

IRON AND STEEL

By Michael Fenton

Iron and steel are vital to the United States for both national security and economic well-being. They are the basic metals of an industrial society. Although there are many acceptable substitutes for many of their uses, at this time there are no practical substitutes on a large scale because of the cost and lack of availability of alternative materials.

Data tables on ferroalloys production and consumption are contained in this chapter. Ferroalloys are alloys of iron that contain a sufficient amount of one or more other chemical elements to be useful as an agent to introduce these other elements into a molten metal, usually steel. The reader is referred to the Annual Reports dealing with specific elements, especially those for chromium, manganese, and silicon, for analysis and detail with respect to the ferroalloys industry.

Data regarding U.S. production of iron and steel and shipments of steel mill products are those reported by the American Institute of Iron and Steel (AISI). These data can be regarded as representing 100% of the raw steel producers in the United States. World production of iron and steel is reported by the International Institute of Iron and Steel (IISI) and by foreign government agencies. Consistent with international usage and Federal Government policy, the U.S. Geological Survey is reporting all data on iron and steel in metric units, unless otherwise noted.

U.S. steel producers continued to enhance their position in world markets during 1995. To improve customer satisfaction, value-added steels were added to product lines, and efforts were increased to improve quality and customer service. As in 1994, demand for steel products during 1995 remained strong both domestically and in foreign markets as exports increased and imports decreased. Average 1995 prices for most products were higher than those during 1994, but prices declined during the fourth quarter and earnings trended downward as the year ended.

Production

Production of raw steel in the United States increased 4.4% to 95.2 million metric tons, from 91.2 million tons produced in 1994. Raw steel production capability was estimated by AISI as 102.0 million tons, up from 98.1 million tons in 1994. Production in 1994 represented 93.3% of estimated capability, compared with 93.0% in 1993.

The basic oxygen steelmaking process was utilized for 56.7 million tons, 59.6% of raw steel production in 1995. Basic oxygen furnaces are used by integrated steel producers that smelt iron ores to crude liquid iron in blast furnaces and refine the iron, with some scrap, in basic oxygen furnaces, producing

liquid steel. The liquid steel is mostly cast into semifinished products in continuous casting machines, although 8.8% of U.S. production in 1994 was cast in ingot form and subsequently rolled into semifinished form. The integrated steel industry in the United States in 1995 consisted of 15 companies operating ironmaking and steelmaking facilities at 22 locations. Several of these companies also operated nonintegrated plants and/or other steelmaking facilities at the same locations.

The electric arc furnace steelmaking process was utilized for 38.4 million tons, 40.4% of total steelmaking in 1995. Electric arc furnaces are used by nonintegrated steel producers to melt raw materials, primarily scrap. Two subcategories of nonintegrated mills are minimills and specialty mills. Minimills use modern technology to produce a limited product line with maximum efficiency. These plants always incorporate electric melting of low-cost raw materials, continuous casting, and a hot rolling mill, often closely coupled to the casting operation. Specialty mills include producers of stainless, alloy-electrical, and tool steel, high-temperature alloys, forged ingots, and other low-volume steel products. Overall, the nonintegrated sector of the industry consisted of more than 65 companies with 92 steelmaking locations.

The trend in the use of continuous casting continued to rise. Continuous casting production was 86.7 million tons, 91.1% of total raw steel production, compared with 81.7 million tons and 89.5% in 1994.

Consumption

“Steel mill products” refers to products produced by a steel mill, either by forging or rolling, in the form normally delivered for fabrication or use. Some companies purchase semifinished steel mill products from other steel companies and use these semifinished products to produce steel mill products. To avoid double counting steel mill product shipments under these circumstances, steel mills identify any shipments of steel mill products to other companies that are reporters of steel mill product shipments. The accumulated shipments of all companies, less the shipments to other reporting companies, are identified as “net” shipments.

Shipments of steel mill products by U.S. companies were up 2.4%, to 88.4 million tons. Export shipments reversed a downward trend by rising dramatically from 1.71 million tons in 1994 to 4.44 million tons in 1995, while shipments to domestic customers were down 1% during 1995. Shipments to the automotive market, the largest single end-use market for steel, were down nearly 1% during 1995. Also down during the year were the steel service centers and distributors (2%) and

appliances (9%). Construction products rose more than 4%. Shipments of steel for containers, packaging, and shipping materials decreased 8%. The combined shipments to the oil and gas, mining, quarrying, and lumbering industries increased 31% from the 1994 level. Shipments for industrial and agricultural machinery, equipment, and tools decreased 3%. Although 1995 demand was strong and the amount of steel products shipped was the highest since 1979, earnings for most producers were trending downward during the fourth quarter. Low fourth quarter earnings relative to the same quarter a year ago were attributed to low profits from exports and increased supply as capacity increased and operating efficiency improved.

Prices

Prices for steel mill products increased steadily through August 1995 and then declined to a level below that of January. The Bureau of Labor Statistics' Producer Price Index for steel mill products in 1995 was up by 5.9%, from 113.4 to 120.1 (1982 base=100). However, a steady rise in the index through the first 8 months of the year was followed by a decline to a December level that was slightly lower than that of the previous January. Prices peaked during the second quarter, and then fell significantly for most products, especially for hot-rolled sheet steel. In November, hot-rolled-steel spot prices, a key indicator of the steel industry, dropped 20% from their peak in mid-1994.

Foreign Trade

Exports of steel mill products increased dramatically to 6.4 million tons, from 3.5 million tons in 1994. Canada was again the nation receiving the largest amount of U.S. exported steel, 2.2 million tons, up from 1.9 million tons, with Mexico again in second place, receiving a modest increase of 0.1 million tons, to 0.8 million tons.

Imports of steel mill products decreased to 22.1 million tons from 27.3 million tons in 1994, a decrease of 19%. Brazil, Canada, the European Union (EU), Japan, Republic of Korea, and Mexico were major sources for steel mill product imports. One of the most significant developments reported in 1994 was the emergence of Russia and Ukraine as major sources of imported steel mill products. During 1994, more than 2 million tons of steel mill products was imported from Russia and Ukraine. But during the following year, 1995, combined imports from these countries declined about 6%. Imports from Russia declined by 15%, whereas imports from Ukraine increased 22%. As dramatic as this may be for these countries, their contribution was only about 2% of total domestic and foreign supply to U.S. markets. The rising trend during 1993 and 1994 of imported semifinished steel for rolling in the United States, believed to have been imported by U.S. steel companies to supplement steelmaking capacity, ended in 1995 as imports of mostly ingots, blooms, billets, and slabs declined 34% from the 1994 high of about 7.2 million tons to nearly the 1993 import level.

The increase in imports of semifinished steel by steel

companies must be taken into consideration in evaluating total consumption of steel mill products in the United States and the share of the market represented by imported steel. To avoid counting both the imported semifinished steel and the products produced from it, it is necessary to subtract from domestic consumption the amount of semifinished steel consumed by companies that also produce raw steel. For 1995, this amount is estimated to have been 2 million tons. For years prior to 1993, the amount was less than 0.5 million tons per year, and for 1993 and 1994, the amount of such imports was estimated to be 2.5 million and 5 million tons, respectively. Taking the imported semifinished steel into consideration, the share of the U.S. steel market represented by imported steel was 22% in 1995 compared with 26% in 1994.

Regarding the reporting of imports and exports, "fabricated steel products" are products produced from steel mill products, but not including products that incorporate steel products along with other materials. Examples of fabricated steel products are fabricated structural steel and steel fasteners. "Other iron and steel products" refers to products that are not produced from steel mill products. Examples of other iron and steel products include iron or steel castings and direct-reduced iron (DRI).

World Review

World production of pig iron in 1995 totaled about 525 million tons, an increase of 2.1% compared with that of 1994. In Asia, China and India experienced double-digit growth in pig iron production during 1994, but production declined during 1995 to about 4.5% for both countries. China continued in 1995 by a wide margin as the leading pig iron-producing nation in the world. China produced 102 million tons. Japan and the United States followed with 75 million and 51 million tons, respectively. The Republic of Korea's production increased 5.5%, which exceeded the 4.4% increase achieved by China. Russia and Ukraine were the only major pig iron producers in the former Soviet Union (FSU). Russia reversed a 3-year production decline with a production increase of 10% to nearly 40 million tons during 1995. Ukraine continued its production decline during the same period to less than 18 million tons, including a decrease of 11% during 1995. The only major producer of pig iron in North America was the United States, where production increased a modest 3% to about 51 million tons. South America had only one major pig iron producer, Brazil, which produced about 25 million tons during 1994 and 1995. Germany was the top producer in the EU with 30 million tons. Italy had the best growth rate, nearly 5%, in the EU.

DRI production continued to expand as it had during 1994, but at a slower pace. The increase was 8% in 1995 compared with that of 1994, to almost 30 million tons, and 59% over the past 5 years. The leading technology was the Midrex process, followed by the HYL III and the HYL I processes. Demand for charge materials and the growth of thin slab casting caused increased interest in DRI by steel producers. Direct reduction of iron ore has proved to be a cost-effective way for developing countries, especially those with an abundance of natural gas, to

encourage economic growth. The leading producer continued to be Venezuela, followed by India and Mexico. World capacity for DRI production was estimated to be 38 million tons per year, with an additional 4.3 million tons under construction in China, Egypt, India, Republic of Korea, Mexico, Peru, and South Africa. After the addition of several DRI plants, India's capacity reached nearly 6 million tons per year in 1995. Six plants remained under construction, having a combined capacity of 1 million tons per year.

World production of crude steel in 1995 was more than 749 million tons, only 3% greater than the 730 million tons of steel produced during 1994. As in previous years, production varied widely among major regions of the world. Seventeen Asian countries produced 37% of the world's steel, while the EU produced 21% and North America produced 16%. Japan remained the world's leading steel producer, reaching 102 million tons, a modest gain of 3.4% over that of 1994. Four leading producers behind Japan, in declining order, were the United States, China, Russia, and Germany. These five countries accounted for about one-half of world production. Eight current steel-producing states in the FSU had combined steel production of less than 80 million tons, with Russia and Ukraine remaining the top producers. While Russia was able to reverse a declining 3-year trend in production with a 5% increase in 1995, Ukrainian production continued downward. In the former Soviet satellite states of Eastern Europe, growth in steel production continued with 1995 production of 34 million tons, an increase of only 3% over that of 1994. This increase was primarily a result of increases in Czech Republic, Poland, and Romania.

Mexico's major steel producers were able to react quickly to the changed competitive environment brought about by the December 1994 decision to float the Peso. Mexico's largest producers moved quickly to shift emphasis from the domestic to the export market. Steel production increased in 1995 by 18% to a record 12 million tons and exports more than doubled to 5.5 million tons. Producers were working at or near full capacity while planning to invest in capacity expansion and process upgrades. Meanwhile, apparent steel consumption within Mexico's residential and office construction and public works sectors declined more than 40% in 1995 to 6.2 million tons, the lowest level this decade.

Outlook

The global iron and steel industry exhibited growth and prosperity during 1995 as privatization of state-owned facilities continued at a rapid pace. Free trade was encouraged by the reduction of tariffs through the General Agreement on Tariffs and Trade (GATT). Opportunities are abundant for those in the steel industry that are able to adapt to new world conditions. The most significant changes in state control have been in China, Eastern Europe, and the FSU. The demand for steel in China, which has been a part of the free-market economic boom during the early 1990's, is expected to continue at record growth rates. As the free market replaced state-controlled economies

in the FSU and Eastern Europe, iron production declined by nearly one-half by 1994 when compared with 1988 production, and reversed in 1995. Production of crude steel in these regions also declined during the same time period and reversals have also occurred; during 1994 in Eastern Europe and 1995 in the FSU. As the emphasis is placed increasingly in higher quality steel produced at the most economically viable plants, modest growth is expected in Eastern Europe and the FSU, especially as domestic demand increases.

Because the automobile industry is a significant user of steels and cast iron, the future of the world iron and steel industry would be expected to be influenced to a large extent by the degree iron and steel remains as major material components in cars and trucks. Since the U.S. Government, among others, has recognized the need to decrease vehicle weight as a way of decreasing air pollution, it seems likely that manufacturers will be forced to replace iron and steel with lightweight materials, such as aluminum and plastic. Therefore, vehicle manufacturers and the steel industry will need to work aggressively together to find cost-effective ways to ensure maximum use of these traditional materials. Over the short term, worldwide steel consumption is expected to increase slightly, primarily as a result of economic growth in the relatively underdeveloped countries of Asia, the FSU, Eastern Europe, and Latin America. In the United States and other countries with highly developed economies, steel consumption tends to expand much more slowly than overall economic growth and to contract when economic growth is weak. Therefore, demand for steel in the Canada, Europe, and the United States was expected to remain at about the current level during 1996.

Steel consumption in the United States, which peaked in 1994, caused imports to capture a significant share of the U.S. market that was far greater than their historical average. Domestic companies made great progress in modernizing mills, adopting efficient technology, improving quality, and reducing costs to meet this increased demand. With greater demand in 1994 and the first half of 1995, producers were able to achieve a level of profitability that supported new capacity construction in the form of minimills, mostly to produce hot-rolled sheet products, which are expected to begin producing through 1998. As the industry began constructing as much as 10 million tons of new capacity, demand for steel, both domestically and in Canada and Western Europe, began weakening. Increased production from new minimills coming on-line during the next few years and improved technology are expected to cut into these imports somewhat and displace some integrated production in the domestic market. The export market may become increasingly difficult for U.S. mills owing to an oversupply from new foreign production capacity.

¹All quantities are in metric tons unless otherwise specified.

OTHER SOURCES OF INFORMATION

U.S. Geological Survey Publications

Monthly and annual publications on Iron and Steel Scrap; Iron Ore; and Iron and Steel Slag.

Other Sources

American Metal Market, daily.

Annual Statistical Report, American Iron and Steel Institute, Washington, DC.

Directory of Iron and Steel Plants, Association of Iron and Steel Engineers, Pittsburgh, PA.

Iron and Steelmaker, American Institute of Mining and Metallurgical Engineers—Iron and Steel Society, Warrenton, PA.

HYL, the Iron & Steel Technology Division of Hylsa, S.A. de C.V. HYL Report.

Making, Shaping and Treating of Steel, Association of Iron and Steel Engineers, Pittsburgh, PA.

Metal Bulletin, biweekly.

Midrex Corporation. Direct From Midrex. Quarterly.

Steel Manufacturers Association, Washington, DC.

Steel Statistical Yearbook, International Iron and Steel Institute, Brussels, Belgium.

Steel Times International.

TABLE 1
SALIENT IRON AND STEEL STATISTICS 1/

(Thousand metric tons)

	1991	1992	1993	1994	1995
United States:					
Pig iron:					
Production 2/	44,100	47,400	48,200	49,400	50,900
Exports 3/	15	33	27	56	54
Imports for consumption 3/	434	497	828	2,500 r/	2,360
Direct-reduced iron:					
Production 4/	410	390	440	480	460
Exports 3/	4	9	17 r/	18 r/	5
Imports for consumption 3/	365	542	1,090	1,170	1,190
Raw steel production: 5/					
Carbon steel	70,700	74,800	78,800	81,200	84,100
Stainless steel	1,700	1,810	1,770	1,840	2,060
All other alloy steel	7,380	7,710	8,220	8,180	9,080
Total	79,700	84,300	88,800	91,200	95,200
Capability utilization, percent	74.7	82.2	89.1	93.0	93.3
Steel mill products:					
Net shipments 2/	71,500	74,600	80,800	86,300	88,400
Exports 5/	5,760	3,890	3,600	3,470	6,420
Imports 5/	14,400	15,500	17,700	27,300	22,100
Producer price index for steel mill products 6/ (1982=100.0)	109.5	106.4	108.2	113.4	120.1
World production: 7/					
Pig iron	509,000	503,000	506,000	514,000 r/	525,000
Direct-reduced iron	19,100 r/	20,500 r/	23,600 r/	27,400 r/	29,700
Raw steel	737,000 r/	724,000	730,000 r/	730,000 r/	752,000

r/ Revised.

1/ Data are rounded to three significant digits, except prices; may not add to totals shown.

2/ American Iron and Steel Institute (AISI).

3/ Data from Bureau of the Census.

4/ Midrex Direct Reduction Corporation.

5/ Raw steel is defined by AISI as steel in the first solid state after melting, suitable for rolling.

6/ Data from Bureau of Labor Statistics.

7/ Data from U.S. Geological Survey and International Iron and Steel Institute.

TABLE 2
MATERIALS CONSUMED IN BLAST FURNACES AND PIG IRON PRODUCED 1/

(Thousand metric tons)

Material	1994	1995
Iron oxides: 2/		
Ores	1,820	1,200
Pellets	61,100	67,600
Sinter 3/	12,100	12,400
Total	75,100	81,200
Scrap 4/	1,800	1,700
Coke 2/	22,100 r/	22,300
Pig iron produced	49,400	50,900

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ American Iron and Steel Institute.

3/ Includes sintered ore and pellet fines, dust, mill scale, and other revert iron-bearing materials; also some nodules.

4/ Mainly briquetted turnings and borings, shredded scrap, etc.; scrap produced at blast furnaces and remelt not included.

TABLE 3
DISTRIBUTION OF SHIPMENTS OF STEEL MILL PRODUCTS, BY STEEL TYPE, PRODUCT,
AND MARKET 1/

(Thousand metric tons)

	Thousand metric tons		Percent	
	1994	1995	1994	1995
Shipments by steel type:				
Carbon steel	80,300	82,100	93.1	92.8
Alloy steel	4,410	4,640	5.1	5.3
Stainless steel	1,560	1,720	1.8	1.9
Total shipments by steel type	86,300	88,400	100.0	100.0
Steel mill products:				
Ingots, blooms, billets and slabs	2,300	2,380	2.66	2.69
Wire rods	4,370	4,450	5.06	5.03
Structural shapes-heavy	5,000	5,180	5.79	5.86
Steel piling	395	515	.46	.58
Plates-cut lengths	4,760	4,930	5.52	5.57
Plates-in coils	3,000	3,280	3.48	3.70
Rails	453	483	.52	.55
Railroad accessories	119	89	.14	.10
Bars-hot-rolled	6,430	6,260	7.45	7.08
Bars-light-shaped	1,550	2,120	1.80	2.39
Bars-reinforcing	4,470	4,580	5.18	5.18
Bars-cold finished	1,620	1,620	1.88	1.83
Tool steel	60	66	.07	.07
Pipe and tubing-standard pipe	1,040	1,270	1.20	1.44
Pipe and tubing-oil country goods	1,210	1,350	1.40	1.53
Pipe and tubing-line pipe	1,030	1,070	1.19	1.21
Pipe and tubing-mechanical tubing	939	964	1.09	1.09
Pipe and tubing-pressure tubing	35	37	.04	.04
Pipe and tubing-stainless	23	24	.03	.03
Pipe and tubing-structural	176	174	.20	.20
Pipe for piling	56	43	.06	.05
Wire	714	593	.83	.67
Tin mill products-blackplate	287	310	.33	.35
Tin mill products-tinplate	2,520	2,400	2.92	2.71
Tin mill products-tin-free steel	856	796	.99	.90
Tin mill products-tin coated sheets	92	75	.11	.08
Sheets-hot-rolled	14,200	15,400	16.50	17.40
Sheets-cold-rolled	11,800	11,200	13.70	12.70
Sheets and strip-hot-dip galvanized	9,930	10,300	11.50	11.60
Sheets and strip-electrogalvanized	3,340	2,940	3.88	3.32
Sheets and strip-other metallic coated	1,550	1,570	1.80	1.78
Sheets and strip-electrical	399	386	.46	.44
Strip-hot-rolled	646	734	.75	.83
Strip-cold-rolled	887	897	1.03	1.01
Total-steel mill products	86,300	88,400	100.00	100.00
Shipments by markets:				
Service centers and distributors	21,900	21,500	25.40	24.40
Construction	13,000	13,500	15.00	15.30
Automotive	13,400	13,300	15.50	15.00
Machinery	6,690	6,530	7.75	7.39
Containers	4,080	3,750	4.73	4.25
All others	27,200	29,800	31.60	33.70
Total shipments by market	86,300	88,400	100.00	100.00

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: American Iron and Steel Institute.

TABLE 4
U.S. IMPORTS AND EXPORTS OF STEEL MILL PRODUCTS, BY COUNTRY 1/

(Thousand metric tons)

Country	1994		1995	
	Imports	Exports	Imports	Exports
Argentina	200	5	112	9
Australia	398	11	--	18
Brazil	2,040	11	1,930	19
Bulgaria	198	--	--	--
Canada	4,150	1,880	4,140	2,230
China	115	41	369	215
European Union	8,460	119	5,400	828
Finland	224	3	94	1
India	188	33	--	--
Japan	3,220	31	2,240	247
Korea, Republic of	1,320	15	1,270	475
Mexico	1,590	734	2,060	738
Russia	1,600	5	1,360	--
Slovakia	178	--	--	--
South Africa	431	8	(2/)	--
Sweden	273	2	188	2
Taiwan	184	12	118	431
Trinidad and Tobago	220	6	(2/)	--
Turkey	407	1	425	--
Ukraine	479	1	585	--
Venezuela	398	49	--	61
Other	999	506	1,850	1,150
Total	27,300	3,470	22,100	6,420

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Unable to distinguish country breakdown; included with "Other."

Source: American Iron and Steel Institute.

TABLE 5
U.S. EXPORTS OF IRON AND STEEL PRODUCTS 1/

(Thousand metric tons)

	1994	1995
Steel mill products:		
Ingots, blooms, billets, and slabs	143	418
Wire rods	31	63
Structural shapes-heavy	326	431
Steel piling	11	33
Plates-cut lengths	139	221
Plates-in coils	123	480
Rails-standard	8	7
Rails-other	6	7
Railroad accessories	23	15
Bars-hot-rolled	248	269
Bars-light-shaped	72	88
Bars-concrete reinforcing	96	114
Bars-cold-finished	84	83
Tool steel	5	6
Pipe and tubing-standard pipe	51	64
Pipe and tubing-oil country goods	209	249
Pipe and tubing-line pipe	273	244
Pipe and tubing-mechanical tubing	13	11
Pipe and tubing-stainless	16	21
Pipe and tubing-nonclassified	177	224
Pipe and tubing-structural	33	35
Pipe for piling	2	4
Wire	90	115
Tin mill products-blackplate	5	14
Tin mill products-tinplate	189	290
Tin mill products-tin-free steel	35	51
Sheets-hot-rolled	166	1,710
Sheets-cold-rolled	404	551
Sheets and strip-hot-dip galvanized	130	149
Sheets and strip-electrogalvanized	54	94
Sheets and strip-other metallic coated	101	104
Sheets and strip-electrical	40	34
Strip-hot-rolled	60	74
Strip-cold-rolled	108	149
Total steel mill products	3,470	6,420
Fabricated steel products:		
Structural shapes-fabricated	215	230
Rails-used	33	23
Railroad products	35	47
Wire rope	7	6
Wire-stranded products	22	28
Wire-other products	17	15
Springs	43	51
Nails and staples	20	20
Fasteners	369	376
Chains and parts	24	22
Grinding balls	24	32
Pipe and tube fittings	21	23
Other 2/	37	42
Total fabricated steel products	866	914
Total all steel products	4,340	7,340
Cast iron and steel products:		
Cast steel pipe fittings	52	120
Cast iron pipe and fittings	25	23
Cast steel rolls	12	16
Cast grinding balls	22	16
Granules-shot and grit	32	31
Other castings	41	44
Total cast iron and steel products	183	250

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes shapes-cold formed, sashes and frames, fence and sign post, and architectural and ornamental work.

Source: American Iron and Steel Institute.

TABLE 6
U.S. IMPORTS OF MAJOR IRON AND STEEL PRODUCTS 1/

(Thousand metric tons)

	1994	1995
Steel mill products:		
Ingots, blooms, billets and slabs	7,200	4,720
Wire rods	1,520	1,700
Structural shapes-heavy	662	606
Steel piling	62	69
Plates-cut lengths	1,340	1,320
Plates-in coils	890	789
Rails and railroad accessories	191	192
Bars-hot-rolled	1,030	1,040
Bars-light-shaped	116	144
Bars-reinforcing	298	483
Bars-cold-finished	272	258
Tool steel	107	116
Pipe and tubing-standard pipe	751	685
Pipe and tubing-oil country goods	310	164
Pipe and tubing-line pipe	591	449
Pipe and tubing-mechanical tubing	239	277
Pipe and tubing-pressure tubing	33	40
Pipe and tubing-stainless	44	48
Pipe and tubing-nonclassified	11	11
Pipe and tubing-structural	326	401
Pipe for piling	6	10
Wire	538	550
Tin mill products-blackplate	148	130
Tin mill products-tinplate	334	272
Tin mill products-tin-free steel	160	152
Sheets-hot-rolled	4,000	2,910
Sheets-cold-rolled	3,770	2,820
Sheets and strip-hot-dip galvanized	1,530	1,140
Sheets and strip-electrogalvanized	204	193
Sheets and strip-other metallic coated	199	119
Sheets and strip-electrical	91	91
Strip-hot-rolled	105	66
Strip-cold-rolled	194	181
Total steel mill products	27,300	22,100
Fabricated steel products:		
Structural shapes-fabricated	153	189
Rails-used	183	186
Railroad products	68	97
Wire rope	78	92
Wire-stranded products	105	126
Wire-other products	90	107
Springs	298	296
Nails and staples	337	328
Fasteners	820	890
Chains and parts	88	90
Pipe and tube fittings	90	81
Other	175 r/	220
Total fabricated steel products	2,390 r/	2,600
Total all steel products	29,700 r/	24,700
Cast iron and steel products:		
Cast steel pipe fittings	27 r/	36
Cast iron pipe and fittings	34	39
Other products	211	244
Total cast products	272	319

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: American Iron and Steel Institute.

TABLE 7
U.S. IMPORTS OF STAINLESS STEEL 1/

(Metric tons)

Product	1994	1995
Semifinished	137,000	122,000
Plate	107,000	107,000
Sheet and strip	328,000	306,000
Bars and shapes	75,600	85,400
Wire and wire rods	69,700	72,000
Pipe and tube	44,400	48,000
Total	762,000	741,000

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: American Iron and Steel Institute.

TABLE 8
U.S. SHIPMENTS OF IRON AND STEEL CASTINGS 1/

(Thousand metric tons)

Product	1994	1995
Ductile iron castings	3,480 r/	3,660
Gray iron castings	9,500 r/	9,110
Malleable iron castings	272	266
Steel castings	942 r/	836
Steel investment castings	41 r/	42
Total	14,200 r/	13,900

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 9
COAL AND COKE AT COKE PLANTS 1/ 2/

(Thousand metric tons)

	1994	1995
Coal: Consumption	28,800	30,000
Coke: 3/		
Production	20,600	21,500
Exports	599	680
Imports	1,460	1,650
Consumption, apparent	21,900	22,200

1/ Data are rounded to three significant digits.

2/ Includes furnace and merchant coke plants.

3/ Coke production and consumption do not include breeze.

Source: Energy Information Administration, Quarterly Coal Report (DOE/EIA-0121).

TABLE 10
 PIG IRON 1/ AND DIRECT-REDUCED IRON: 2/ WORLD PRODUCTION, BY COUNTRY 3/ 4/

(Thousand metric tons)

Country 5/	1991	1992	1993	1994	1995 e/
Albania e/	50	10	10	10 r/	10
Algeria	877	1,100	925 r/	919 r/	900
Argentina:					
Pig iron	1,305	966	984 r/	998 r/	1,050
Direct-reduced iron	910 r/	980 r/	1,156	1,266	1,330 6/
Australia	5,633 r/	6,384 r/	6,714 r/	7,466	7,475 6/
Austria	3,441	3,074	3,390	3,362	3,800
Belgium	9,354	8,533	8,178	9,029	9,000
Bosnia and Herzegovina e/ 7/	XX	150 6/	100	100	100
Brazil:					
Pig iron	22,695	23,152	23,982	25,177	25,090 6/
Direct-reduced iron	226	230	250 r/	220	300 6/
Bulgaria	943	837	998	1,442 r/	1,300
Burma:					
Pig iron	1	1	2	1 r/	2
Direct-reduced iron	10 r/	10 r/	20	10 r/	20 6/
Canada:					
Pig iron	8,268	8,621	8,633	8,150	8,464 6/
Direct-reduced iron	560 r/	639	740 r/	770	1,010 6/
Chile	703	873	917	883 r/	850
China	67,650	75,890	87,390	97,409 r/	101,700 6/
Colombia	305	308	238	250 e/	275
Croatia e/ 7/	XX	40	40	-- r/	--
Czech Republic 8/	XX	XX	4,668	5,287	5,289 6/
Czechoslovakia 9/	8,479	8,039	XX	XX	XX
Egypt:					
Pig iron	1,204 r/	1,062 r/	1,326 r/	1,148 r/	1,150
Direct-reduced iron	620	850	850 r/	780 r/	860 6/
Finland	2,331	2,452	2,535	2,597	2,500
France	13,408 r/	12,730 r/	12,335 r/	13,293	13,150
Georgia 10/	XX	274	88	--	--
Germany:					
Pig iron	30,608 r/	28,547 r/	26,970	29,923	30,038 6/
Direct-reduced iron	260	170 r/	180 r/	280 r/	410 6/
Hungary	1,314	1,176	1,407	1,590	1,600
India:					
Pig iron	14,176	15,126	15,674	17,808 r/	18,626 6/
Direct-reduced iron	1,153 r/	1,437	2,208	3,122	4,280 6/
Indonesia: Direct-reduced iron	1,430 r/	1,370 r/	1,500 r/	1,620	1,860 6/
Iran:					
Pig iron	1,952	2,053	1,961	1,883	1,532 6/
Direct-reduced iron	470	830 r/	1,650 r/	2,630 r/	3,230 6/
Italy	10,856	10,462	11,066	11,157	11,684 6/
Japan	79,985	73,144	73,738	73,776	74,905 6/
Kazakstan 10/	XX	4,659	3,544	2,432	2,490
Korea, North e/	6,500	6,600	6,600	6,600	6,600
Korea, Republic of	18,510	19,323	22,000 e/	21,200	21,000
Libya: Direct-reduced iron	777 r/	846 r/	944	852	970 6/
Luxembourg 11/	2,463	2,256	2,411	1,927	2,000
Macedonia e/ 7/	XX	20	20	20	20
Malaysia: Direct-reduced iron	620 r/	550 r/	710 r/	990 r/	1,090 6/
Mexico:					
Pig iron	2,960	3,404	3,423	3,500	3,650
Direct-reduced iron	2,470 r/	2,440 r/	2,730 r/	3,240 r/	3,700 6/
Morocco e/	15	15	15	15	15
Netherlands 11/	4,697	4,852	5,406	5,444	5,500
New Zealand	594	625 r/	653 r/	563	631 6/
Nigeria: Direct-reduced iron	120 r/	53 r/	39 r/	40 r/	20
Norway	61	70	73	70 e/	70
Pakistan e/	1,100	1,100	1,200	1,200	1,200
Paraguay	68 r/	92 r/	81 r/	85 r/ e/	105

See footnotes at end of table.

TABLE 10--Continued
 PIG IRON 1/ AND DIRECT-REDUCED IRON: 2/ WORLD PRODUCTION, BY COUNTRY 3/ 4/

(Thousand metric tons)

Country 5/	1991	1992	1993	1994	1995 e/
Peru:					
Pig iron	207	147	147	150 r/	150
Direct-reduced iron	30 r/	30 r/	-- r/	20	3 6/
Poland	6,515 r/	6,498 r/	6,298 r/	7,082 r/	7,500
Portugal	251	402	398	415 e/	400
Qatar: Direct-reduced iron	550 r/	620 r/	560 r/	600 r/	630 6/
Romania	4,525	3,111	3,189	3,496	4,203 6/
Russia: 10/					
Pig iron	XX	45,824	40,871	36,116	39,762 6/
Direct-reduced iron	XX	1,580	1,540	1,710	1,680 6/
Saudi Arabia: Direct-reduced iron	1,117	1,610	2,015 r/	2,111	2,129 6/
Serbia and Montenegro 7/	XX	512	62 r/	17 r/	120
Slovakia e/ 8/	XX	XX	3,000	3,000	3,000
South Africa:					
Pig iron	6,968	6,496	6,121	6,047	6,000
Direct-reduced iron	900 r/	910 r/	870 r/	980	950
Spain	5,397 r/	5,076	5,394 r/	5,447	5,000
Sweden	2,812	2,735	2,845	3,037	3,000
Switzerland	105	110	110	110 e/	100
Taiwan	5,561	5,292	6,116	5,941	6,056
Trinidad and Tobago: Direct-reduced iron	700 r/	680	730 r/	940 r/	1,050 6/
Tunisia	172 r/	158 r/	165 r/	154 r/	162
Turkey	4,594	4,508	4,353	4,604	4,600
Ukraine 10/	XX	34,663	26,999	19,984	17,701 6/
U.S.S.R.: 12/					
Pig iron	90,953	XX	XX	XX	XX
Direct-reduced iron	1,700 r/	XX	XX	XX	XX
United Kingdom	11,883	11,542	11,534	11,943 r/	12,238 6/
United States:					
Pig iron	44,100	47,400	48,200	49,400	50,900 6/
Direct-reduced iron	410	390	440	480	460 6/
Venezuela: Direct-reduced iron	4,020	4,230 r/	4,510	4,710	4,720 6/
Yugoslavia 13/	1,600 e/	XX	XX	XX	XX
Zimbabwe e/	535	507	211 r/	100 r/ e/	100
Grand total	528,000	523,000 r/	529,000 r/	541,000 r/	554,000
Of which:					
Pig iron	509,000	503,000	506,000	514,000 r/	525,000
Direct-reduced iron	19,100 r/	20,500 r/	23,600 r/	27,400 r/	29,700

e/ Estimated. r/ Revised. XX Not applicable.

1/ Production is pig iron unless otherwise specified.

2/ Direct-reduced iron is obtained from ore by reduction of oxides to metal without melting.

3/ Table excludes ferroalloy production except where otherwise noted. Table includes data available through July 9, 1996.

4/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.

5/ In addition to the countries listed, Vietnam has facilities to produce pig iron and may have produced limited quantities during 1991-95, but output is not reported and available information is inadequate to make reliable estimates of output levels.

6/ Reported figure.

7/ Formerly part of Yugoslavia; data were not reported separately until 1992.

8/ Formerly part of Czechoslovakia; data were not reported separately until 1993.

9/ Dissolved Dec. 31, 1992.

10/ Formerly part of the U.S.S.R.; data were not reported separately until 1992.

11/ Includes blast furnace ferroalloys.

12/ Dissolved in Dec. 1991.

13/ Dissolved in Apr. 1992.

TABLE 11
RAW STEEL: 1/ WORLD PRODUCTION, BY COUNTRY 2/ 3/

(Thousand metric tons)

Country 4/	1991	1992	1993	1994	1995 e/
Albania e/	35	5	5	5	23
Algeria	838 r/	842 r/	865 e/	808 r/	827 5/
Angola e/	10	10	9	9	9
Argentina	2,991	2,700	2,886 r/	3,289 r/	3,617 5/
Australia	6,141 r/	6,803 r/	7,853 r/	8,424 r/	8,493 5/
Austria	4,186 r/	3,953 r/	4,149 r/	4,399	4,400
Azerbaijan 6/	XX	385	228	40 r/ e/	20
Bangladesh 7/	58	36	32	34 e/	36
Belarus 6/	XX	1,105	946 r/	880 r/	744 5/
Belgium	11,335 r/	10,377 r/	10,173 r/	11,319 r/	11,606 5/
Benin e/	8	8	2	--	--
Bosnia and Herzegovina e/ 8/	XX	135	115	100	115
Brazil 9/	22,616	23,900 r/	25,170	25,700 e/	25,100
Bulgaria	1,615	1,551	1,941	2,491 r/	2,728 5/
Burma	25	15	25	25 e/	25
Canada	12,987	13,924	14,300	13,897 r/	14,415 5/
Chile 9/	807	1,013	1,063	1,040 e/	1,013 5/
China e/	70,600	80,900 r/	89,600 r/	92,600 r/	93,000
Colombia	652	657	687	691 r/	792 5/
Croatia 8/	XX	102	74	73 e/	75
Cuba e/	180	134	90	131 r/	207 5/
Czech Republic 10/	XX	XX	6,732	7,075 r/	6,746 5/
Czechoslovakia 11/	12,071	10,520	XX	XX	XX
Denmark	633	591	603	723	654
Dominican Republic	39	33	--	--	--
Ecuador	20	20	27	22	29 5/
Egypt	2,541	2,524 r/	2,772 r/	2,622 r/	2,642 5/
El Salvador e/	19 r/	28 r/	37 r/	40 r/	10 5/
Finland	2,890	3,076 r/	3,256 r/	3,420	3,180
France	18,434	17,961	17,179	18,028	18,100
Georgia 6/	XX	529	215	141 r/	84
Germany	42,169	39,711	37,625	40,847	42,100
Greece	980	923	980	848 r/	939 5/
Guatemala	23 r/	25 r/	18 r/	18 r/ e/	18
Hong Kong e/	350	350	350	350	350
Hungary	1,931	1,559	1,752	1,945 r/	1,850
India	17,100	18,117	18,155	19,285 r/	20,291 5/
Indonesia	3,250	3,171	1,948	3,220 r/	3,500
Iran	2,203	2,940	3,672 r/	4,498 r/	4,696 5/
Iraq e/	20	100	300	300	300
Ireland	307	257	326	266 r/	310
Israel	90 r/	109 r/	120 r/	100 r/ e/	100
Italy	25,046	24,904	25,701	26,114	27,800
Jamaica e/	25	25	25 r/	25 r/	25
Japan	109,649	98,132	99,623	98,295 r/	101,640 5/
Jordan	30 r/	30 r/	30 r/	30 r/ e/	30
Kazakstan 6/	XX	5,675	4,279	2,969 r/	3,029 5/
Kenya e/	20	20	20	20	20
Korea, North e/	8,000	8,100	8,100	8,100	8,100
Korea, Republic of	26,001	28,054	33,000	33,745 r/	36,772 5/
Latvia 6/	XX	246	300	332	350
Libya	718	789 r/	920	874 r/	860 5/
Luxembourg	3,379 r/	3,068 r/	3,293 r/	3,092	2,613 5/
Macedonia 8/	XX	202	137	90 e/	90
Malaysia	1,130	1,559	1,808	2,046 r/	2,300
Mauritania	7	7	7	7 e/	5
Mexico	7,960	8,460	9,189	10,260 r/	12,128 5/
Moldova 6/	--	619	604	453 r/	299 5/
Morocco e/	7	7	7	7	7
Netherlands	5,171	5,438	6,001	6,174	6,409 5/
New Zealand	806	759	853	766	842 5/
Nigeria e/	250 r/	200 r/	150 r/	58 r/	36
Norway	438	446	505	456	470

See footnotes at end of table.

TABLE 11--Continued
RAW STEEL: 1/ WORLD PRODUCTION, BY COUNTRY 2/ 3/

(Thousand metric tons)

Country 4/	1991	1992	1993	1994	1995 e/
Pakistan e/	1,000	1,000	1,100	344 r/ 5/	409 5/
Paraguay	61	86	86	86 e/	90 5/
Peru	404 r/	343 r/	417 r/	506 r/	515
Philippines	605	497	623	473 r/	500
Poland	10,432	9,867	9,937	11,113 r/	11,890 5/
Portugal	573 r/	769 r/	775 r/	749 r/	800
Qatar	561	588	620 r/	572 r/	606 5/
Romania	7,130	5,376	5,446	5,800 r/	6,555 5/
Russia 6/	XX	67,029	58,346 r/	48,812 r/	51,300
Saudi Arabia	1,785	1,825	2,318	2,411	2,451 5/
Serbia and Montenegro 8/	XX	665	183	137	190
Singapore e/	490	500	500	500	500
Slovakia 10/	XX	XX	3,768 r/	3,948 r/	3,921 5/
Slovenia e/ 8/	XX	300	300	300	300
South Africa	9,358	9,061	8,726	8,320	8,511 5/
Spain	12,933	12,295	12,646	13,574	13,800
Sri Lanka e/	30	30	30	30	30
Sweden	4,248	4,356	4,591	4,952	4,950
Switzerland	1,111	1,208	1,260	800 e/	1,000
Syria e/	63 5/	70	70	70	70
Taiwan	10,957	10,705	12,038	11,590 r/	11,605 5/
Thailand	711	779	954	1,460 r/	1,500
Trinidad and Tobago	440 r/	553	519 r/	631	738 5/
Tunisia	193	181	183 r/	184 r/	201 5/
Turkey	9,398	10,343	11,519	12,074 r/	12,745 5/
Uganda e/	20	30	30	30	35
Ukraine 6/	XX	41,759	32,357	24,111 r/	22,300
U.S.S.R. 12/	132,839	XX	XX	XX	XX
United Kingdom	16,474	16,212	16,625 r/	17,286 r/	17,600
United States	79,738	84,322	88,793	91,200	95,172 5/
Uruguay	41 r/	55 r/	36 r/	36 r/	40 5/
Uzbekistan 6/	XX	630	573	364 r/	352
Venezuela	3,315 r/	3,489 r/	3,392 r/	3,524 r/	3,634 5/
Vietnam	183 r/	219	270	300 e/	320
Yugoslavia 13/	2,139	XX	XX	XX	XX
Zimbabwe	581	547	221	187 r/	210
Total	737,000 r/	724,000 r/	730,000 r/	730,000 r/	752,000

e/ Estimated. r/ Revised. XX Not applicable.

1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.

2/ Steel formed in solid state after melting, suitable for further processing or sale; for some countries, includes material reported as "liquid steel," presumably measured in the molten state prior to cooling in any specific form.

3/ Table includes data available through Aug. 8, 1996.

4/ In addition to the countries listed, Burma, Ghana, and Mozambique are known to have steelmaking plants, but available information is inadequate to make reliable estimates of output levels.

5/ Reported figure.

6/ Formerly part of the U.S.S.R.; data were not reported separately until 1992.

7/ Data for year ending June 30 of that stated.

8/ Formerly part of Yugoslavia; data were not reported separately until 1992.

9/ Excludes castings.

10/ Formerly part of Czechoslovakia; data were not reported separately until 1993.

11/ Dissolved Dec. 31, 1992.

12/ Dissolved in Dec. 1991.

13/ Dissolved in Apr. 1992.

TABLE 12
GOVERNMENT INVENTORY OF FERROALLOYS, DECEMBER 31, 1995 1/

(Metric tons of alloy, unless otherwise stated)

Alloy	Stockpile grade	Nonstockpile grade	Total
Ferrochromium:			
High-carbon	737,000	629	738,000
Low-carbon	272,000	10,400	283,000
Ferrochromium-silicon	51,700	1,240	52,900
Ferrocolumbium (kilograms contained columbium)	385,000 2/	151,000	535,000
Ferromanganese:			
High-carbon	965,000	--	96,500
Medium-carbon	17,700	--	17,700
Ferrotungsten (kilograms contained tungsten)	385,000	533,000	918,000
Silicomanganese	183	--	183

1/ Data rounded to three significant digits; may not add to totals shown.

TABLE 13
REPORTED U.S. CONSUMPTION OF FERROALLOYS AS ADDITIVES IN 1995, BY END USE 1/ 2/

(Metric tons of alloys unless otherwise specified)

End use	FeMn	SiMn	FeSi	FeTi	FeP	FeB
Steel:						
Carbon	277,000	87,500	50,800 3/	2,340	4,360	618
Stainless and heat-resisting	14,500	5,040	34,100 3/	1,600	--	36
Other alloy	45,700	36,400	(4/)	733	734	336
Tool	(4/)	(4/)	(4/)	--	--	--
Unspecified	593	454	59,900	--	(5/)	(5/)
Total steel	338,000	129,000	145,000	4,660	5,090	990
Cast irons	9,280	664	153,000 6/	W	1,150	(7/)
Superalloys	(7/)	--	33 6/	734	--	(7/)
Alloys (excluding alloy steels and superalloys)	1,390	(8/)	W	384	W	137
Miscellaneous and unspecified	(7/)	(8/)	346,000	132	91	3
Grand total	348,000	130,000	644,000	5,910	6,340	1,130
Total 1994	340,000 r/	115,000 r/	590,000 r/	6,090	7,110	1,330
Percent of 1994	103	113	109	97	89	85
Consumer stocks, Dec. 31	32,600 9/	9,610 9/	29,800	619	1,020	230

r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ FeMn, ferromanganese, including spiegeleisen and manganese metal; SiMn, silicomanganese; FeSi, ferrosilicon, including silicon metal, silvery pig iron, and inoculant alloys; FeTi, ferrotitanium, including titanium scrap and other titanium materials; FeP, ferrophosphorus, including other phosphorus materials; FeB, ferroboration, including other boron materials.

3/ Part included with "Steel: Unspecified."

4/ Included with "Steel: Unspecified."

5/ Included with "Steel: Other alloy."

6/ Part included with "Miscellaneous and unspecified."

7/ Included with "Alloys (excluding alloy steels and superalloys)."

8/ Withheld to avoid disclosing company proprietary data.

9/ Includes producer stocks.

TABLE 14
REPORTED U.S. CONSUMPTION OF FERROALLOYS AS ALLOYING ELEMENTS IN 1995, BY END USE 1/ 2/

(Metric tons of contained elements unless otherwise specified)

End use	FeCr	FeMo	FeW	FeV	FeCb	FeNi
Steel:						
Carbon	8,180	301	--	1,870	917	--
Stainless and heat-resisting	139,000 3/	344	W	32	408	20,300
Other alloy	26,800 3/	1,510	18	1,900	1,050	--
Tool	3,300	W	265	443	(4/)	--
Unspecified	317	--	--	W	5	--
Total steel	178,000	2,150	283	4,240	2,380	20,300
Cast irons	4,430	835	--	40	--	--
Superalloys	8,140 5/	W	W	20	506	--
Alloys (excluding alloy steels and superalloys)	1,130	87	W	310 6/	W	--
Miscellaneous and unspecified 7/	1,060	391	51	20	10	1,410
Grand total	193,000	3,470	334	4,640	2,900	21,700
Total 1994	206,000 r/	3,450 r/	582 r/	4,280 r/	2,750	18,800 r/
Percent of 1994	94	100	57	108	105	115
Consumer stocks, Dec. 31	12,700 8/ 9/	486	57	438	NA	8,130 10/

r/ Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ FeCr, ferrochromium, including other chromium ferroalloys and chromium metal; FeMo, ferromolybdenum, including calcium molybdate; FeW, ferrotungsten, including scheelite; FeV, ferrovanadium, including other vanadium-carbon-iron ferroalloys; FeCb, ferrocolumbium, including nickel columbium; FeNi, ferronickel.

3/ Part included with "Steel: Unspecified."

4/ Included with "Steel: Unspecified."

5/ Part included with "Alloys (excluding alloy steels and superalloys)."

6/ Part included with "Miscellaneous and unspecified."

7/ Includes mill products made from metal powder, pigments, catalysts, and other chemicals or ceramic uses.

8/ Includes some producer stocks.

9/ Part withheld to avoid disclosing company proprietary data.

10/ Secondary stocks not yet available.

TABLE 15
FERROALLOY PRICES IN 1995

	High	Low	Average 1/
Standard-grade ferromanganese 2/	575.00	465.00	518.29
Medium-carbon ferromanganese 3/	57.00	45.00	49.52
Silicomanganese 4/	41.50	24.50	31.45
Charge-grade ferrochromium 3/	81.00	43.00	70.29
High-carbon ferrochromium 3/	83.00	46.50	73.26
Low-carbon ferrochromium 3/	130.00	81.00	111.34
50%-grade ferrosilicon 3/	66.00	43.50	57.90
75%-grade ferrosilicon 3/	67.00	41.00	58.10
Silicon metal 4/	75.00	65.00	69.50
Ferromolybdenum 5/	16.00	6.25	9.64
Molybdenum oxide 5/	17.50	3.90	7.98
Ferrovanadium 6/	27.00	13.00	17.54

1/ Annual weighted average.

2/ Dollars per long ton.

3/ Cents per pound of contained element.

4/ Cents per pound.

5/ Dollars per pound of contained element.

6/ Dollars per kilogram of contained element.

Source: Platt's Metals Week.

TABLE 16
U.S. IMPORTS FOR CONSUMPTION AND EXPORTS OF FERROALLOYS AND FERROALLOY METALS IN 1995 1/

(Metric tons)

Alloy	Imports			Exports		
	Gross weight	Contained weight	Value (thousands)	Gross weight	Contained weight	Value (thousands)
Ferroalloys:						
Chromium ferroalloys:						
Ferrochromium containing:						
More than 4% of carbon	422,000	254,000	\$309,000	6,610	4,060	\$8,120
More than 3% but not more than 4% of carbon	7,570	4,930	7,060	XX	XX	XX
Not more than 3% of carbon	65,800	42,800	82,900	2,010	1,220	3,490
Ferrochromium-silicon	49,600	17,300	32,500	741	259	860
Total ferrochromium alloys	545,000	319,000	431,000	9,360	5,540	12,500
Manganese ferroalloys:						
Ferromanganese containing:						
More than 4% of carbon	255,000	198,000	103,000	XX	XX	XX
More than 2% but not more than 4% of carbon	1,200	762	310	XX	XX	XX
More than 2% of carbon	XX	XX	XX	3,090	2,440	2,190
More than 1% but not more than 2% of carbon	43,400	34,900	31,800	XX	XX	XX
Not more than 1% of carbon	10,500	9,270	14,300	XX	XX	XX
Ferromanganese, other:	XX	XX	XX	7,930	6,260	7,930
Silicomanganese	305,000	201,000	161,000	7,840	5,200	5,650
Total ferromanganese alloys	615,000	443,000	311,000	18,900	13,900	10,100
Silicon ferroalloys:						
Ferrosilicon containing:						
More than 55% of silicon	XX	XX	XX	10,700	6,580	9,720
More than 55% but not more than 80% of silicon and more than 3% of calcium	116	70	131	XX	XX	XX
More than 55% but not more than 80% of silicon and not more than 3% of calcium	199,000	150,000	151,000	XX	XX	XX
Magnesium ferrosilicon	5,960	2,810	5,770	XX	XX	XX
Ferrosilicon, other	12,700	4,420	7,690	30,900	15,400	30,900
Total ferrosilicon alloys	218,000	157,000	164,000	41,600	22,000	40,600
Other ferroalloys:						
Ferrocerium and other pyrophoric alloys and other	88	(2/)	1,440	XX	XX	XX
Ferromolybdenum	6,550	4,190	73,700	1,250	695	14,600
Ferronickel	46,000	16,700	129,000	1,570	807	6,590
Ferroniobium (columbium)	5,510	(2/)	45,000	529	(2/)	4,450
Ferrophosphorus	7,590	(2/)	3,860	6,470	(2/)	2,730
Ferrotitanium and ferrosilicon-titanium	5,570	(2/)	14,100	XX	XX	XX
Ferrotungsten and ferrosilicon-tungsten	874	666	3,560	53	27	72
Ferrovandium	2,720	1,950	30,000	453	340	6,550
Ferrozirconium	46	(2/)	110	130	(2/)	260
Ferroalloys, other	30,800	(2/)	40,300	3,590	(2/)	6,510
Total other ferroalloys	106,000	XX	342,000	14,000	XX	41,800
Total ferroalloys	1,480,000	XX	1,250,000	83,900	XX	105,000
Metals:						
Chromium	7,040	(2/)	45,400	714	(2/)	7,820
Manganese:						
Unwrought, other	10,300	(2/)	16,100	XX	XX	XX
Other, other	401	(2/)	1,690	XX	XX	XX
Silicon:						
Less than 99% of silicon	50,200	46,600	53,800	19,200	18,600	25,200
Less than 99.99% but not less than 99% of silicon	44,500	44,200	61,100	3,300	3,270	5,680
Not less than 99.99% silicon	1,210	1,210	62,900	2,650	2,650	165,000
Total ferroalloy metals	114,000	XX	241,000	25,800	XX	204,000
Grand total	1,600,000	XX	1,490,000	110,000	XX	309,000

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Not recorded.

Source: Bureau of the Census.

TABLE 17
FERROALLOYS: WORLD PRODUCTION, BY COUNTRY, FURNACE TYPE, AND ALLOY TYPE 1/ 2/

(Metric tons)

Country, furnace type, 3/ and alloy type 4/	1991	1992	1993	1994	1995 e/
Albania: Electric furnace, ferrochromium e/	25,000	22,000	36,000	34,000	43,000
Argentina: Electric furnace:					
Calciumsilicon	4,995 r/	3,403	5,335 r/	3,500 e/	3,600
Ferromanganese	26,337	4,524	5,400	4,500 e/	5,000
Ferosilicon	14,437	8,073	19,579 r/	10,000 e/	9,000
Silicomanganese	14,564	30,790	18,500	20,000 e/	20,000
Other	375	197	486 r/	200 e/	250
Total	60,708 r/	46,987	49,300 r/	38,200 e/	37,900
Australia: Electric furnace: e/					
Ferromanganese	45,000	55,000	75,000	100,000	100,000
Ferosilicon	19,000	17,000	--	--	--
Silicomanganese	74,000	75,000	75,000	100,000	110,000
Silicon metal	30,000	30,000	30,000	30,000	30,000
Total	168,000	177,000	180,000	230,000	240,000
Austria: Electric furnace: e/					
Ferro-nickel	8,750 r/	9,750 r/	8,000 r/	5,250 r/	6,200
Other	3,400	5,900	5,900	5,900	5,900
Total	12,200 r/	15,700 r/	13,900 r/	11,200 r/	12,100
Belgium: Electric furnace, ferromanganese e/	25,000	25,000	25,000	25,000	25,000
Bhutan: Electric furnace, ferosilicon e/	--	--	--	2,000	12,000
Bosnia and Herzegovina: 5/ Electric furnace: e/					
Ferosilicon	XX	5,000 6/	1,000	1,000	1,000
Silicon metal	XX	2,000 6/	200	200	200
Other	XX	500 6/	--	--	--
Total	XX	7,500 6/	1,200	1,200	1,200
Brazil: Electric furnace:					
Ferrochromium 7/	82,225	91,100	83,892	77,163 r/	95,840 6/
Ferrochromiumsilicon e/	4,524 6/	6,760 r/	4,500	5,000	5,000
Ferromanganese	169,103	178,937	201,518	200,000 r/	130,000
Ferro-nickel	34,480 r/	34,968 r/	34,732 r/	35,260 r/	34,000
Ferosilicon	190,864	243,838	248,000 r/	198,505 r/	243,824 6/
Silicomanganese	272,046	299,995	284,147	248,000 r/	167,000
Silicon metal	106,002	93,734	106,000 r/	110,000 r/	110,000
Other	76,484	76,654	76,000 e/	76,000 e/	76,000
Total	935,728 r/	1,025,986 r/	1,038,789 r/	949,928 r/	862,000
Bulgaria: Electric furnace: e/					
Ferosilicon	25,200	18,000	18,000	18,000	18,000
Other	2,800	2,000	2,000	2,000	2,000
Total	28,000	20,000	20,000	20,000	20,000
Canada: Electric furnace: e/					
Ferromanganese 8/	45,000	--	--	--	--
Ferosilicon	75,000	55,000	55,000	55,000	56,000
Ferrovanadium	2,000	2,000	2,000	2,000	1,000
Silicon metal	20,000	20,000	20,000	20,000	22,000
Total	142,000	77,000	77,000	77,000	79,000
Chile: Electric furnace:					
Ferrochromium	2,509	2,110 r/	680	1,579	2,730 6/
Ferromanganese	6,779	7,460	8,916	8,500 e/	8,500
Ferromolybdenum	2,673	2,310	2,202 r/	2,300 e/	2,300
Ferosilicon e/	5,516 6/	3,830 r/	7,550 r/	5,600	5,600
Silicomanganese	1,674	1,564	1,612	1,700 r/	1,600
Total e/	19,151 6/	17,300 r/	21,000 r/	19,700 r/	20,700
China: e/					
Blast furnace:					
Ferromanganese	500,000	550,000	520,000	567,000 r/	570,000
Other	170,000	180,000	200,000	210,000	210,000
Electric furnace:					
Ferrochromium	380,000	410,000	372,000	370,000	400,000
Ferromanganese	180,000	200,000	220,000	350,000 r/	350,000
Ferosilicon	817,000	834,000	1,040,000	1,100,000	1,100,000
Silicomanganese	415,000	420,000	525,000	657,000 r/	670,000
Other	88,000	56,000	58,000	110,000	80,000
Total	2,550,000	2,650,000	2,930,000	3,360,000 r/	3,380,000
Colombia: Electric furnace, ferro-nickel	49,254 r/	49,256 r/	48,624 r/	50,827 r/	59,917 6/

See footnotes at end of table.

TABLE 17--Continued
FERROALLOYS: WORLD PRODUCTION, BY COUNTRY, FURNACE TYPE, AND ALLOY TYPE 1/ 2/

(Metric tons)

Country, furnace type, 3/ and alloy type 4/	1991	1992	1993	1994	1995 e/
Croatia: 5/ Electric furnace:					
Ferrochromium	XX	56,456	27,336	31,700 r/	26,000 6/
Ferromanganese e/	XX	10,000	10,000	10,000	10,000
Silicomanganese e/	XX	15,000 r/	40,000	30,000 r/	30,000
Total e/	XX	81,500 r/	77,300	71,700 r/	66,000
Czech Republic: 9/ Electric furnace e/					
	XX	XX	1,000	1,000	1,000
Czechoslovakia: 10/ Electric furnace:					
Ferrochromium 7/ 11/	41,200	52,500	XX	XX	XX
Ferromanganese e/ 8/	90,000	70,000	XX	XX	XX
Ferrosilicon e/	15,000	15,000	XX	XX	XX
Silicon metal e/	5,000	5,000	XX	XX	XX
Other e/ 12/	10,000	10,000	XX	XX	XX
Total e/	161,000	153,000	XX	XX	XX
Dominican Republic: Electric furnace, ferronickel					
	76,482 r/	72,447 r/	62,787 r/	80,989 r/	81,297 6/
Egypt: Electric furnace:					
Ferromanganese	-- r/	10,000 e/	30,000	35,000 e/	35,000
Ferrosilicon	20,000 e/	36,038	40,136	40,000 e/	40,000
Total	20,000 r/ e/	46,038	70,136	75,000 e/	75,000
Finland: Electric furnace, ferrochromium					
	190,000	187,100 r/	218,370	254,000 r/	232,000 6/
France:					
Blast furnace, ferromanganese e/	290,000	280,000	300,000 r/	294,000 r/	350,000
Electric furnace:					
Ferrochromium e/	23,100	6,694 6/	--	--	--
Ferromanganese	30,000	60,000	57,000	66,200 r/	80,000
Ferrosilicon	105,800	98,000	39,000	111,000 r/	100,000
Silicomanganese e/ 13/	30,000	80,000 6/	80,000	75,000	80,000
Silicon metal e/	64,000	60,000	59,000	60,000	65,000
Other e/ 14/	43,000 r/	32,000 r/	29,000	20,000 r/	20,000
Total e/	586,000 r/	617,000 r/	564,000 r/	626,000 r/	695,000
Georgia: 15/ Electric furnace: e/					
Ferromanganese	XX	100,000	100,000	10,000 r/	5,000
Silicomanganese	XX	50,000	50,000	40,000 r/	25,000
Other	XX	10,000	10,000	5,000	5,000
Total	XX	160,000	160,000	55,000 r/	35,000
Germany: e/					
Blast furnace, ferromanganese 16/	220,000	130,000	100,000	--	--
Electric furnace:					
Ferrochromium	38,327 6/	26,520 6/	16,400 6/	17,283 r/ 6/	22,000 6/
Ferromanganese 8/	40,000	30,000	20,000	20,000	20,000
Ferrosilicon	50,000	20,000	20,000	20,000	20,000
Silicon metal	2,600	500	500	500	500
Other 12/	40,000	30,000	30,000	30,000	30,000
Total	391,000	237,000	187,000	87,800 r/	92,500
Greece: Electric furnace:					
Ferrochromium e/	10,500	--	--	--	--
Ferronickel	76,214 r/	73,429 r/	52,067 r/	77,129 r/	81,733 6/
Total	86,700 r/ e/	73,429 r/	52,067 r/	77,129 r/	81,733 6/
Hungary: 17/ Electric furnace: e/					
Ferrosilicon	7,000	7,000	7,000	7,000	7,000
Silicon metal	1,000	1,000	1,000	1,000	1,000
Other	1,000	1,000	1,000	1,000	--
Total	9,000	9,000	9,000	9,000	8,000
Iceland: Electric furnace, ferrosilicon					
	50,299	51,651	67,375	66,003	66,000
India: Electric furnace:					
Ferrochromium 18/	229,477	256,831	234,500	251,459	300,000
Ferrochromiumsilicon e/	8,800 6/	9,000	8,000	8,000	9,000
Ferromanganese e/	211,000	198,000	137,291 6/	150,000	150,000
Ferrosilicon	85,300	90,000	67,600	85,000 e/	85,000
Silicomanganese e/	70,000	93,000	85,000 6/	140,000 r/	140,000
Other e/	6,767 6/	6,500	8,600	8,500	8,500
Total e/	611,000	653,000 r/	541,000	643,000 r/	693,000

See footnotes at end of table.

TABLE 17--Continued
FERROALLOYS: WORLD PRODUCTION, BY COUNTRY, FURNACE TYPE, AND ALLOY TYPE 1/ 2/

(Metric tons)

Country, furnace type, 3/ and alloy type 4/	1991	1992	1993	1994	1995 e/
Indonesia: Electric furnace: e/					
Ferromanganese	--	--	10,000	10,000	14,000
Ferronickel	26,600 r/	27,500 r/	26,300 r/	28,700 r/	53,675 6/
Silicomanganese	--	--	--	--	7,000
Total	26,600 r/	27,500 r/	36,300 r/	38,700 r/	74,700
Iran: Electric furnace, ferrochromium e/ 19/					
	--	--	--	5,000	5,000
Italy: Electric furnace:					
Ferrochromium	47,192	60,315	53,504	22,650	51,017 6/
Ferromanganese	14,145	17,079	17,000 e/	16,000 e/	16,000
Ferrosilicon	12,648	3,350	--	--	--
Silicomanganese e/	55,000	50,000	50,000	40,000	40,000
Silicon metal	16,200	10,000	10,000 e/	--	--
Other e/ 20/	14,500	12,000	12,000	12,000	12,000
Total e/	160,000	153,000	143,000	90,700	119,000
Japan: Electric furnace:					
Ferrochromium 21/	270,786	267,857	204,719	192,989 r/	210,445 6/
Ferromanganese	463,722	361,941	382,912	345,153 r/	346,977 6/
Ferronickel	295,422	237,350	257,316	242,447	351,337 6/
Ferrosilicon	62,362	37,656	29,084	12,208 r/	3,650 6/
Silicomanganese	87,229	96,360	64,758	69,183 r/	64,870 6/
Other 22/	12,317	12,189	13,666	14,647	12,353 6/
Total	1,191,838	1,013,353	952,455	876,627 r/	989,632 6/
Kazakstan: 15/ Electric furnace: e/					
Ferrochromium	XX	400,000	327,896 6/	200,000 r/	350,000
Ferrochromiumsilicon	XX	40,000	30,000 r/	20,000	25,000
Ferrosilicon	XX	500,000	450,000	350,000	350,000
Silicomanganese	XX	--	--	40,000	20,000
Other	XX	20,000	15,000 r/	10,000 r/	10,000
Total	XX	960,000	823,000 r/	620,000 r/	755,000
Korea, North: Electric furnace: e/					
Ferromanganese 8/	70,000	70,000	70,000	70,000	70,000
Ferrosilicon	30,000	30,000	30,000	30,000	30,000
Other 12/	20,000	20,000	20,000	20,000	20,000
Total	120,000	120,000	120,000	120,000	120,000
Korea, Republic of: Electric furnace:					
Ferromanganese	94,893	85,867	100,630	120,020	118,798 6/
Ferrosilicon	--	55	--	--	--
Silicomanganese	74,173	82,582	81,996	89,023	97,785 6/
Total	169,066	168,504	182,626	209,043	216,583 6/
Macedonia: 5/ 23/ Electric furnace: e/					
Ferrochromium	XX	3,958 6/	4,376 6/	3,164 6/	3,765 6/
Ferrochromiumsilicon	XX	1,500	--	--	--
Ferrosilicon	XX	30,000	20,000	20,000	15,000
Silicon metal	XX	1,000	1,000	1,000	1,000
Total	XX	36,500 r/	25,400 r/	24,200 r/	19,800
Mexico: Electric furnace:					
Ferrochromium	72	70 e/	--	--	-- 6/
Ferromanganese	98,000	79,000	70,000 e/	67,000	58,000 6/
Ferrosilicon	6,000	5,000	400 e/	400 e/	--
Silicomanganese	51,000	51,000	55,000 e/	64,000	67,700 6/
Other	105	300	300 e/	300 e/	--
Total e/	155,177 6/	135,000	126,000	132,000	125,700 6/
New Caledonia: Electric furnace, ferronickel					
	137,644 r/	127,580 r/	147,400 r/	157,952 r/	168,800 6/
Norway: Electric furnace:					
Ferrochromium	83,000	102,000	80,000	120,000	148,000 6/
Ferromanganese	173,212	202,680	226,018	248,648	225,000
Ferrosilicon	377,455	367,034	399,559	452,984	500,000
Silicomanganese	226,737	213,106	218,566	197,328	200,000
Silicon metal e/	65,000	60,000	60,000	60,000	50,000
Other e/ 13/	14,000	14,000	14,000	14,000	15,000
Total e/	939,000	959,000	998,000	1,090,000	1,140,000

See footnotes at end of table.

TABLE 17--Continued
FERROALLOYS: WORLD PRODUCTION, BY COUNTRY, FURNACE TYPE, AND ALLOY TYPE 1/ 2/

(Metric tons)

Country, furnace type, 3/ and alloy type 4/	1991	1992	1993	1994	1995 e/
Peru: Electric furnace: e/					
Ferromanganese	331	--	--	--	--
Ferrosilicon	600	600	600	600	600
Total	931	600	600	600	600
Philippines: Electric furnace:					
Ferrochromium	23,700	27,400	11,908	16,186	50,500
Ferromanganese e/	5,000	5,000	5,000	5,000	5,000
Ferrosilicon e/	10,000	10,000	10,000	10,000	10,000
Total e/	38,700	42,400	26,900	31,200	65,500
Poland:					
Blast furnace:					
Ferromanganese	57,400	43,000	56,400 r/ e/	55,000	50,000
Spiegeleisen	-- r/	-- r/	-- r/	-- r/	--
Electric furnace:					
Ferrochromium	1,928	35,322	38,449	7,000 e/	18,334 6/
Ferromanganese	9,200 r/	4,800 r/	1,100 r/	1,000 r/	1,000
Ferrosilicon	60,100 r/	36,100 r/	43,100 r/	40,000 r/	40,000
Silicomanganese e/	25,000	25,000	25,000	25,000	25,000
Silicon metal e/	9,000 6/	9,000	9,000	9,000	9,000
Other e/ 12/	30,000 6/	25,000	20,000	20,000	20,000
Total e/	193,000 r/	178,000 r/	193,000 r/	157,000 r/	163,000
Romania: Electric furnace:					
Ferrochromium	20,400 e/	6,977	3,907	3,885 r/	15,053 6/
Ferromanganese	40,000	27,130 r/	16,400 r/	31,295	28,410 6/
Ferrosilicon	30,000	23,300 r/	23,600 r/	28,385 r/	19,320 6/
Silicomanganese	30,000	28,200 r/	22,000 r/	35,215 r/	57,149 6/
Silicon metal e/	1,000	430 6/	400	300 r/	300
Total e/	121,000	86,037 r/ 6/	66,300 r/	99,100 r/	120,000
Russia: e/ 15/					
Blast furnace:					
Ferromanganese	XX	200,000	150,000	55,000 r/	55,000
Ferrophosphorus	XX	30,000	25,000	20,000	20,000
Spiegeleisen	XX	10,000	8,000	7,000	7,000
Electric furnace:					
Ferrochromium	XX	400,000	255,900 6/	265,525 6/	200,000
Ferrochromiumsilicon	XX	60,000	40,000 r/	40,000	30,000
Ferronickel	XX	46,000 r/	47,000 r/	59,000 r/	77,000
Ferrosilicon	XX	500,000	400,000 r/	350,000 r/	350,000
Silicon metal	XX	60,000	50,000 r/	40,000 r/	40,000
Other	XX	60,000	50,000	40,000	40,000
Total	XX	1,370,000 r/	1,030,000 r/	877,000 r/	819,000
Serbia and Montenegro: 5/ Electric furnace, ferronickel	XX	6,481 r/	1,283 r/	1,763 r/ e/	2,414
Slovakia: 9/ Electric furnace: e/					
Ferrochromium 3/	XX	XX	50,600 6/	48,555 r/ 6/	65,260 6/
Ferromanganese	XX	XX	22,000	25,000	25,000
Silicomanganese	XX	XX	12,000 6/	12,000	12,000
Other	XX	XX	8,000	8,000	8,000
Total	XX	XX	92,600	93,600 r/	110,000
Slovenia: 5/ Electric furnace: e/					
Calciumsilicon	XX	400	200	200	200
Ferrochromium	XX	17,104 6/	9,000 6/	12,592 6/	18,876 6/
Ferrosilicon	XX	14,000	12,000	12,000	12,000
Other	XX	5,000	--	--	--
Total	XX	36,500	21,200	24,800	31,100
South Africa: Electric furnace:					
Ferrochromium 24/	1,149,200	770,600	833,600	1,103,612 r/	1,341,267 6/
Ferromanganese	259,944 r/	269,807 r/	393,372 r/	590,535 r/	480,162 6/
Ferrosilicon	68,300	63,900	98,800	119,714 r/	89,743 6/
Silicomanganese	270,132	266,556	268,123	290,400 r/	280,000
Silicon metal	39,800	34,528	38,279	36,169 r/	30,082 6/
Other e/	1,000	1,000	1,000	1,000	1,000
Total e/	1,790,000 r/	1,410,000 r/	1,630,000 r/	2,140,000 r/	2,220,000

See footnotes at end of table.

TABLE 17--Continued
FERROALLOYS: WORLD PRODUCTION, BY COUNTRY, FURNACE TYPE, AND ALLOY TYPE 1/ 2/

(Metric tons)

Country, furnace type, 3/ and alloy type 4/	1991	1992	1993	1994	1995 e/
Spain: Electric furnace: e/					
Ferrochromium	6,000	--	2,390 6/	2,300 r/	1,320 6/
Ferromanganese	50,000	50,000	40,000	35,000	25,000
Ferrosilicon	40,000	40,000	30,000	25,000	30,000
Silicomanganese	40,000	40,000	35,000	35,000	45,000
Silicon metal	9,000	10,000	5,000	3,000	5,000
Other	5,000	5,000	5,000	4,000	5,000
Total	150,000	145,000	117,000	104,000 r/	111,000
Sweden: Electric furnace:					
Ferrochromium	120,884	133,300	127,543	134,076	130,000
Ferrosilicon	21,145	15,451	20,381	20,000 e/	20,000
Total	142,029	148,751	147,924	154,000 e/	150,000
Switzerland: Electric furnace: e/					
Ferrosilicon	3,000	3,000	3,000	3,000	3,000
Silicon metal	2,000	2,000	2,000	2,000	2,000
Total	5,000	5,000	5,000	5,000	5,000
Taiwan: Electric furnace:					
Ferromanganese	40,110	38,000 r/	13,628	7,000 e/	5,000
Ferrosilicon	6,252	2,606	689	500 e/	400
Silicomanganese	12,801	4,000 r/	--	--	--
Total	59,163	44,606 r/	14,317	7,500 e/	5,400
Thailand: Electric furnace:					
Ferromanganese	1,546	549	70	140 r/	150
Silicomanganese	3,938	4,275	1,503	689 r/	650
Total	5,484	4,824	1,573	829 r/	800
Turkey: Electric furnace:					
Ferrochromium	84,651	85,755	90,030	97,585	88,809 6/
Ferrosilicon	1,736	1,250	4,680 r/	4,930 r/	4,900
Total	86,387	87,005	94,710 r/	102,515 r/	93,700
Ukraine: e/ 15/					
Blast furnace:					
Ferromanganese	XX	50,000	40,000	30,000	30,000
Spiegeleisen	XX	5,000	4,000	3,000	2,500
Electric furnace:					
Ferromanganese	XX	150,000 r/	110,000 r/	100,000 r/	100,000
Ferronickel	XX	98,000 r/	50,000	23,000 r/	23,000
Ferrosilicon	XX	500,000	400,000 r/	350,000 r/	300,000
Silicomanganese	XX	950,000 r/	850,000 r/	750,000 r/	700,000
Other	XX	40,000	30,000 r/	25,000 r/	25,000
Total	XX	1,790,000 r/	1,480,000 r/	1,280,000 r/	1,180,000
U.S.S.R.: 25/					
Blast furnace:					
Ferromanganese	235,000	XX	XX	XX	XX
Ferrophosphorus	31,000	XX	XX	XX	XX
Spiegeleisen e/	15,000	XX	XX	XX	XX
Electric furnace: e/ 26/					
Ferrochromium	700,000	XX	XX	XX	XX
Ferrochromiumsilicon	100,000	XX	XX	XX	XX
Ferromanganese	370,000	XX	XX	XX	XX
Ferronickel	150,000 r/	XX	XX	XX	XX
Ferrosilicon	1,600,000	XX	XX	XX	XX
Silicomanganese	1,100,000	XX	XX	XX	XX
Silicon metal	60,000	XX	XX	XX	XX
Other	140,000	XX	XX	XX	XX
Total	4,500,000 r/	XX	XX	XX	XX
United Kingdom:					
Blast furnace, ferromanganese	178,400	137,000	45,000 e/	--	--
Electric furnace, other e/	10,000	10,000	10,000	--	--
Total e/	188,000	147,000	55,000	--	--

See footnotes at end of table.

TABLE 17--Continued
FERROALLOYS: WORLD PRODUCTION, BY COUNTRY, FURNACE TYPE, AND ALLOY TYPE 1/ 2/

(Metric tons)

Country, furnace type, 3/ and alloy type 4/	1991	1992	1993	1994	1995 e/
United States: Electric furnace:					
Ferrochromium 27/	68,300	60,900	63,000	67,400 r/	72,500 6/
Ferromanganese 28/	W	W	W	W	W
Ferronickel	14,300 r/	18,200 r/	9,930 r/	--	16,800 6/
Ferrosilicon	338,000	346,000	323,000	359,000	358,000 6/
Silicon metal	145,000	159,000	159,000	158,000	158,000 6/
Other 29/	211,000	190,000	161,000	200,000	188,000
Total	777,000 r/	773,000 r/	715,000 r/	784,000 r/	793,000
Uruguay: Electric furnace, ferrosilicon e/					
	250	250	250	250	250
Venezuela: Electric furnace: e/					
Ferromanganese	580 r/	8,570 r/	--	--	--
Ferrosilicon	54,000 r/	40,000 r/	47,000 r/	41,000	40,000
Silicomanganese	30,600 r/	32,100 r/	42,200 r/	40,000	40,000
Total	85,200 r/	80,700 r/	89,200 r/	81,000	80,000
Yugoslavia: 30/ Electric furnace: e/					
Calciumsilicon	1,000	XX	XX	XX	XX
Ferrochromium	91,000	XX	XX	XX	XX
Ferrochromiumsilicon	3,000	XX	XX	XX	XX
Ferromanganese	22,000 r/	XX	XX	XX	XX
Ferronickel	11,700 r/	XX	XX	XX	XX
Ferrosilicon	80,000	XX	XX	XX	XX
Silicomanganese	60,000 r/	XX	XX	XX	XX
Silicon metal	10,000	XX	XX	XX	XX
Other	9,000	XX	XX	XX	XX
Total	288,000 r/	XX	XX	XX	XX
Zimbabwe: Electric furnace:					
Ferrochromium	186,774	190,994	124,000 r/	182,852 r/	254,142 6/
Ferrochromiumsilicon	27,755	20,282	10,000 e/	36,531 r/	46,667 6/
Ferromanganese	--	--	2,151	--	--
Total	214,529	211,276	136,151 r/	219,383 r/	300,809 6/
Grand total	17,700,000 r/	16,700,000 r/	15,900,000 r/	16,400,000 r/	16,900,000
Of which:					
Blast furnace:					
Ferromanganese 31/	1,480,000	1,390,000	1,210,000 r/	1,000,000 r/	1,060,000
Spiegeleisen 31/	15,000 r/	15,000 r/	12,000 r/	10,000 r/	9,500
Other 32/	201,000	210,000	225,000	230,000	230,000
Total, blast furnace	1,700,000 r/	1,620,000 r/	1,450,000 r/	1,240,000 r/	1,290,000
Electric furnace:					
Ferrochromium 33/	3,880,000 r/	3,670,000 r/	3,270,000 r/	3,520,000 r/	4,150,000
Ferrochromiumsilicon	144,000	97,500 r/	62,500 r/	89,500 r/	90,700
Ferromanganese 34/ 35/	2,580,000 r/	2,320,000 r/	2,370,000 r/	2,650,000 r/	2,440,000
Ferronickel	881,000 r/	801,000 r/	745,000 r/	762,000 r/	956,000
Ferrosilicon	4,280,000 r/	4,070,000 r/	3,970,000 r/	3,950,000 r/	3,940,000
Silicomanganese 34/ 36/	2,940,000 r/	2,910,000 r/	2,890,000 r/	3,000,000 r/	2,900,000
Silicon metal	586,000 r/	558,000 r/	551,000 r/	531,000 r/	524,000
Other 37/	734,000 r/	639,000 r/	577,000 r/	632,000 r/	588,000
Total, electric furnace	16,000,000 r/	15,100,000 r/	14,400,000 r/	15,100,000 r/	15,600,000

e/ Estimated. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other." XX Not applicable.

1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.

2/ Table includes data available through Aug. 22, 1996.

3/ To the extent possible, ferroalloy production of each country has been separated according to the furnace type from which production is obtained; production derived from metallothermic operation is included with electric furnace production.

4/ To the extent possible, ferroalloy production of each country has been separated to show individually the following major types of ferroalloys: ferrochromium, ferrochromiumsilicon, ferromanganese, ferronickel, ferrosilicon, silicomanganese, silicon metal, and spiegeleisen. Ferroalloys other than those listed that have been identified specifically in sources, as well as those ferroalloys not identified specifically but which definitely exclude those listed previously in this footnote, have been reported as "Other." Where one or more of the individual ferroalloys listed separately in this footnote have been inseparable from other ferroalloys, owing to a nation's reporting system, deviations are indicated by individual footnotes.

5/ Formerly part of Yugoslavia; data were not reported separately until 1992.

6/ Reported figure.

7/ Includes high- and low-carbon ferrochromium.

8/ Includes silicomanganese, if any.

9/ Formerly part of Czechoslovakia; data were not reported separately until 1993.

10/ Dissolved Dec. 31, 1992.

11/ All production in Czechoslovakia for 1991-92 came from Slovakia.

12/ Includes ferrochromiumsilicon and ferronickel, if any was produced.

TABLE 17--Continued
FERROALLOYS: WORLD PRODUCTION, BY COUNTRY, FURNACE TYPE, AND ALLOY TYPE 1/ 2/

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- 13/ Includes silicospiegeleisen, if any.
14/ Includes ferronickel if any was produced.
15/ Formerly part of the U.S.S.R.; data were not reported separately until 1992.
16/ Includes spiegeleisen, if any.
17/ Hungary is believed to produce some blast furnace ferromanganese.
18/ Includes ferrochrome and charge chrome.
19/ Production began in 1994. Plant capacity is estimated at 7,000 tons per year.
20/ Series excludes calcium silicide.
21/ Includes net consumption of ferrochromiumsilicon.
22/ Includes calciumsilicon, ferrocolumbium, ferromolybdenum, ferrotungsten, ferrovanadium, and other ferroalloys.
23/ Imports of ferronickel originating in Macedonia were reported for 1992-95, but information on the output of the Kavadarci operation was not available. Data supplied by the International Nickel Study Group suggest that, since 1991, annual ferronickel production has ranged from 7,000 to 15,000 metric tons, gross weight.
24/ Includes production from Bophuthatswana. Includes net production of ferrochromiumsilicon, if there was any.
25/ Dissolved in Dec. 1991.
26/ Soviet production of electric furnace ferroalloys is not reported; estimates provided are based on crude source material production and availability for consumption (including estimates) and upon reported ferroalloy trade, including data from trading partner countries.
27/ U.S. output of ferrochromium includes high- and low-carbon ferrochromium, ferrochromiumsilicon, chromium metal, and other chromium materials.
28/ U.S. output of ferromanganese includes silicomanganese and manganese metal.
29/ Includes ferroaluminum, ferroboron, and other complex boron additive alloys, ferromolybdenum, ferrotitanium, ferrovanadium, silvery pig iron, and data indicated by the symbol "W."
30/ Dissolved in Apr. 1992.
31/ Spiegeleisen, if any, for Germany is included with blast furnace ferromanganese.
32/ Includes ferrophosphorus and data contained in "Blast furnace: Other."
33/ Ferrochromium includes ferrochromiumsilicon (if any was produced) for Japan, South Africa, and the United States.
34/ Ferromanganese includes silicomanganese (if any was produced) for countries carrying footnote 7 on "Ferromanganese" data line.
35/ U.S. production under "Other."
36/ Includes silicospiegeleisen, if any, for France.
37/ Includes calciumsilicon, ferromolybdenum, ferrovanadium, and data contained in "Electric furnace: Other" for each country indicated.