratory metal finishing machines, except parts .....	6	X	X	5 155	7	X	X	9 776
33329873E6	Metal plating equipment, except electroplating and parts .....	9	X	X	10 877	14	X	X	21 033
33329873F1	Other metal finishing equipment, except electroplating, rolling mill equipment, and parts .....	20	X	X	117 620	31	X	X	114 353
33329873G1	Metal degreasing machines and parts thereof .....	17	X	X	104 057	16	X	X	33 496
33329874	Glassmaking machinery and equipment, including machines for hot working glass or glassware, except parts .....	N	X	X	205 818	N	X	X	N
33329874A6	Glassmaking machinery and equipment, including machines for hot working glass or glassware, except parts .....	15	X	X	205 818	20	X	X	191 058
33329875	Special industry machinery and parts, nec.....	N	X	X	2 049 321	N	X	X	N
33329875R1	Special industry machinery and parts, nec.....	314	X	X	2 049 321	N	X	X	N
3332987Y	Special industry machinery and equipment, nec, nsk .....	N	X	X	369 493	N	X	X	N
3332987YWV	Special industry machinery and equipment, nec, nsk .....	N	X	X	369 493	N	X	X	N
333298W	All other industrial machinery manufacturing, nec, nsk, total .....	N	X	X	916 403	N	X	X	N
333298WY	All other industrial machinery manufacturing, nec, nsk, total .....	N	X	X	916 403	N	X	X	N
333298WYWW	All other industrial machinery manufacturing, nec, nsk, for nonadministrative-record establishments.....	N	X	X	691 085	N	X	X	N
333298WYWY	All other industrial machinery manufacturing, nec, nsk, for administrative-record establishments .....	N	X	X	225 318	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>P</sup> 10 to 19 percent estimated; <sup>Q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3332981</b>	<b>CHEMICAL MANUFACTURING MACHINERY, EQUIPMENT, AND PARTS</b>		
	<b>United States</b> .....	<b>1 117 017</b>	<b>818 758</b>
	California .....	27 953	53 835
	Florida .....	20 285	17 029
	Georgia .....	13 095	N
	Illinois .....	78 048	42 230
	Louisiana .....	14 538	N
	Massachusetts .....	69 447	27 834
	Michigan .....	164 151	N
	Minnesota .....	13 854	N
	New Jersey .....	21 139	46 621
	New York .....	32 287	33 493
	Ohio .....	113 068	101 177
	Oklahoma .....	53 835	40 078
	Pennsylvania .....	120 123	138 558
	Texas .....	45 538	19 367
<b>3332983</b>	<b>FOUNDRY MACHINERY AND EQUIPMENT, EXCLUDING PATTERNS AND MOLDS</b>		
	<b>United States</b> .....	<b>353 683</b>	<b>319 026</b>
	California .....	4 713	N
	Illinois .....	55 426	51 497
	Indiana .....	14 115	N
	Michigan .....	56 219	53 639
	Missouri .....	37 396	27 723
	New Jersey .....	2 650	N
	New York .....	11 555	N
	Ohio .....	40 670	27 538
	Pennsylvania .....	6 286	13 101
	Wisconsin .....	19 232	13 609
<b>3332985</b>	<b>PRINTED CIRCUIT BOARD MANUFACTURING MACHINERY, EXCEPT TESTING</b>		
	<b>United States</b> .....	<b>986 927</b>	<b>575 522</b>
	California .....	305 824	181 833
	Florida .....	37 463	20 103
	Illinois .....	8 951	N
	Missouri .....	5 667	N
	New Jersey .....	31 481	14 504
	New York .....	33 320	N
	Ohio .....	27 881	10 483
	Texas .....	124 826	N
	Virginia .....	2 455	N
	Wisconsin .....	17 389	N
<b>3332987</b>	<b>SPECIAL INDUSTRY MACHINERY AND EQUIPMENT, NEC @</b>		
	<b>United States</b> .....	<b>4 350 135</b>	<b>N</b>
	Arizona .....	18 643	N
	California .....	441 058	N
	Colorado .....	13 389	N
	Connecticut .....	292 015	N
	Florida .....	76 926	N
	Georgia .....	111 939	N
	Illinois .....	395 226	N
	Indiana .....	149 802	N
	Iowa .....	57 431	N
	Kentucky .....	21 393	N
	Louisiana .....	27 617	N
	Maryland .....	39 576	N
	Massachusetts .....	124 944	N
	Michigan .....	538 545	N
	Minnesota .....	77 597	N
	Missouri .....	39 948	N
	New Jersey .....	132 916	N
	New York .....	179 841	N
	North Carolina .....	103 684	N
	Ohio .....	307 963	N
	Oklahoma .....	162 607	N
	Oregon .....	24 448	N
	Pennsylvania .....	169 521	N
	Rhode Island .....	11 410	N
	South Carolina .....	54 891	N
	Tennessee .....	56 650	N
	Texas .....	202 469	N
	Virginia .....	88 658	N
	Washington .....	50 374	N
	West Virginia .....	6 496	N
	Wisconsin .....	100 699	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>333298</b>	<b>ALL OTHER INDUSTRIAL MACHINERY MFG</b>				
001900B1	Electrical transmission, distribution, and control equipment . . . . .	X	114 250	X	N
33399601	Fluid power pumps, motors, and hydrostatic transmissions (hydraulic and pneumatic) . . . . .	X	40 715	X	N
33391101	Other pumps and pump parts, except fluid power (complete assemblies) . . . . .	X	26 602	X	N
33291207	Fluid power valves (hydraulic and pneumatic) . . . . .	X	21 642	X	N
33399501	Fluid power cylinders and rotary actuators (hydraulic and pneumatic) . . . . .	X	23 430	X	N
33291203	Fluid power hose or tube fittings and assemblies (hydraulic and pneumatic) . . . . .	X	13 092	X	N
33399901	Fluid power filters (hydraulic and pneumatic) . . . . .	X	7 500	X	N
00190089	Other fluid power products (hydraulic and pneumatic) . . . . .	X	6 762	X	N
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products . . . . .	X	45 797	X	N
332000A1	Metal tanks, heat exchangers, steam condensers, and other boiler products, fabricated steel plate, and weldments . . . . .	X	52 616	X	N
33291901	Metal pipe, valves, and pipe fittings (except forgings) . . . . .	X	44 645	X	N
33200051	Other fabricated metal products (except fluid power products and forgings) . . . . .	X	179 875	X	N
33210001	Forgings . . . . .	X	7 750	X	N
33151001	Iron and steel castings (rough and semifinished) . . . . .	X	58 387	X	N
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished) . . . . .	X	18 740	X	N
33152003	Other nonferrous castings (rough and semifinished) . . . . .	X	4 685	X	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products) . . . . .	X	115 568	X	N
33120017	Steel sheet and strip, including tin plate . . . . .	X	145 827	X	N
33120019	Steel structural shapes and sheet piling (except castings, forgings, and fabricated metal products) . . . . .	X	28 619	X	N
33120091	All other steel shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	53 827	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing . . . . .	X	18 970	X	N
33100055	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	12 017	X	N
33100077	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	15 504	X	N
33531217	Other fractional horsepower electric motors (under 1 hp) . . . . .	X	19 067	X	N
33531221	Integral horsepower electric motors and generators (1 hp or more) . . . . .	X	34 936	X	N
33299101	Ball and roller bearings (mounted or unmounted) . . . . .	X	26 217	X	N
33361200	Mechanical speed changers, gears, and industrial high-speed drives . . . . .	X	30 154	X	N
33391200	Air and gas compressors except refrigeration compressors . . . . .	X	4 542	X	N
32212031	Filter paper . . . . .	X	10 676	X	N
33120033	All other steel shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	1 086	X	N
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	10 879	X	N
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies . . . . .	X	13 183	X	N
33593101	Current-carrying wiring devices . . . . .	X	1 832	X	N
32610013	Plastics products consumed in the form of sheets, rods, tubes, film, and other shapes . . . . .	X	2 551	X	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc. . . . .	X	3 485	X	N
00970099	All other materials and components, parts, containers, and supplies . . . . .	X	1 089 264	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. . . . .	X	880 516	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.



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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **333298 ALL OTHER INDUSTRIAL MACHINERY MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing industrial machinery (except agricultural and farm-type, construction and mining machinery, sawmill and woodworking machinery, plastics and rubber making machinery, paper and paperboard

making machinery, textile machinery, printing machinery and equipment, food manufacturing-type machinery, and semiconductor making machinery).

The data published with NAICS code 333298 include the following SIC industries:

3559 Special industry machinery, n.e.c. (pt)

3639 Household appliances, n.e.c. (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The 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

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census – manufacturing. The economic census – manufacturing 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 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. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.



# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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## Part 1. **Products Statistics (Tables 6a and 6b)**

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NAICS product code	Footnote
@3332987 .....	For additional detail, see Current Industrial Report MA335F, Major Household Appliances.

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## Part 2. **Materials Consumed by Kind (Table 7)**

Not applicable.













1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3339243	35374	35374	3339927	35483	35483	3339940YWW pt	3567000 pt	3567100
3339243101	3537412	3537411	3339927101	3548305	3548305	3339940YWW pt	3567000 pt	3567400
3339243106	3537413	3537418 pt	3339927106	3548306	3548306	3339940YWW pt	3567000 pt	3567500
3339243111	3537414	3537418 pt	3339927111	3548307	3548307	3339940YWW pt	3567000 pt	3567600
3339243YVV	3537400	3537400	3339927116	3548308	3548308	3339940YWW pt	3567002	3567002
333924W	353700 pt	353700 pt	3339927121	3548309	3548309	3339951	35934	35934
333924WYWW	3537000 pt	3537000 pt	3339927126	3548311	3548311	3339951100	3593400	3593400
333924WYVY	3537002 pt	3537002 pt	3339927131	3548319	3548319	3339953	35935	35935
3339911	35462	35462	3339927YVW	3548300	3548300	3339953100	3593500	3593500
3339911101	3546237	3546237	3339929101	35484	35484	3339955	35939	35939
3339911106	3546238	3546238	3339929101	3548401	3548401	3339955100	3593900	3593900
3339911111	3546241	3546241	3339929106	3548402	3548402	3339957 pt	35932	35932
3339911116	3546242	3546242	3339929111	3548403	3548403	3339957 pt	37284 pt	37284 pt
3339911121	3546244	3546244	3339929116	3548404	3548404	3339957100 pt	3593200	3593200
3339911126	3546245	3546245	3339929121	3548405	3548405	3339957100 pt	3728400 pt	3728400 pt
3339911131	3546248	3546248	3339929126	3548409	3548409	3339957100 pt	3728409 pt	3728473 pt
3339911136	3546249	3546249	3339929YVW	3548400	3548400	3339957100 pt	3728409 pt	3728483 pt
3339911141	3546251	3546251	333992A pt	35485	35485	3339957100 pt	3728409 pt	3728485 pt
3339911146 pt	3546262 pt	3546261	333992A101	36992 pt	36992 pt	333995W pt	35930	35930
3339911146 pt	3546262 pt	3546279 pt	333992A101	3548501	3548501	333995W pt	37280 pt	37280 pt
3339911151 pt	3546273 pt	3546271	333992A111	3548511	3548511	333995W pt	3593000	3593000
3339911151 pt	3546273 pt	3546272	333992A116	3699291	3699291	333995WYVW pt	3728000 pt	3728000 pt
3339911156	3546278	3546279 pt	333992A121	3548515	3548515	333995WYVY pt	3593002	3593002
3339911YVW	3546200	3546200	333992A126	3548516	3548516	333995WYVY pt	3728002 pt	3728002 pt
3339913	35463	35463	333992A131	3548517	3548517	3339961	35943	35943
3339913101	3546301	3546301	333992A131	3548514	3548514	3339961100	3594300	3594300
3339913106	3546311	3546311	333992A141	3548507	3548507	3339963	35944	35944
3339913111	3546317	3546319 pt	333992A146	3548509	3548509	3339963100	3594400	3594400
3339913116	3546318	3546319 pt	333992AYVW pt	3548500	3548500	3339965	35945	35945
3339913YVW	3546300	3546300	333992AYVW pt	3699200 pt	3699200 pt	3339965100	3594500	3594500
3339917	35464	35464	333992W pt	35480 pt	35480 pt	3339967 pt	35946	35946
3339917101	3546401	3546401	333992W pt	36990 pt	36990 pt	3339967 pt	37284 pt	37284 pt
3339917106	3546405	3546405	333992WYVW pt	3548000 pt	3548000 pt	3339967100 pt	3594600	3594600
3339917111 pt	3546406 pt	3546409	333992WYVW pt	3699000 pt	3699000 pt	3339967100 pt	3728400 pt	3728400 pt
3339917111 pt	3546418	3546419 pt	333992WYVY pt	3548002 pt	3548002 pt	3339967100 pt	3728405 pt	3728473 pt
3339917116	3546418	3546419 pt	333992WYVY pt	3699002 pt	3699002 pt	3339967100 pt	3728405 pt	3728475 pt
3339917121	3546421	3546421	3339931	35651	35651	3339969 pt	35949	35949
3339917126	3546421	3546421	3339931103	3565123	3565123	3339969100 pt	37284 pt	37284 pt
3339917YVW	3546400	3546400	3339931207	3565125	3565125	3339969100 pt	3728400 pt	3728400 pt
3339919	35465	35465	3339931311	3565103	3565103	3339969100 pt	3728407 pt	3728473 pt
3339919101 pt	3546510 pt	3546502	3339931315	3565131	3565131	3339969100 pt	3728407 pt	3728475 pt
3339919101 pt	3546510 pt	3546505	3339931319	3565104	3565104	3339969100 pt	3728407 pt	3728475 pt
3339919101 pt	3546510 pt	3546507	3339931321	3565105	3565105	3339969100 pt	3728407 pt	3728475 pt
3339919101 pt	3546510 pt	3546509	3339931426	3565152	3565152	3339969100 pt	3728407 pt	3728475 pt
3339919104	3546511	3546511	3339931433	3565122	3565122	3339969100 pt	3728407 pt	3728475 pt
3339919108	3546512	3546512	3339931437	3565151	3565151	3339969100 pt	3728407 pt	3728475 pt
3339919112	3546513	3546513	3339931444	3565133	3565133	3339969100 pt	3728407 pt	3728475 pt
3339919116	3546514	3546514	3339931545	3565135	3565135	3339969100 pt	3728407 pt	3728475 pt
3339919121	3546515	3546515	3339931651	3565145	3565145	3339969100 pt	3728407 pt	3728475 pt
3339919124	3546516	3546516	3339931755	3565137	3565137	3339969100 pt	3728407 pt	3728475 pt
3339919128	3546517	3546517	3339931859	3565141	3565141	3339969100 pt	3728407 pt	3728475 pt
3339919132	3546521	3546521	3339931963	3565143	3565143	3339969100 pt	3728407 pt	3728475 pt
3339919136	3546522	3546522	3339931A67	3565118	3565118	3339969100 pt	3728407 pt	3728475 pt
3339919141	3546523	3546523	3339931A71	3565149	3565149	3339969100 pt	3728407 pt	3728475 pt
3339919144	3546524	3546524	3339931B75	3565127	3565127	3339969100 pt	3728407 pt	3728475 pt
3339919148	3546525	3546525	3339931B79	3565128	3565128	3339969100 pt	3728407 pt	3728475 pt
3339919152	3546527	3546527	3339931B83	3565153	3565153	3339969100 pt	3728407 pt	3728475 pt
3339919156	3546528	3546528	3339931C99	3565159	3565159	3339969100 pt	3728407 pt	3728475 pt
3339919161	3546529	3546529	3339931YVW	3565100	3565100	3339969100 pt	3728407 pt	3728475 pt
3339919164	3546531	3546531	3339935	35652	35652	3339969100 pt	3728407 pt	3728475 pt
3339919164	3546531	3546531	3339935100	3565200	3565200	3339969100 pt	3728407 pt	3728475 pt
3339919168	3546533	3546533	333993W	35650	35650	3339969100 pt	3728407 pt	3728475 pt
3339919172	3546536	3546536	333993WYVW	3565000	3565000	3339969100 pt	3728407 pt	3728475 pt
3339919176	3546537	3546537	333993WYVY	3565002	3565002	3339969100 pt	3728407 pt	3728475 pt
3339919181	3546538	3546538	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339919184	3546539	3546539	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339919188	3546541	3546541	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339919192	3546543	3546543	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339919YVW	3546500	3546500	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
333991W	35460	35460	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
333991WYVW	3546000	3546000	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
333991WYVY	3546002	3546002	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921	35481 pt	35481 pt	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921101	3548103	3548103	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921106	3548101	3548104 pt	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921111	3548102	3548104 pt	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921126	3548107	3548107	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921131	3548108	3548108	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921136	3548109	3548109	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921141	3548111	3548111	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921146	3548112	3548112	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921151	3548114	3548114	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921156	3548115	3548115	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921161	3548118	3548119	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339921YVW	3548100 pt	3548100 pt	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923	35482	35482	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923101	3548203	3548203	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923106	3548204	3548204	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923111	3548205	3548205	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923116	3548206	3548206	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923121	3548209	3548209	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923126	3548211	3548211	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923131	3548212	3548212	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923136	3548213	3548213	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923141	3548214	3548214	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923146	3548217	3548217	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923151	3548218	3548218	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923YVW	3548200	3548200	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923YVW	3548200	3548200	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923YVW	3548200	3548200	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923YVW	3548200	3548200	3339940 pt	35670 pt	35670	3339969100 pt	3728407 pt	3728475 pt
3339923Y								

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3339998 .....	35699 .....	35699	3339998870 pt .....	3569945 pt .....	3569942	3339999 .....	35994 pt .....	35994 pt
3339998109 .....	3569909 .....	3569909	3339998870 pt .....	3569945 pt .....	3569943	3339999100 pt .....	3599400 pt .....	3599400 pt
3339998218 .....	3569903 .....	3569903	3339998870 pt .....	3569945 pt .....	3569944	3339999100 pt .....	3599498 .....	3599498
3339998321 .....	3569921 .....	3569921	3339998880 .....	3569907 .....	3569913 pt	3339999W pt .....	35690 .....	35690
3339998425 .....	3569905 .....	3569905	3339998883 .....	3569908 .....	3569917			
3339998436 .....	3569915 .....	3569915	3339998886 .....	3569917 .....	3569927	3339999W pt .....	35990 pt .....	35990 pt
3339998446 .....	3569946 .....	3569947 pt	3339998899 .....	3569927 .....	3569931	3339999WYWWW pt...	3599000 .....	3599000
3339998451 .....	3569950 .....	3569951 pt	3339998991 .....	3569931 .....	3569931	3339999WYWWW pt...	3599000 pt .....	3599000 pt
3339998556 .....	3569901 .....	3569901	3339998995 pt .....	3569948 pt .....	3569925	3339999WYWWW pt...	3599098 .....	3599000 pt
3339998661 .....	3569911 .....	3569911	3339998995 pt .....	3569948 pt .....	3569947 pt	3339999WYWY pt ...	3569002 .....	3569002
3339998763 .....	3569923 .....	3569923	3339998996 .....	3569952 .....	3569951 pt	3339999WYWY pt ...	3599002 pt .....	3599002 pt
3339998870 pt .....	3569945 pt .....	3569941	3339998YVW .....	3569900 .....	3569900			

