IRON AND STEEL SCRAP

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Iron and steel scrap is a vital raw material for the production of new steel and cast-iron products. The steelmaking and foundry industries in the United States are highly dependent upon the ready availability of scrap from manufacturing operations and from the recovery of products that are no longer used or needed. The steel industry has been recycling steel scrap for more than 150 years. In 1999, domestic electric-arc-furnace (EAF) steel made primarily from recycled ferrous scrap in about 41 minimills was 46% of the total steel produced. Consistent with international usage and Federal Government policy, the U.S. Geological Survey (USGS) reports all data on iron and steel in metric units, unless otherwise noted.

Steel scrap recycling conserves raw materials, energy, and landfill space. The domestic steel industry recycles millions of metric tons per year of steel cans, automobiles, appliances, construction materials, and other steel products. In 1999, the industry's overall recycling rate was nearly 64% (Steel Recycling Institute, 1999, A few facts about steel—North America's #1 recycled material, Fact Sheet, accessed May 16, 2000, at URL http://www.recycle-steel.org/ fact/main.html). The remelting of scrap requires much less energy than the production of iron and steel products from iron ore. Each year, steel recycling saves the energy equivalent of the electrical power needed for one year by approximately one-fifth of the houses in the United States (about 18 million). Consumption of iron and steel scrap by remelting reduces the burden on landfill disposal facilities and prevents the accumulation of abandoned steel products in the environment. Every metric ton of steel recycled saves about 1.3 metric tons (t) of iron ore, 700 kilograms (kg) of coal, and 60 kg of limestone.

In the United States, the primary source of obsolete steel is the automobile (Steel Recycling Institute, 1999, Recycling scrapped automobiles, accessed June 9, 1999, at URL http://www.recycle-steel.org/cars/autorec.html). Of the ferrous metal used to make a typical 1999 U.S. family vehicle, 44% was recycled metal. About 16,000 car dismantlers and 3,000 scrap processors produced about 12.9 million metric tons (Mt) of iron and steel scrap from 13.5 million automobiles for recycling in 1999— enough steel to produce nearly 13 million new cars (James Woods, Manager, Steel Recycling Institute, accessed June 7, 2000, from e-mail jimw@recycle-steel.org). The recycling rate of automobile scrap steel decreased to 91% in 1999 and 92% in 1998 from 98% in 1997. Decreases may be attributed to U.S. steel industry production cutbacks caused by record increases in imports of foreign steel products.

The recycling rate of obsolete appliance scrap had increased from 20% in 1988 to 81% in 1997, decreased to 72% in 1998, and rebounded to 77% in 1999. During 1999, more than 1.9 million tons of steel were recovered from recycled appliances (Steel Recycling Institute, A few facts about steel — North America's #1 recycled material, Fact Sheet, accessed May 6, 2000, at URL http://www.recycle-steel.org/fact/main.html). The typical appliance consists of about 75% steel, and from 25% to 100% of the steel used in appliances is recycled. The recycling rate of steel cans increased to 61% in 1997 from 15% in 1988, decreased to 56% in 1998, and rebounded to 58% in 1999. Decreases may also be attributed to U.S. steel industry production cutbacks caused by record increases in imports of foreign steel products. Estimated rates of 1999 recycling of structural beams and plates was 95%, and reinforcement bar and other materials, 45%. By 2002, an estimated 25 % of all new homes built in the United States will be framed in recycled steel.

Minimills in which EAFs are used consumed greater quantities of direct reduced iron (DRI) to improve steel quality, and integrated steelmakers continued to use small quantities of DRI in blast furnaces as a process coolant. Mills often used a feed mix that had equal proportions of DRI, pig iron, and scrap. Although production in the U.S. steel industry declined during 1999, DRI production increased by 4.4%.

The Asian financial crisis of 1997 continued to affect adversely steel industries throughout the world until early 1999. The rapid decline in currency exchange rates in Asia led to declining Asian demand for steel and ferrous scrap, excess steel-producing capacity, and increased exports to the United States, where low-priced steel was welcomed by consumers. Domestic mills eventually reduced steel production and scrap consumption, which led to an oversupply of scrap and a plunge of almost 50% in scrap prices to the lowest levels in decades. Domestic scrap exporters were also adversely affected. The U.S. steel industry began to rebound during early 1999 owing to a reduced availability of low-priced steel imports and continued strong steel-product demand. The U.S. scrap industry began a slow but steady recovery as a result of increasing demand for scrap in Asia and North America and a reduced supply of scrap from the Commonwealth of Independent States (CIS). As scrap prices rose steadily during 1999, a viable merchant market for DRI and hot briquetted iron developed. At yearend 1999, steel-producing minimills and scrap suppliers were increasingly optimistic that they were on track for a slow but certain recovery to precrisis economic levels.

Legislation and Government Programs

Steelmakers and the ferrous scrap industry, among others, continued to lobby in 1999 for legislative reform of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, or "Superfund," to expedite the pace of hazardous site cleanups, to eliminate litigation costs, and to

return sites to productive use. A major issue was that a supplier of recycled material will be held liable for cleanup because Superfund considers recycled material to be solid waste and, therefore, subject to Superfund liability. The Superfund Recycling Equity Act, which became law in November 1999 and is considered to be a major victory by the scrap recycling industry, reversed wording within the original 1980 Superfund law that held recyclers to the same liability standards as those in the waste disposal industry by redefining scrap as reusable material instead of as waste. Recycling is not disposal, and shipping for recycling is not arranging for disposal. Recyclers must meet three criteria under the new law—they must make certain that scrap meets the definition of what is a recyclable material; they must be able to show that they are arranging for the recycling, not the disposal, of the material; and they must prove that they have exercised reasonable care in the handling of the material (Marley, Michael, 2000, Recyclers must follow Superfund Act, accessed March 17, 2000, at http://www.amm.com/subscrib/2000/mar/inside3/ 0316sp03.htm).

Environment

In July 1997, the U.S. Environmental Protection Agency (EPA) revised the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM), which met resistance by the steel industry. The EPA reduced the standard for airborne PM from 10 microns (PM10) to 2.5 microns (PM2.5) because epidemiological evidence suggested a link between increased mortality, hospital admissions, and respiratory illness and ambient particulate levels below the previous standard (U.S. Environmental Protection Agency, 1998, p. 1). According to the EPA, the PM10 standard does not protect against fine particles produced by fossil fuel combustion that lodge deep in the lungs, and research indicated that fine particles pose the greatest health hazard. Subsequently, the American Iron and Steel Institute and several other business groups initiated litigation against the EPA. The U.S. Court of Appeals for the District of Columbia ruled in May 1999 that EPA's controversial proposals for the new standards were "arbitrary and capricious" (New Steel, 1999). The following October, the Court remanded the standards back to EPA and denied EPA's request for a rehearing. Aside from the immediate relief to the steel industry, the ruling sparked debate concerning its broader implications for the balance of powers and responsibilities among branches of government.

In 1998, the United States signed the Kyoto Protocol and agreed to reduce its emissions of greenhouse gases, principally carbon dioxide, by 7% from 1990 levels in the period 2008 to 2012 (Steel Manufacturers Association, 1999, p. 19). Opponents of the Protocol said that most studies had found it would have little environmental impact while causing great economic damage. In response to the Protocol, four U.S. Senators introduced the Energy and Climate Policy Act of 1999 that would authorize spending of $200 million per year for 10 years on research and development of greenhouse gas emission-reducing technologies. The bill also would establish an Office of Global Climate Change within the U.S. Department of Energy (DOE) that would oversee all climate-related programs.

Steel mills receiving ferrous scrap have been exposed to radioactive materials without warning at an alarming rate. Contaminated scrap was in the form of shielded radioactive sources, which were typically installed in measurement gauges used in manufacturing operations or in hospital equipment, and scrap from decommissioned nuclear power and DOE facilities. Accidental meltings of radioactive scrap have cost as much as $20 million to clean up (American Metal Market, 2000a). In 1997, the DOE contracted to decommission and decontaminate three uranium enrichment plants at DOE's Oak Ridge, TN, nuclear reservation, which contain an estimated 100,000 tons of radioactive metals (Paper, Allied-Industrial, Chemical and Energy Workers Union, June 30, 1999, Court finds that energy department plan to recycle radioactive metals from nuclear weapons factories poses great potential for environmental harm, Press Release, accessed July 7, 1999, at URL http://biz.yahoo.com/ prnews/990630/dc_court_e_2.html). In a June 29, 1999, decision, a U.S. District Court judge found that the DOE's recycling of radioactive metals for commercial uses poses potential for environmental harm without public notice and comment opportunities. As part of the contract, DOE arranged to sell to an unspecified company 6,000 t of contaminated nickel from a former nuclear weapons plant (American Metal Market, 2000b). The Metals Industry Recycling Coalition, which consists of steel, nickel, zinc, and copper and brass interests, lobbied to prevent radioactive-contaminated scrap from reaching the commerce stream. Their concern was that consumers would reject recycled goods made from radioactive scrap even if the level of radiation was deemed to be safe by the Government. In response, the DOE announced its decision to restructure its contract without explaining how the nickel would be disposed of and whether the decision would extend to other metals, such as ferrous scrap.

Consumption

Domestic data for ferrous scrap were derived from voluntary monthly or annual surveys of U.S. scrap consuming operations by the USGS. About 53% of the known manufacturers of pig iron and raw steel responded to the surveys. Their responses represented about 59% of estimated total scrap consumption by this class of consumers. The remaining 41% of scrap consumption was estimated on the basis of prior reports. For manufacturers of steel castings, iron foundries, and miscellaneous users, about 31% of the surveyed establishments, which represented about 46% of estimated scrap consumption by these consumers, responded to the annual survey. Total consumption for these two classes of consumers was estimated by using statistical methods and prior reports. Actual survey data accounted for about 44% of total estimated scrap consumption by all classes of scrap consumers.

In 1999, brokers, dealers, and other outside sources supplied domestic consumers with 51 Mt of all types of ferrous scrap at an estimated delivered value of more than $4.8 billion and exported 5.5 Mt (excluding used rails for rerolling and other uses and ships, boats, and other vessels for scrapping) valued at $738 million (Tables 1, 8). In 1998, domestic consumers

received 53 Mt at an estimated delivered value of about $5.7 billion; exports totaled 5.6 Mt valued at $805 million. This represented a tonnage decrease during 1999 of nearly 4% for received quantities and nearly 2% for exported quantities. The total value of received and exported scrap grades decreased nearly 16% from that of 1998.

Raw steel production was 97.4 Mt in 1999 compared with 98.6 Mt in 1998 (American Iron and Steel Institute, 1999, p. 74). The shares of raw steel produced by electric and basic oxygen furnaces were 46% and 54%, respectively; EAF production increased slightly during 1999. In 1999, continuous cast steel production represented 96% of total raw steel production, as it had in 1998. Raw steel production capability was 116 Mt compared with 114 Mt in 1998.

Steel mills accounted for 83% of all scrap received from brokers, dealers, and other outside sources; iron foundries and miscellaneous users received 14%; and steel foundries received 3% (Table 2). Apparent total domestic consumption of ferrous scrap was 51 Mt of net receipts (total receipts minus shipments) and 19 Mt of home scrap (Table 1). Stocks of ferrous scrap at consumers' plants increased by nearly 5% to 5.5 Mt (Table 1). Total domestic consumption was 71 Mt, a 3% decrease since 1998 (Table 1). The total market for U.S.-produced scrap (net receipts plus exports minus imports) was 53.3 Mt compared with 55.5 Mt in 1998. Feedstock used in electric furnaces by all iron and steel product manufacturers comprised scrap, 91%; pig iron, 5.9%; and DRI, 3.1% (Table 4). Consumption of DRI was 79% greater than that of 1998.

Net shipments of all grades of steel mill products were 96.3 Mt, which was an increase of 3.7% from the 92.9 Mt shipped in 1998 (American Iron and Steel Institute, 1999, p. 26). Imports of steel mill products decreased to 32.4 Mt from 37.7 Mt in 1998. Exports of steel mill products decreased to 4.9 Mt from 5.0 Mt in 1998. The U.S. apparent supply of steel mill products decreased to 116 Mt from 118 Mt in 1998. As a share of the U.S. market, imports of steel mill products decreased to 28% in 1999 from 32% (revised) in 1998. Pig iron production decreased to 46.3 Mt from 48.2 Mt in 1998. As reported by the U.S. Bureau of the Census, iron castings shipments totaled an estimated 9.8 Mt for 1998 and 9.6 Mt (revised) for 1997. Steel castings shipments (including investment castings) totaled 1.3 Mt in 1998, up slightly from 1.2 Mt in 1997.

Transportation

In June 1999, the acquisition of Conrail, Inc. by CSX Transportation, Inc. (CSXT) (42%) and Norfolk Southern Corp.(58%) reduced the number of large rail carriers from three to two in the eastern part of the United States. The routes of both carriers are in 23 States east of the Mississippi River, the District of Columbia, Quebec, and Ontario. The steel and scrap industry has been described as captive to the rail companies because the railroad system is the main form of transportation of ferrous scrap in the United States (Scrap Price Bulletin, March 2000, Rail delays derail scrap profits, Scrap Magner, accessed May 1, 2000, at URL http://www.scrappricebulletin.com/scrapmagnet.htm). Because profitability is based on receiving reliable, affordable transportation, steel producers and scrap suppliers expressed concern prior to the restructuring that it might adversely affect them. A significant part of the industry experienced considerable deterioration of service, such as significantly increased turnaround times of rail cars, lost cars and billing, erroneous information given to shippers, car unavailability, and mistakenly routed shipments, based, for the most part on the railroads' computer problems. All of this resulted in canceled contracts, smaller orders, and increased costs (American Metal Market, 1999b, 2000b). To alleviate the problems, greater reliance was placed on truck transportation, which can be twice as expensive, and was even more so because of the increased demand on a limited numbers of trucks and because the fuel surcharge for trucks was about 10% (American Metal Market, 1999a).

New and expanding minimills with electric furnaces that need ferrous scrap and scrap substitutes used the well-developed barge system that operates on the navigable waterway system of the Central United States. Barges were an integral part of the total shipping system of trains, trucks, and ocean vessels that served the mills, thus giving them flexibility in their transportation planning. Shipping in large barges was the most economical way of handling ferrous scrap and scrap substitutes because of its efficiency (Alley, 1999). Although slow, one barge can hold from 1,400 to 1,800 t of scrap, which is comparable to more than 15 rail cars or 58 tractor-trailers. One standard 15-barge tow equals more than 225 rail cars or 870 tractor-trailers. Because construction of new barges was nearly nonexistant during the past decade, the barge industry has been left with an aging fleet of thousands of older barges that will need to be replaced during the next few years at a cost of $275,000 per barge (Alley, 1999). A capital expenditure of more than $1 billion will be required to meet the ever-increasing demand for barge freight.

Prices

The average composite delivered price per metric ton of No. 1 heavy melting steel scrap, calculated from prices per long ton published monthly by American Metal Market, was $94.15; the price ranged from a low of $82.56 in January to a high of $114.75 in December (Table 8). The average composite delivered price per ton of No. 1 heavy melting steel scrap, calculated from prices per long ton published weekly in Iron Age Scrap Price Bulletin, was $90.98; the price had ranged from a low of $79.07 in March to a high of $111.38 in December.

On the basis of weekly quotations by Iron Age Scrap Price Bulletin for 18-8 (18% chromium, 8% nickel) stainless steel scrap (bundles and solids) delivered to consumers in the Pittsburgh, PA, area, the average price increased by 5% to $624 per metric ton from $592 in 1998.

The value of total ferrous scrap exports (excluding used rails for rerolling and other uses, and ships, boats, and other vessels for scrapping) decreased by about 5% to about $137 per metric ton compared with that of 1998 (Table 11). The value of total imports, which was about $104 per ton, was about 21% less than that of 1998 (Table 14).

Foreign Trade

Foreign trade valuation continued to be reported on a f.a.s. (free-alongside-ship) basis for exports and on a Customs value basis for imports. In 1999, the U.S. trade surplus for all classes of ferrous scrap (including used rails for rerolling and other uses and ships, boats, and other vessels for scrapping) was 1.5 Mt valued at $328 million (Bureau of the Census, unpub. data, 1999). This represented decreases of 32% in quantity and 12% in value compared with the 1998 surpluses of 2.2 MT and $372 million.

Total U.S. exports of carbon steel and cast-iron scrap (excluding used rails for rerolling and other uses; ships, boats, and other vessels for scrapping; stainless steel; and alloy steel) went to 56 countries (5 more than during the previous year) and totaled 4.7 Mt (a 4% increase) valued at $473 million (an 8% decrease) for an average of $100 per ton (Bureau of the Census, unpub. data, 1998). The largest tonnages went to the Republic of Korea, 1.75 million; Canada, 1.44 million; Mexico, 670,000; China, 346,000; and Taiwan, 163,000. These countries received 93% of the total quantity valued at $421 M, which was 89% of the total value.

Total U.S. exports of stainless steel scrap went to 31 countries (21 fewer than during the previous year) and consisted of 260,000 t (a 13% decrease) valued at $151 M (a 14% decrease) for an average of $582 per metric ton (a 1% decrease) (Bureau of the Census, unpub. data, 1998). The largest tonnages went to the Republic of Korea, 104,000; Taiwan, 50,000; Canada, 29,000; and Spain, 27,000. These countries received 81% of the total quantity valued at $118 M, which was 78% of the total value.

U.S. exports of alloy steel scrap (excluding stainless steel) were shipped to 45 countries (2 more than the previous year) and consisted of 559,000 t (a 25% decrease) valued at $115 M (a 2% decrease) for an average of $205 per metric ton (a 31% increase) (Bureau of the Census, unpub. data, 1998). The largest tonnages went to Canada, 230,000, and Mexico, 179,000. These countries received 73% of the total quantity valued at $56.3 M, which was 49% of the total value.

World Review

Iron and steel scrap is an important raw material for the steel and foundry industries. Because scrap comes from such sources as old buildings, industrial machinery, discarded cars and consumer durables, and manufacturing operations, the mature industrialized economies are the main exporters of scrap. The main trade flows of scrap are from the heavily industrialized and developed countries of North America and Europe to lesser developed steelmaking countries.

The United States was no longer the leading exporting country of iron and steel scrap in 1999, as reported by the International Iron and Steel Institute (IISI) (1999, p. 222). Germany took the lead, followed by Russia, the United States, Japan, France, Ukraine, the United Kingdom, and Canada. The four most significant importing nations were, in decreasing order of importance, Turkey, Spain, the Republic of Korea, and Germany (International Iron and Steel Institute, 1999, p. 224).

Outlook

The year 1999 was a moderately strong one for the steel and ferrous scrap industries, but looking ahead at 2000, a stronger capital goods market is developing, Southeast Asian financial markets are recovering, European and Latin American economies are recovering, and imports of inexpensive steel into the United States are decreasing. The current U.S. economic expansion — in its 104th month at yearend — is the longest in U.S. history and economists expect economic growth to continue for several years (AISE Steel Technology, 2000).

The IISI forecast an increase in world steel consumption during 2000 of 4.2% and during 2001 of 3.1% from that of 1999 for a total increase of 52 M t during the 2-year period (International Iron and Steel Institute, 2000, Short and medium term outlook for steel demand, accessed June 22, 2000, at URL http://www.worldsteel.org/cgi-bin/printpage.pl). About 37% of this increase is accounted for by estimates for China, where economic growth is running around 7% annually. Even without the Chinese contribution to the total, world steel demand is forecast to grow by 20 Mt in 2000 and 12.7 Mt in 2001. Consumption will increase during 2000 in the Republic of Korea by 10.7%; China, 7.1%; Europe, 3.4%; the CIS, 1.6%, and the United States and Japan, less than 1% each. The Organization for Economic Cooperation and Development forecast that world steel demand may be expected to recover by around 4% during 2000 (Organization for Economic Cooperation and Development, OECD steel outlook 1999/2000, accessed July 6, 2000, at URL http://www.oecd.org/dsti/sti/industry/steel/index.htm).

Steelmaking by the EAF will continue to grow because of its capital and operating cost advantages relative to those of the basic oxygen furnace and it is environmentally cleaner (Darrel Hassler, 1999, Scrap trade pins hopes on mini-mills, Americal Metal Market Online, accessed June 11, 1999, at URL http://www.amm.com/ref/hot/fersc98a.htm#3). The EAF may be the primary steel production method in the world by 2010 (Forster, 1999). The availability of scrap and reasonably priced electricity have made EAF growth possible. Ferrous scrap will be available in sufficient quantities worldwide (Katrak and others, 1999). In the United States, demand for steel products and ferrous scrap will increase as the domestic economy continues to grow.

References Cited

AISE Steel Technology, 2000, Business cues from the Nation's Capital: AISE Steel Technology, v. 77, no. 4, p. 11.

Alley, S.E., 1999, Partnering seen as steelmakers' key to efficiency: American Metal Market, v. 107, no. 242, December 17, p. 5.

American Iron and Steel Institute, 1999, Annual report 1999: American Iron and Steel Institute, 130 p.

American Metal Market, 1999a, Rail glitches give steel companies a tough time: American Metal Market, v. 197, no. 131, July 9, p. 4.

———1999b, Steel industry bemoans poor rail service and logistics in the East: American Metal Market, v. 107, no. 226, November 23, p. 4.

———2000a, Metals to NRC: Keep radioactive scrap out: American Metal Market, v. 108, no. 16, January 26, p. 16.

———2000b, Problems for steel coming by train, truck: American Metal Market,

v. 108, no. 33, February 18, p. 1.
———2000c, DOE backs down on nuclear scrap: American Metal Market, v. 108, no. 8, January 13, p. 6.
Forster, Harriet, 1999, Global growth seen for EAF into millennium: American Metal Market, Electric Furnace Supplement, February 4, p. 17A.
International Iron and Steel Institute, 1999, Steel statistical yearbook 1999: International Iron and Steel Institute, December, 243 p.
Katrak, F.E., Agarwal, J.C., and Persampieri, David, 1999, Global restructuring of the steel industry: American Metal Market Steel Forecast Supplement, January 5, p. 15A.
New Steel, 1999, Courts rule against EPA in PM2.5 and "overfiling" cases: New Steel, v. 15, no. 13, December, p. 28.
Steel Manufacturers Association, 1999, 1999 Public Policy Statement, p. 19.
U.S. Environmental Protection Agency, 1998, Atmospheric observations—Helping build the scientific basis for decisions related to airborne particulate matter: U.S. Environmental Protection Agency Report of the PM Measurements Research Workshop, Chapel Hill, NC, July 22-23, 1998, 103 p.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Iron. Ch. in United States mineral resources, U.S. Geological Survey Professional Paper 820, 1973.
Iron and Steel. Ch. in Minerals Yearbook, annual.
Iron and Steel. Ch. in Minerals Commodity Summaries, annual.[1]
Iron and Steel Scrap. Mineral Industry Surveys, monthly.
Iron and Steel Slag. Ch. in Minerals Commodity Summaries, annual.[1]
Iron and Steel Slag. Ch. in Minerals Yearbook, annual.[1]
Iron Ore. Ch. in Minerals Yearbook, annual.[1]
Iron Ore. Mineral Industry Surveys, monthly.
Iron Ore. Ch. in Minerals Commodity Summaries, annual.[1]

Other

American Foundrymen's Society.
American Iron and Steel Institute.
Bureau International de la Recuperation.
Center for Materials Production.
Institute of Scrap Recycling Industries Inc.
Iron and Steel. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
Metal Bulletin [London].
Steel Can Recycling Institute.
Steel Manufacturers Association.[1]

[1]Prior to January 1996, published by the U.S. Bureau of Mines.

TABLE 1
SALIENT U.S. IRON AND STEEL SCRAP, PIG IRON, AND DIRECT-REDUCED IRON STATISTICS 1/

(Thousand metric tons, unless otherwise specified)

		1995	1996	1997	1998	1999
Manufacturers of pig iron and raw steel and castings: 2/						
Ferrous scrap consumption		56,000	56,000	58,000	58,000	56,000
Pig iron consumption		51,000	50,000	51,000	49,000	48,000
Direct-reduced iron consumption		1,500	1,300	1,300	1,300	2,200
Net receipts of ferrous scrap 3/		42,000	41,000	43,000	44,000	42,000
Home scrap production 4/		15,000	15,000	14,000	14,000	13,000
Ending stocks of ferrous scrap, December 31		3,700	4,800	4,900	4,700	4,800
Manufacturers of steel castings: 5/						
Ferrous scrap consumption		2,000	2,000	1,800	2,000	1,900
Pig iron consumption		10	11	13	14	11
Net receipts of ferrous scrap 3/		1,300	1,300	1,200	1,300	1,200
Home scrap production 4/		680	640	660	710	690
Ending stocks of ferrous scrap, December 31		93	84	77	83	230
Iron foundries and miscellaneous users: 5/						
Ferrous scrap consumption		13,000	13,000	13,000	13,000	13,000
Pig iron consumption		1,100	1,100	1,200	1,200	1,100
Direct-reduced iron consumption		2	13	13	12	13
Net receipts of ferrous scrap 3/		8,300	8,300	8,200	7,900	7,700
Home scrap production 4/		4,900	4,900	5,200	5,100	5,000
Ending stocks of ferrous scrap, December 31		390	360	470	440	430
Totals, all manufacturing types:						
Ferrous scrap consumption		72,000	71,000	73,000	73,000	71,000
Pig iron consumption		52,000	52,000	52,000	50,000	49,000
Direct-reduced iron consumption		1,500	1,300	1,300	1,300	2,200
Net receipts of ferrous scrap 3/		51,000	50,000	52,000	53,000 r/	51,000
Home scrap production 4/		20,000	20,000	20,000	20,000	19,000
Ending stocks, December 31:						
Ferrous scrap at consumer plants		4,200	5,200	5,500	5,200	5,500
Pig iron at consumer and supplier plants		620	600	510	560	720
Direct-reduced iron at consumer plants		190	270	160	280	310
Exports: 6/						
Ferrous scrap (includes tinplate and terneplate) 7/		10,400	8,440	8,930	5,570	5,520
Value	thousands	$1,700,000	$1,340,000	$1,350,000	$805,000	$738,000
Pig iron (all grades)		54	58	86	87	83
Value	thousands	$6,450	$8,320	$12,300	$11,700	$11,100
Direct-reduced iron (steelmaking grade)		5	3	8	5	3
Value	thousands	$490	$304	$852	$487	$302
Imports for consumption: 6/						
Ferrous scrap (includes tinplate and terneplate) 7/		2,090	2,600	2,870	3,060	3,670
Value	thousands	$284,000	$342,000	$384,000	$402,000	$383,000
Pig iron (all grades)		2,360	2,660	3,150	5,150	4,990
Value	thousands	$391,000	$411,000	$465,000	$722,000	$527,000
Direct-reduced iron (steelmaking grade)		1,190	1,050	987	939	950
Value	thousands	$145,000	$136,000	$127,000	$118,000	$86,500

r/ Revised.

1/ Data are rounded to no more than two significant digits, except trade data, which are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes manufacturers of raw steel that also produce steel castings.

3/ Net receipts of scrap is defined as receipts from brokers, dealers, and other outside sources, plus receipts from other own-company plants minus shipments.

4/ Home scrap production includes recirculating scrap that results from current operations and obsolete home scrap.

5/ Some consumers in the "Manufacturers of steel castings" category also produce iron castings; some consumers in the "Iron foundries and miscellaneous users" category also produce steel castings.

6/ Data from Bureau of the Census. Export valuation is free-alongside-ship (f.a.s.) value, and import valuation is Customs value.

7/ Excludes used rails for rerolling and other uses and ships, boats and other vessels for scrapping.

TABLE 2
U.S. CONSUMER RECEIPTS, PRODUCTION, CONSUMPTION, SHIPMENTS, AND STOCKS
OF IRON AND STEEL SCRAP IN 1999, BY GRADE 1/

(Thousand metric tons)

Grade	Receipts of scrap		Production of home scrap		Consumption of purchased and home scrap	Shipments of scrap	Ending stocks, December 31
	From brokers, dealers and other outside sources	From other own-company plants	Recirculating scrap from current operations	Obsolete scrap 2/			
Manufacturers of pig iron and raw steel and castings:							
Carbon steel:							
Low-phosphorus plate and punchings	380	--	2	--	360	11	34
Cut structural and plate	3,700	52	660	51	4,200	63	290
No. 1 heavy melting steel	5,200	320	3,700	12	9,500	110	650
No. 2 heavy melting steel	4,900	81	510	3	5,300	9	490
No. 1 and electric furnace bundles	5,700	400	1,400	(3/)	7,000	500	380
No. 2 and all other bundles	930	18	1	--	980	--	51
Electric furnace, 1 foot and under (not bundles)	1	10	140	--	55	110	3
Railroad rails	170	--	42	--	200	--	12
Turnings and borings	2,100	72	62	(3/)	2,200	8	120
Slag scrap	660	150	1,400	--	2,100	210	190
Shredded or fragmentized	8,500	850	340	--	9,700	16	610
No. 1 busheling	4,900	120	180	--	5,000	110	300
Steel cans (post consumer)	250	7	35	--	310	--	73
All other carbon steel scrap	2,400	68	2,800	7	4,900	380	390
Stainless steel scrap	690	3	450	--	1,100	7	45
Alloy steel (except stainless)	230	8	520	3	780	29	74
Ingot mold and stool scrap	5	--	120	85	90	130	17
Machinery and cupola cast iron	71	--	4	--	64	1	10
Cast-iron borings	260	--	(3/)	--	250	(3/)	16
Motor blocks	W	--	--	--	W	W	W
Other iron scrap	320	61	500		840	160	360
Other mixed scrap	930	13	390	(3/)	1,300	25	670
Total	42,000	2,200	13,000	160	56,000	1,900	4,800
Manufacturers of steel castings:							
Carbon steel:							
Low-phosphorus plate and punchings	360	--	100	(3/)	510	(3/)	140
Cut structural and plate	190	--	12	(3/)	200	(3/)	18
No. 1 heavy melting steel	63	14	39	--	110	--	9
No. 2 heavy melting steel	13	--	--	--	11	--	2
No. 1 and electric furnace bundles	15	--	--	--	14	--	2
No. 2 and all other bundles	--	--	--	--	--	--	--
Electric furnace, 1 foot and under (not bundles)	6	5	4	--	14	--	3
Railroad rails	46	--	58	--	100	--	2
Turnings and borings	45	1	3	--	52	--	1
Slag scrap	--	--	5	--	5	--	(3/)
Shredded or fragmentized	90	--	--	--	90	--	2
No. 1 busheling	97	--	6	--	100	--	6
Steel cans (post consumer)	--	--	--	--	--	--	--
All other carbon steel scrap	70	2	270	3	340	(3/)	10
Stainless steel scrap	29	--	38	(3/)	67	1	6
Alloy steel (except stainless)	78	(3/)	63	--	130	(3/)	14
Ingot mold and stool scrap	10	--	--	(3/)	9	--	1
Machinery and cupola cast iron	--	--	--	--	(3/)	--	(3/)
Cast-iron borings	--	--	1	--	1	--	(3/)
Motor blocks	1	--	--	--	1	--	(3/)
Other iron scrap	9	--	62	(3/)	70	1	2
Other mixed scrap	51	--	1	14	64	1	5
Total	1,200	23	670	19	1,900	5	230

See footnotes at end of table.

TABLE 2--Continued
U.S. CONSUMER RECEIPTS, PRODUCTION, CONSUMPTION, SHIPMENTS, AND STOCKS
OF IRON AND STEEL SCRAP IN 1999, BY GRADE 1/

(Thousand metric tons)

Grade	Receipts of scrap		Production of home scrap		Consumption of purchased and home scrap	Shipments of scrap	Ending stocks, December 31
	From brokers, dealers and other outside sources	From other own-company plants	Recirculating scrap from current operations	Obsolete scrap 2/			
Iron foundries and miscellaneous users:							
Carbon steel:							
Low-phosphorus plate and punchings	880	5	160	(3/)	1,000	1	13
Cut structural and plate	1,300	33	110	(3/)	1,400	(3/)	120
No. 1 heavy melting steel	190	4	17	(3/)	210	2	7
No. 2 heavy melting steel	150	1	--	--	150	--	3
No. 1 and electric furnace bundles	110	140	32	--	270	--	15
No. 2 and all other bundles	150	--	1	--	150	1	4
Electric furnace, 1 foot and under (not bundles)	140	1	1	--	140	1	3
Railroad rails	130	--	9	(3/)	140	--	6
Turnings and borings	71	65	9	--	150	4	3
Slag scrap	61	--	3	--	63	4	2
Shredded or fragmentized	1,300	100	--	--	1,400	--	56
No. 1 busheling	750	62	43	--	810	38	19
Steel cans (post consumer)	21	--	--	--	21	--	(3/)
All other carbon steel scrap	200	(3/)	42	--	240	(3/)	9
Stainless steel scrap	4	--	4	--	7	(3/)	1
Alloy steel (except stainless)	13	--	1	--	14	--	2
Ingot mold and stool scrap	60	--	2	--	63	(3/)	10
Machinery and cupola cast iron	740	(3/)	300	--	1,000	3	58
Cast-iron borings	220	100	33	1	350	4	12
Motor blocks	240	9	740	--	980	2	12
Other iron scrap	240	5	3,300	(3/)	3,600	8	62
Other mixed scrap	240	23	130	(3/)	400	(3/)	9
Total	7,200	550	5,000	1	13,000	67	430
Totals for all manufacturing types:							
Carbon steel:							
Low-phosphorus plate and punchings	1,600	5	270	(3/)	1,900	12	190
Cut structural and plate	5,200	85	780	51	5,800	63	430
No. 1 heavy melting steel	5,400	340	3,800	12	9,800	110	660
No. 2 heavy melting steel	5,000	82	510	3	5,500	9	500
No. 1 and electric furnace bundles	5,800	540	1,400	(3/)	7,300	500	400
No. 2 and all other bundles	1,100	18	2	--	1,100	1	56
Electric furnace, 1 foot and under (not bundles)	140	15	150	--	210	110	8
Railroad rails	340	--	110	(3/)	450	(3/)	21
Turnings and borings	2,200	140	77	(3/)	2,400	12	120
Slag scrap	720	150	1,400	--	2,200	210	190
Shredded or fragmentized	9,900	950	340	--	11,000	16	670
No. 1 busheling	5,700	180	230	--	5,900	150	320
Steel cans (post consumer)	270	7	35	--	330	--	73
All other carbon steel scrap	2,700	69	3,100	10	5,500	390	410
Stainless steel scrap	730	4	490	(3/)	1,200	8	52
Alloy steel (except stainless)	320	8	590	3	920	36	91
Ingot mold and stool scrap	76	--	130	85	160	130	28
Machinery and cupola cast iron	810	(3/)	300	--	1,100	3	68
Cast-iron borings	480	100	34	1	600	4	28
Motor blocks	250	9	740	--	990	2	13
Other iron scrap	560	66	3,900	(3/)	4,400	170	420
Other mixed scrap	1,200	36	530	16	1,700	26	680
Total	51,000	2,800	19,000	180	71,000	2,000	5,500

W Withheld to avoid disclosing company proprietary data; included with "Other iron scrap." -- Zero.
1/ Data are rounded to no more than two significant digits; may not add to totals shown.
2/ Obsolete home scrap includes ingot molds, stools, and scrap from old equipment, buildings, etc.
3/ Less than 1/2 unit.

TABLE 3
U.S. CONSUMER RECEIPTS, PRODUCTION, CONSUMPTION, SHIPMENTS, AND STOCKS
OF PIG IRON AND DIRECT-REDUCED IRON (DRI) IN 1999 1/

(Thousand metric tons)

	Receipts	Production	Consumption	Shipments	Stocks, December 31
Manufacturers of pig iron, raw steel, and castings:					
Pig iron	7,300 2/	44,000	48,000	2,000	660
DRI	2,100 3/	W	2,200	1	310
Manufacturers of steel castings:					
Pig iron	11	(4/)	11	W	1
DRI	--	--	--	--	--
Iron foundries and miscellaneous users:					
Pig iron	1,200	(4/)	1,200	12	61
DRI	13	--	W	W	--
Totals for all manufacturing types:					
Pig iron	8,500	44,000	49,000	2,000	720
DRI	2,100	W	2,200	W	310

W Withheld to avoid disclosing company proprietary data. -- Zero.
1/ Data are rounded to no more than two significant digits; may not add to totals shown.
2/ Includes 1,700 tons purchased by electric furnace steel producers.
3/ Includes 1,300 tons purchased by integrated steel producers.
4/ Withheld to avoid disclosing company proprietary data; included in "Total."

TABLE 4
U.S. CONSUMPTION OF IRON AND STEEL SCRAP, PIG IRON, AND DIRECT-REDUCED IRON (DRI) IN 1999,
BY TYPE OF FURNACE OR OTHER USE 1/

(Thousand metric tons)

	Manufacturers of pig iron and raw steel and castings			Manufacturers of steel castings			Iron foundries and miscellaneous users			Totals for all manufacturing types		
	Scrap	Pig iron	DRI	Scrap	Pig iron	DRI	Scrap	Pig iron	DRI	Scrap	Pig iron	DRI
Blast furnace	1,600	--	440	--	--	--	--	--	--	1,600	--	440
Basic oxygen process	14,000	45,000	55	--	--	--	--	--	--	14,000	45,000	55
Electric furnace	40,000	2,500	1,700	1,900	11	--	5,400	620	2	48,000	3,100	1,700
Cupola furnace	--	--	--	2	1	--	7,100	520	11	7,100	520	11
Other (including air furnaces)	W	--	--	3	--	--	W	W	--	23	W	--
Direct castings 2/	--	36	--	--	--	--	--	--	--	--	36	--
Total	56,000	48,000	2,200	1,900	11	--	13,000	1,100	13	71,000	49,000	2,200

W Withheld to avoid disclosing company proprietary data; included with "Electric furnace." -- Zero.
1/ Data are rounded to no more than two significant digits; may not add to totals shown.
2/ Includes ingot molds and stools.

TABLE 5
IRON AND STEEL SCRAP SUPPLY AVAILABLE FOR CONSUMPTION IN 1999, BY REGION AND STATE 1/ 2/

(Thousand metric tons)

Region and State	Receipts of scrap		Production of home scrap		Shipments of scrap 4/	New supply available for consumption
	From brokers, dealers, and other outside sources	From other own company plants	Recirculating scrap resulting from current operations	Obsolete scrap 3/		
New England and Middle Atlantic:						
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	47	--	30	(5/)	(5/)	78
New Jersey and New York	1,800	--	89	--	--	1,800
Pennsylvania	4,400	100	2,500	82	27	7,100
Total	6,200	100	2,600	84	28	9,000
North Central:						
Illinois	3,700	120	1,200	2	72	4,900
Indiana	4,400	190	4,800	37	630	8,800
Iowa, Nebraska, South Dakota	2,000	3	210	--	(5/)	2,200
Kansas and Missouri	900	1	190	(5/)	--	1,100
Michigan	2,900	450	1,900	--	160	5,000
Minnesota	460	170	120	--	(6/)	750
Ohio	6,900	880	2,400	22	760	9,400
Wisconsin	1,200	3	1,100	--	6	2,300
Total	22,000	1,800	12,000	62	1,600	35,000
South Atlantic:						
Delaware and Maryland	690	--	430	--	(6/)	1,100
Florida and Georgia	880	--	120	--	(5/)	1,000
North Carolina and South Carolina	1,800	(6/)	210	--	(6/)	2,000
Virginia and West Virginia	1,400	(6/)	530	(6/)	(6/)	2,000
Total	4,800	150	1,300	(6/)	120	6,100
South Central:						
Alabama and Mississippi	3,300	(6/)	900	(6/)	110	4,100
Arkansas, Louisiana, Oklahoma	4,400	(6/)	340	(6/)	(6/)	4,800
Kentucky and Tennessee	2,400	2	580	1	(6/)	2,900
Texas	3,000	640	620	3	21	4,300
Total	13,000	720	2,400	20	190	16,000
Mountain and Pacific:						
Arizona, Colorado, Idaho, Montana, Utah	2,000	(5/)	390	(6/)	(6/)	2,400
California, Oregon, Washington	2,100	W	320	1	(6/)	2,500
Total	4,100	W	700	(6/)	4	4,800
Grand total	51,000	2,800	19,000	180	2,000	71,000

W Withheld to avoid disclosing company proprietary data. -- Zero.

1/ Supply available for consumption is a net figure computed by adding production to receipts and deducting scrap shipped during the year. The difference in stock levels at the beginning and end of the year is not taken into consideration.

2/ Data are rounded to no more than two significant digits; may not add to totals shown.

3/ Obsolete scrap includes ingot molds, stools and scrap from old equipment, buildings, etc.

4/ Includes scrap shipped, transferred, or otherwise disposed of during the year.

5/ Less than 1/2 unit.

6/ Withheld to avoid disclosing company proprietary data; included in "Total" or "Grand total."

TABLE 6
U.S. CONSUMPTION OF IRON AND STEEL SCRAP AND PIG IRON IN 1999, BY REGION AND STATE 1/ 2/ 3/

(Thousand metric tons)

Region and State	Manufacturers of pig iron and raw steel and castings		Manufacturers of steel castings		Iron foundries and miscelaneous users		Totals for all manufacturing types	
	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron
New England and Middle Atlantic:								
Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont	1,500	24	20	(4/)	410	17	2,000	41
Pennsylvania	6,400	3,000	190	2	590	77	7,200	3,000
Total	8,000	3,000	210	3	1,000	94	9,200	3,100
North Central:								
Illinois	4,200	2,700	130	2	580	43	5,000	2,700
Indiana	8,000	17,000	69	1	1,200	170	9,200	18,000
Iowa, Kansas, Minnesota, Missouri, Nebraska, South Dakota, Wisconsin	3,100	110	470	2	2,500	340	6,000	450
Michigan	2,400	4,500	37	(4/)	2,600	130	5,000	4,600
Ohio	7,900	9,800	380	2	1,200	130	9,500	10,000
Total	26,000	35,000	1,100	7	8,000	810	35,000	35,000
South Atlantic:								
Delaware, Maryland, Virginia, West Virginia	2,400	W	W	W	480	21	2,900	3,900
Florida, Georgia, North Carolina, South Carolina	2,500	W	W	W	500	39	3,000	86
Total	4,900	3,900	76	W	980	59	6,000	4,000
South Central:								
Alabama, Kentucky, Mississippi, Tennessee	5,000	W	260	W	1,700	W	7,000	4,700
Arkansas, Louisiana, Oklahoma	4,600	W	25	W	110	W	4,700	580
Texas	3,800	110	89	W	450	42	4,300	150
Total	13,000	5,200	380	W	2,300	200	16,000	5,400
Mountain and Pacific:								
Arizona, Colorado, Idaho, Montana, Utah	2,400	W	21	(4/)	130	W	2,500	1,200
California, Oregon, Washington	2,100	W	120	(4/)	230	W	2,400	64
Total	4,400	1,200	140	(4/)	360	13	4,900	1,300
Grand total	56,000	48,000	1,900	11	13,000	1,200	71,000	49,000

W Withheld to avoid disclosing company proprietary data; included in "Total" or "Grand total."

1/ Includes recirculating scrap resulting from current operations and home-generated obsolete scrap.

2/ Includes molten pig iron used for ingot molds and direct castings.

3/ Data are rounded to no more than two significant digits; may not add to totals shown.

4/ Less than 1/2 unit.

TABLE 7
U.S. CONSUMER STOCKS OF IRON AND STEEL SCRAP AND PIG IRON, DECEMBER 31, 1999,
BY REGION AND STATE 1/

(Thousand metric tons)

Region and State	Carbon steel 2/	Stainless steel	Alloy steel 3/	Cast iron 4/	Other grades of scrap	Total scrap	Pig iron
New England and Middle Atlantic:							
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	1	(5/)	(5/)	1	W	2	1
New Jersey and New York	69	2	1	2	W	74	1
Pennsylvania	360	32	20	26	5	440	27
Total	430	34	21	29	5	520	28
North Central:							
Illinois	310	(5/)	W	17	4	340	16
Indiana	510	5	W	110	25	650	220
Iowa, Kansas, Missouri, Nebraska, South Dakota	180	(5/)	1	21	W	200	100
Michigan	130	(5/)	2	20	21	170	22
Minnesota and Wisconsin	42	2	(5/)	11	2	57	7
Ohio	420	7	41	39	5	510	61
Total	1,600	15	50	220	58	1,900	420
South Atlantic:							
Delaware, Maryland, Virginia, West Virginia	370	(5/)	W	11	41	430	60
Florida, Georgia, North Carolina, South Carolina	150	(5/)	W	22	4	170	5
Total	520	(5/)	3	33	45	600	65
South Central:							
Alabama, Kentucky, Mississippi, Tennessee	640	W	W	270	W	1,400	88
Arkansas, Louisiana, Oklahoma	360	W	W	1	W	360	77
Texas	300	W	W	7	W	310	21
Total	1,300	1	12	270	490	2,100	190
Mountain and Pacific:							
Arizona, Colorado, Idaho, Montana, Utah	140	(5/)	W	2	--	140	W
California, Oregon, Washington	90	1	W	7	90	190	W
Total	230	1	5	9	90	330	22
Grand total	4,100	51	91	560	680	5,500	720

W Withheld to avoid disclosing company proprietary data; included in "Total" or "Grand total." -- Zero.

1/ Data are rounded to no more than two significant digits; may not add to totals shown.

2/ Excludes rerolling rails.

3/ Excludes stainless steel.

4/ Includes borings.

5/ Less than 1/2 unit.

TABLE 8
U.S. AVERAGE MONTHLY PRICE AND COMPOSITE PRICE FOR NO. 1 HEAVY MELTING STEEL, WITH ANNUAL AVERAGES 1/

(Dollars per metric ton)

Period	Chicago	Philadelphia	Pittsburgh	Composite price
1999:				
January	88.24	76.45	82.96	82.55
February	99.90	84.48	94.64	93.01
March	89.45	74.80	85.54	83.26
April	89.07	74.80	85.63	83.17
May	98.42	80.41	90.77	89.87
June	102.67	83.52	91.04	92.41
July	99.39	83.66	91.04	91.36
August	104.28	88.35	99.99	97.54
September	104.82	88.58	100.88	98.09
October	104.82	88.58	100.88	98.09
November	111.61	93.50	111.90	105.67
December	118.27	104.84	121.13	114.75
Annual average:				
1999	100.91	85.16	96.37	94.15
1998	116.93	99.44	108.52	108.30

1/ Calculated by the U.S. Geological Survey from prices published in American Metal Market.

TABLE 9
U.S. EXPORTS OF IRON AND STEEL SCRAP, BY COUNTRY 1/ 2/

(Thousand metric tons and thousand dollars)

Country	1998		1999	
	Quantity	Value	Quantity	Value
Belgium	5	1,890	3	1,770
Brazil	7	1,140	3	505
Canada	1,470	165,000	1,700	182,000
China	216	57,500	419	96,200
Colombia	16	1,620	30	3,380
Germany	10	3,690	9	2,610
Greece	--	--	(3/)	(3/)
Hong Kong	62	13,900	48	13,600
India	19	5,390	17	5,770
Indonesia	3	767	6	1,590
Italy	26	13,400	5	2,080
Japan	26	12,900	72	15,400
Korea, Republic of	1,420	183,000	1,870	215,000
Malaysia	138	15,300	46	4,360
Mexico	961	123,000	849	88,100
Netherlands	13	4,130	3	1,730
Pakistan	2	952	1	403
Philippines	60	10,400	17	8,290
Singapore	1	392	2	803
South Africa	12	10,500	16	10,100
Spain	75	44,100	32	16,700
Sweden	14	3,760	1	672
Taiwan	270	44,600	220	44,100
Thailand	109	13,200	58	6,930
Turkey	452	50,300	(3/)	(3/)
United Kingdom	23	4,550	13	4,760
Venezuela	132	14,300	46	3,790
Other	19 r/	5,890 r/	33	8,530
Total	5,570	805,000	5,520	738,000

r/ Revised -- Zero.
1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping. Export valuation is free-alongside-ship (f.a.s.) value. The United States exported scrap to 74 countries in 1998 and 70 countries in 1999.
3/ Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 10
U.S. EXPORTS OF IRON AND STEEL SCRAP, BY CUSTOMS DISTRICT 1/ 2/

(Thousand metric tons and thousand dollars)

Customs district	1998		1999	
	Quantity	Value	Quantity	Value
Boston, MA	452	46,800	328	30,500
Buffalo, NY	133	29,100	148	27,300
Chicago, IL	2	149	(3/)	61
Cleveland, OH	(3/)	8	(3/)	4
Columbia-Snake	46	8,290	52	10,300
Detroit, MI	301	37,500	411	46,900
Honolulu, HI	133	14,400	45	5,250
Houston-Galveston, TX	71	30,600	66	28,500
Laredo, TX	345	46,300	193	21,800
Los Angeles, CA	772	118,000	1,120	155,000
Miami, FL	14	2,520	29	4,940
New Orleans, LA	64	38,300	50	13,900
New York, NY	635	108,000	379	64,200
Norfolk, VA	190	21,500	118	15,700
Pembina, ND	271	26,400	361	32,600
Philadelphia, PA	98	10,800	23	1,840
Portland, ME	16	1,810	79	8,010
Providence, RI	50	5,290	140	10,700
San Francisco, CA	718	101,000	706	90,600
Seattle, WA	232	42,000	277	40,300
Tampa, FL	21	1,510	2	415
Other	1,000	114,000	993	130,000
Total	5,570	805,000	5,520	738,000

1/ Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping. Export valuation is free-alongside-ship (f.a.s.) value.
2/ Data are rounded to no more than three significant digits; may not add to totals shown.
3/ Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 11
U.S. EXPORTS OF IRON AND STEEL SCRAP, BY GRADE 1/ 2/

(Thousand metric tons and thousand dollars)

Grade	1998		1999	
	Quantity	Value	Quantity	Value
No. 1 heavy melting scrap	1,130	117,000	931	77,200
No. 2 heavy melting scrap	222	26,100	245	19,300
No. 1 bundles	20	2,350	42	3,810
No. 2 bundles	31	2,970	32	2,180
Shredded steel scrap	1,370	152,000	1,190	113,000
Borings, shovelings and turnings	233	17,100	230	15,600
Cut plate and structural	131	15,700	284	29,000
Tinned iron or steel	109	19,800	90	21,500
Remelting scrap ingots	9	1,870	2	664
Stainless steel scrap	298	176,000	260	151,000
Other alloy steel scrap	737	116,000	558	115,000
Other steel scrap 3/	690	91,000	940	101,000
Iron scrap	580	67,900	715	89,300
Total	5,570	805,000	5,520	738,000
Ships, boats, and other vessels for scrapping	3	925	7	2,610
Used rails for rerolling and other uses 4/	39	14,200	37	14,300
Grand Total	5,610	820,000	5,560	755,000

1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Export valuation is on a free-alongside-ship (f.a.s.) value.
3/ Includes tinplate and terneplate.
4/ Includes mixed (used plus new) rails. See table 15 for details.

Source: U.S. Census Bureau.

TABLE 12
U.S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL SCRAP, BY COUNTRY 1/ 2/

(Thousand metric tons and thousand dollars)

Country	1998		1999	
	Quantity	Value	Quantity	Value
Australia	25	2,820	19	1,900
Belgium	(3/)	46	30	3,270
Brazil	38	3,770	12	609
Canada	2,080	258,000	1,830	181,000
China	2	1,390	3	1,870
Colombia	(3/)	3	(3/)	19
Dominican Republic	18	1,640 r/	32	3,090
Egypt	1	601	2	1,970
Finland	(3/)	82	106	9,170
France	5	792	(3/)	73
Germany	6	1,100	(3/)	360
Israel	1	84	(3/)	29
Jamaica	10	812	7	638
Japan	30	4,790	26	3,740
Korea, Republic of	(3/)	198	(3/)	3
Martinique	--	--	1	14
Mexico	75	27,600	62	26,600
Netherlands	237	27,900	218	21,000
Panama	(3/)	243	2	107
Philippines	--	--	1	109
Poland	--	--	46	4,200
Russia	41	3,850	98	6,840
Singapore	(3/)	245	2	24
South Africa	5	546	6	2,000
Sweden	35	3,350	175	16,100
Switzerland	(3/)	7	(3/)	11
United Kingdom	371	52,200	976	95,600
Venezuela	11	1,670	4	523
Other	74 r/	8,500 r/	14	1,810
Total	3,060	402,000	3,670	383,000

r/ Revised. -- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping. Import valuation is Customs value. The United States imported scrap from 53 countries in both 1999 and 1998.

3/ Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 13
U.S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL SCRAP,
BY CUSTOMS DISTRICT 1/ 2/

(Thousand metric tons and thousand dollars)

Customs district	1998		1999	
	Quantity	Value	Quantity	Value
Baltimore, MD	19	1,640	12	718
Buffalo, NY	334	49,500	187	28,800
Charleston, SC	54	6,330	75	6,990
Chicago, IL	47	8,140	145	11,200
Cleveland, OH	52	5,880	28	1,790
Detroit, MI	1,210	150,000	1,110	107,000
El Paso, TX	24	4,910	6	2,020
Laredo, TX	40	14,700	44	17,500
New Orleans, LA	780	99,200	1,670	159,000
New York, NY	1	271	2	132
Ogdensburg, NY	24	4,710	19	3,710
Pembina, ND	28	4,260	25	7,610
San Diego, CA	13	7,360	12	5,530
Seattle, WA	347	33,300	264	20,400
Other	90	11,900	75	11,500
Total	3,060	402,000	3,670	383,000

1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping. Import valuation is Customs value.

Source: U.S. Census Bureau.

TABLE 14
U.S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL SCRAP, BY CLASS 1/ 2/

(Thousand metric tons and thousand dollars)

Class	1998		1999	
	Quantity	Value	Quantity	Value
No. 1 heavy melting scrap	157	20,000	46	3,660
No. 2 heavy melting scrap	30	2,360	16	1,480
No. 1 bundles	311	34,600	246	23,100
No. 2 bundles	5	603	1	74
Shredded steel scrap	535	65,900	1,080	103,000
Borings, shovelings and turnings	163	19,100	138	10,800
Cut plate and structural	40	5,100	134	13,200
Tinned iron or steel	72	6,380	58	5,270
Remelting scrap ingots	15	3,650	5	1,860
Stainless steel scrap	57	21,600	66	27,700
Other alloy steel scrap	284	43,200	210	29,700
Other steel scrap 3/	1,210	158,000	1,320	135,000
Iron scrap	180	21,400	354	28,300
Total	3,060	402,000	3,670	383,000
Ships, boats, other vessels for scrapping	--	--	--	189
Used rails for rerolling and other uses 4/	308	46,000	348	43,900
Grand Total	3,370	448,000	4,020	427,000

-- Zero.
1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Import valuation is Customs value.
3/ Includes tinplate and terneplate.
4/ Includes mixed (used plus new) rails. See table 16 for details.

Source: U.S. Census Bureau.

TABLE 15
U.S. EXPORTS OF USED RAILS FOR REROLLING AND OTHER USES, BY COUNTRY 1/ 2/

(Thousand metric tons and thousand dollars)

Country	1998		1999	
	Quantity	Value	Quantity	Value
Bahamas, The	101	284	21	90
Canada	8,640	1,990	9,290	2,090
Chile	2,940	1,100	63	64
Dominican Republic	631	263	566	232
Mexico	24,600	7,070	21,800	8,850
Peru	61	56	21	21
Venezuela	710	281	70	87
Other	1,740	3,210	1,750	2,870
Total	39,500	14,200	33,500	14,300

1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Exports contain mixed (used plus new) rails totaling 7,770 tons valued at $7,390,000 in 1999 and 6,670 tons valued at $6,290,000 in 1998. Export valuation is free-alongside-ship (f.a.s.) value.

Source: U.S. Census Bureau.

TABLE 16
U.S. IMPORTS FOR CONSUMPTION OF USED RAILS FOR REROLLING AND OTHER USES, BY COUNTRY 1/ 2/

(Thousand metric tons and thousand dollars)

Country	1998		1999	
	Quantity	Value	Quantity	Value
Canada	87,100	19,300	28,700	5,490
France	215	104	1	2
Germany	1	3	9,020	725
Japan	657	87	244	168
Poland	--	--	41,400	8,370
Russia	204,000	24,300	34,600	27,600
Ukraine	11,500	1,290	13,600	1,410
Other	4,880 r/	842 r/	103	71
Total	308,000	46,000	128,000	43,900

r/ Revised. -- Zero.
1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Import valuation is Customs value.

Source: U.S. Census Bureau.

TABLE 17
U.S. EXPORTS OF DIRECT-REDUCED IRON (DRI), BY COUNTRY 1/ 2/

Country	1998 Quantity (metric tons)	1998 Value (thousands)	1999 Quantity (metric tons)	1999 Value (thousands)
Australia	424	$45	--	--
Canada	21	3	41	$4
Chile	385	41	25	3
Colombia	--	--	--	--
Germany	38	4	2,160	183
Indonesia	1,310	118	--	--
Japan	--	--	653	69
Mexico	1,480	156	26	3
Paraguay	588	62	218	23
Other	472	58	147	17
Total	4,720	487	3,270	302

-- Zero.
1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Data are for steelmaking-grade DRI only.

Source: U.S. Census Bureau.

TABLE 18
U.S. IMPORTS FOR CONSUMPTION OF DIRECT-REDUCED IRON (DRI),
BY COUNTRY 1/ 2/

Country	1998 Quantity (metric tons)	1998 Value (thousands)	1999 Quantity (metric tons)	1999 Value (thousands)
Argentina	--	--	35300	$3,510
Australia	13,100	$1,780	--	--
Brazil	17,100	929	--	--
Canada	18,300	2,500	23	3
Japan	--	--	19,000	2,010
Mexico	41	6	--	--
Trinidad and Tobago	72,300	8,530	26,300	2,110
Venezuela	818,000	104000	870,000	78800
Total	939,000	118,000	950,000	86,500

-- Zero.
1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Data are for steelmaking-grade DRI only.

Source: U.S. Census Bureau.

TABLE 19
U.S. EXPORTS OF PIG IRON, BY COUNTRY 1/ 2/

Country	1998 Quantity (metric tons)	1998 Value (thousands)	1999 Quantity (metric tons)	1999 Value (thousands)
Australia	6	$3	2,430	$214
Brazil	--	--	--	--
Canada	22,100	3,930	10,100	1,680
China	102	28	--	--
Hong Kong	--	--	97	30
Japan	5	4	--	--
Korea, Republic of	171	15	--	--
Mexico	48,300	6,140	64,300	8,500
Saudi Arabia	178	17	--	--
Taiwan	9,850	867	397	35
United Kingdom	689	63	--	--
Venezuela	860	76	1,570	138
Other	4,910	526	4,110	461
Total	87,200	11,700	83,000	11,100

-- Zero.
1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Includes the following grades of pig iron: less than or equal to 0.5% phosphorus content, greater than 0.5% phosphorus content, and alloy grade. Export valuation is free-alongside-ship (f.a.s.) value.

Source: U.S. Census Bureau.

TABLE 20
U.S. IMPORTS FOR CONSUMPTION OF PIG IRON, BY COUNTRY 1/ 2/

Country	1998 Quantity (metric tons)	1998 Value (thousands)	1999 Quantity (metric tons)	1999 Value (thousands)
Argentina	125,000	$18,000	--	--
Australia	5,540	592	--	--
Brazil	2,290,000	327,000	2,540,000	$271,000
Canada	153,000	29,600	117,000	20,700
China	157,000	20,600	20,700	2,340
Estonia	119,000	14,600	--	--
India	79,000	11,100	--	--
Japan	475,000	59,600	112,000	11,000
Russia	776,000	104,000	688,000	63,100
South Africa	189,000	29,900	221,000	29,100
Switzerland	130,000	16,800	354,000	33,400
Ukraine	555,000	77,700	921,000	94,600
United Kingdom	10,000	1,600	--	--
Venezuela	86,400	10,500	--	--
Other	1	5	20,200	1,960
Total	5,150,000	722,000	4,990,000	527,000

-- Zero.
1/ Data are rounded to no more than three significant digits; may not add to totals shown.
2/ Includes the following grades of pig iron: less than or equal to 0.5% phosphorus content, greater than 0.5% phosphorus content, and alloy grade. Import valuation is Customs value.

Source: U.S. Census Bureau.