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 the 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 1998, more than 1,200 electric arc furnaces (EAF) operating worldwide melted ferrous scrap. In the United States, EAF steel made primarily from recycled ferrous scrap in about 41 minimills was 45% of total steel produced. 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.

Steel scrap recycling conserves raw materials, energy, and landfill space. The domestic steel industry recycles millions of tons per year of steel cans, automobiles, appliances, construction materials, and other steel products. In 1998, the industry's overall recycling rate was nearly 64% (Steel Recycling Institute, A few facts about steel—North America's #1 recycled material, Fact Sheet, accessed June 9, 1999, at URL http://www.recycle-steel.org/fact/index.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 electrical power needed by approximately one-fifth of the houses in the United States (about 18 million) for 1 year. 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 ton of steel recycled saves about 1.1 metric tons of iron ore, 0.6 ton of coal, and 54 kilograms of limestone.

In the United States, the primary source of obsolete steel is the automobile (Steel Recycling Institute, Recycling scrapped automobiles, accessed June 9, 1999, at URL http://www.recycle-steel.org/cars/autorec.html). About 16,000 car dismantlers and 3,000 scrap processors produced more than 11.8 million tons of shredded steel scrap for recycling in 1998. Of the ferrous metal used to make a typical 1998 U.S. family vehicle, 44% was recycled metal (Barrett, 1999a). More than 12 million cars recycled through 200 shredders during 1998 yielded enough steel to produce nearly 13 million new cars—a recycling rate of 92%, compared with 98% in 1997, which can be attributed to U.S. steel industry production cutbacks caused by record increases in foreign steel imports.

The recycling rate of obsolete appliance scrap had increased to 81% in 1997 from 43% in 1990, but decreased to 72% in 1998. During 1998, more than 1.7 million tons of steel were recovered from recycled appliances. 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 nearly 61% in 1997 from 15% in 1988, but decreased to 56% in 1998. Decreases in both instances can also be attributed to U.S. steel industry production cutbacks caused by record increases in foreign steel imports (Steel Recycling Institute, A few facts about steel—North America's #1 recycled material, Fact Sheet, accessed June 9, 1999, at URL http://www.recycle-steel.org/fact/main.html).

Minimills using EAF 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. During 1998, U.S. minimills and integrated mills purchased nearly 10 million tons of merchant-complementary materials, including DRI, hot-briquetted iron (HBI), compacted DRI or HBI, iron carbide, and pig iron (Reid, 1999). This amount was about 15% of the total metallics purchased for melting. Mills commonly used a feed mix having equal proportions of DRI, pig iron, and scrap. Although production in the U.S. steel industry was sharply reduced, 2.4% more DRI was made in 1998 compared with that of 1997.

The Asian financial crisis of 1997 continued unabated throughout 1998. The crisis was characterized by currency devaluations, stock market declines, plunging consumer demand, bankruptcies, and joblessness. Japan, whose economy accounts for about two-thirds of Asia's economy, fell into deep recession, from which it had not recovered during 1998. At first, only Asian countries were affected—China, Hong Kong, Indonesia, Japan, the Republic of Korea, Malaysia, Singapore, Taiwan, and Thailand. Real gross domestic product fell by about 2% in 1998, the first downturn for that region since 1974 (Carter, 1999). Eventually, the economies of Russia and South America were affected. With the exception of U.S. foreign trade, and especially the steel industry, the U.S. economy as a whole appeared to be strong enough at yearend 1998 to resist the spread of financial turmoil.

The Asian economic problems adversely affected steel markets throughout the world. The rapid decline in currency exchange rates in Asia led to declining Asian demand for steel and ferrous scrap, excess steel-producing capacity, unusually low steel prices, and major export activity from Asia to the industrialized nations of the world, including the United States, where low-priced steel was welcomed by consumers. U.S. steelmakers were forced to compete with imports priced below $220 per ton for rebar and as low as $176 per ton for mesh quality rod (Barrett, 1999b). Cold rolled steel was available to large-volume buyers at prices as low as $397 per metric ton. The price of an eight-carbon-product composite fell from a high of $478 per metric ton in May to $385 in November (Carter, 1999). 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 during the year to the lowest levels in decades.

Legislation and Government Programs

The steel industries in Canada, Mexico, and the United States, represented by the Steel Manufacturers Association (SMA), continued to lobby for reform of the Merchant Marine Act of 1920 (the Jones Act) by supporting passage of The Freedom to Transport Act of 1998 (S. 2390). The Jones Act requires that transportation of goods between U.S. deepwater ports be carried only by U.S.-owned, U.S.-flagged, U.S.-manned, and U.S.-built ships. S. 2390 would rescind only the U.S.-built requirement for shipments of forest products and bulk cargoes. According to the SMA, the Jones Act has adversely affected the U.S. economy, the environment, and the taxpaying public (Steel Manufacturers Association, 1998, Statement of Thomas A. Danjczek, President, Steel Manufacturers Association in support of S. 2390, The Freedom to Transport Act of 1998, before the Senate Commerce, Science and Transportation Committee, September 15, 1998, accessed June 9, 1999, at URL http://www.steelnet.org/new/jonesacttestimony.html). The SMA stated that more than 60 shipyards have gone out of business in the past 40 years, eliminating more than 200,000 U.S. jobs; longshore positions declined by 60% in the past 20 years; the number of shipboard jobs declined to about 4,800 today (1998) from 160,000 in 1945; and the number of U.S.-flagged cargo ships decreased to 351 from 3,644 in 1948. U.S. steel producers could lose iron and steel scrap feedstock to foreign steelmakers because of lower shipping costs to foreign ports, thereby increasing the need for electrical energy and increasing carbon dioxide emissions when steel needs to be made from nonscrap feedstock. One small coastal freighter sailing between Maine and Florida can carry the same cargo as 100 trucks, but emits two-thirds less pollution and saves $40,000 in road damage. The U.S. International Trade Commission estimated that U.S. consumers pay $10.4 billion per year in higher prices because of the Jones Act. Steelmakers represented by the SMA believed that coastal and Great Lakes water transportation should be allowed to develop freely, free of protectionism, to compete with railroads and trucks, and S. 2390 would be progress toward that goal.

Steelmakers and the ferrous scrap industry, among others, continued to lobby for 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 in contention was that the supplier of recycled material, typically a railroad shipping steel scrap, will be held liable for cleanup, because Superfund considers recycled material to be solid waste and, therefore, subject to Superfund liability. On April 29, the U.S. 4th Circuit Court of Appeals ruled that Superfund liability applies to those who dispose of waste at a contaminated site, not to those who sell secondary materials for recycling (New Steel, 1998c). Language that would exempt metals recyclers from Superfund liability was excluded from the fiscal 1999 funding bill signed into law near the end of the 105th Congress.

Environment

Steel mills receiving ferrous scrap have been exposed to radioactive materials without warning at an alarming rate (Kelly, 1997). Contaminated scrap was in the form of shielded radioactive sources, typically installed in measurement gauges used in manufacturing operations or in hospital equipment, and scrap from decommissioned nuclear power and U.S. Department of Energy facilities. When shielded by lead, these radioactive objects can pass through sensitive radiation detection devices used by EAF steelmakers. The U.S. Nuclear Regulatory Commission (NRC) estimated that 2 million sources containing radioactive material were in use, of which only 27,000 were specifically licensed (Zagone, 1998). The NRC reported that every year about 200 radioactive sources and devices containing radioactive materials have entered the scrap supply in an uncontrolled manner (Kelly, 1997). Since 1983, more than 2,400 detections of radioactive material have been reported; more than 300 were in the United States. During this period, 40 confirmed meltings of this material have taken place, 25 of which were in the United States. The economic effects of inadequate radioactive source control include delays in steelmaking operations and costs of detection systems, personnel training, disposal of discovered sources, and cleanup. Costs of accidental meltings averaged $10 million each. One minimill was reported to have spent as much as $23 million for decontamination, disposal, and shutdown (Kelly, 1997). In April, the NRC began to develop a new program that would require additional labeling of devices to improve identification of radioactivity so that they can be traced back to the responsible party in the event of loss of control. The NRC also began to implement an enforcement program that included a short amnesty program and increased civil penalties for general and specific licensees for lost sources.

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. In October, legislation (S. 2617) was introduced in the U.S. Congress that would provide companies who agree to reduce greenhouse gas emissions voluntarily with credit towards meeting possible future regulatory requirements. The steel industry has made significant progress in reducing energy consumption and gas emissions by investing in energy-efficient, low-emission EAF steel production.

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 of a link among increased mortality, hospital admissions, and respiratory illness and ambient particulate levels below the previous standard (U.S. Environmental Protection Agency, 1998). 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. The biological mechanism or mechanisms by which PM could cause health problems is uncertain. The SMA's response continues to be that the result of the new standard could be the elimination of thousands of high-paying, high-skilled manufacturing jobs in the steel and supporting industries and produce no quantifiable benefits to public health. Imports of steel products to satisfy domestic demand would come from countries having few or no environmental regulations comparable to those of the United States. According to the SMA, the result would be an increase in worldwide environmental degradation. The new standard will not be effective until a national PM monitoring network is established at the time of the next review of the NAAQS, scheduled for 2002.

Consumption

Domestic data for ferrous scrap were derived from voluntary monthly or annual surveys of U.S. scrap consuming operations by the U.S. Geological Survey. For manufacturers of pig iron and raw steel, about 61% of the known establishments responded to the surveys. Their responses represented about 68% of estimated total scrap consumption by this class of consumers. The remaining 32% 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, representing 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 45% of total estimated scrap consumption by all classes of scrap consumers.

In 1998, brokers, dealers, and other outside sources supplied domestic consumers with 53 million tons of all types of ferrous scrap at an estimated delivered value of more than $5.7 billion and exported 5.6 million tons (excluding used rails for rerolling and other uses and ships, boats, and other vessels for scrapping) valued at $805 million. (See tables 1 and 8.) In 1997, domestic consumers received 52 million tons (revised) at an estimated delivered value of about $6.8 billion; exports totaled 8.9 million tons valued at $1.35 billion. This represented a tonnage increase during 1998 of nearly 2% for received quantities and a tonnage decrease of about 37% for exported quantities. The total value of received and exported scrap grades decreased by about 20% from that of 1997.

Raw steel production was 98.6 million tons in 1998 compared with 98.5 million tons in 1997 (American Iron and Steel Institute, 1998, p. 75). The shares of raw steel produced by electric and basic oxygen furnaces were 45% and 55%, respectively, with EAF production increasing slightly during 1998. In 1998, continuous cast steel production represented 95% of total raw steel production as it had in 1997. Raw steel production capability was 114 million tons compared with 110 million tons in 1997.

Steel mills accounted for 83% of all scrap received from brokers, dealers, and other outside sources; iron foundries and miscellaneous users received nearly 15%; and steel foundries received 2%. (See table 2.) The apparent total domestic consumption of ferrous scrap comprised 53 million tons net receipts (total receipts minus shipments) and 20 million tons of home scrap. (See table 1.) Stocks of ferrous scrap at consumers' plants decreased by nearly 5.5%, to 5.2 million tons. (See table 1.) Total domestic consumption was 73 million tons, the same as in 1997. (See table 1.) The total market for U.S.-produced scrap (net receipts plus exports minus imports) was 55.5 million tons compared with 58.1 million tons in 1997. (See table 1.) Feedstock used in electric furnaces by all iron and steel product manufacturers comprised scrap, 91%; pig iron, 7.4%; and DRI, 1.6%. (See table 4.) Consumption of DRI was 5.2% greater than that of 1997.

Net shipments of all grades of steel mill products were 92.9 million tons, a decrease of 3.2% from the 96.0 million tons shipped in 1997 (American Iron and Steel Institute, 1998, p. 27). Imports of steel mill products increased to 37.7 million tons from 28.3 million tons in 1997. Exports of steel mill products decreased to 5.0 million tons from 5.8 million tons in 1997. The U.S. apparent supply of steel mill products increased to 118 million tons from 114 million tons in 1997. As a share of the U.S. market, imports of steel mill products increased to 35% in 1998 from 25% in 1997. Pig iron production decreased to 48.2 million tons from 49.6 million tons in 1997. As reported by the U.S. Bureau of the Census, iron castings shipments totaled an estimated 9.7 million tons per year (revised) during each of the years 1996 and 1997. Steel castings shipments (including investment castings) totaled 1.2 million tons in 1997, up slightly from 1.1 million tons in 1996.

Transportation

Railroads continued to be the main form of transportation of ferrous scrap in the U.S. despite competition from long-distance trucking firms and river barges (Novelli, 1998). Two major transporters of metal scrap, mostly ferrous scrap, were CSX Transportation, Inc. (CSXT), and Union Pacific Corp., shipping more than 100,000 and 81,000 carloads per year, respectively. Industrial Metal Processing Co. shipped about 156,000 tons per month of scrap. A major problem has been the chronic railcar shortage needed to satisfy the needs of scrap suppliers and steelmakers. Some in the steel industry attributed this problem to the merger of Union Pacific and Southern Pacific Rail Corp., and these observers were not optimistic about the acquisition in mid-1998 of Conrail Inc. by CSX Corp. and Norfolk Southern Corp. (New Steel, 1998b). To satisfy such concerns, CSXT, which had the largest fleet of gondola rail cars available to the industry, invested $52 million during the past 3 years in 1,200 new, higher-capacity (10% greater) gondolas to meet the demands of the new minimills—Gallatin Steel Co., Steel Dynamics, Inc., Nucor Corp. (Berkeley), Tuscaloosa Steel Corp., and Trico Steel Co. For many years, CSXT aggressively protected its market share in the scrap transportation industry by partnering with such companies as Steel Dynamics, Nucor, and AK Steel Corp. (New Steel, 1998a). Expenditures have reached $1.6 billion since 1994 and

$9 million in Ohio and Tennessee during the first quarter of 1998. Union Pacific added 1,500 gondolas to its fleet of 5,500 since 1994.

New minimills with electric furnaces needing raw materials were being located beyond historical steelmaking areas and along or near navigable rivers to take advantage of the well-developed barge system operating on the navigable waterway system of the central United States. Barge shipping is the most economical way of handling ferrous scrap and scrap substitutes (Zagone, 1999); rail shipping was as much as 3 times more expensive, and trucking can be as much as 10 times greater. Barges were also an integral part of the total shipping system of trains, trucks, and ocean vessels that serve the mills, giving mills flexibility in their transportation planning. Although slow, barges provided accurate and reliable service and carried loads that exceeded those carried by trucks and railcars. The largest barges may carry as much as 1,500 tons of scrap compared to 25 tons for trucks and 100 tons for railcars.

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 $108.30; the price ranged from a high of $135.89 in January to a low of $71.58 in December. (See 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 $104.07; the price had ranged from a high of $130.82 in January to a low of $69.22 in November.

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 decreased by 26%, to $592 per ton from $805 in 1997.

The average 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 $144 per ton compared with that of 1997. (See table 11.) The average value of total imports, about $131 per ton, was about 6% less than that of 1997. (See table 14.)

Foreign Trade

Foreign trade valuation continued to be reported on f.a.s. (free alongside ship) basis for exports and on Customs value basis for imports. In 1998, 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 $372 million and 2.2 million tons (Bureau of the Census, unpub. data, 1998). This represented a decrease of 60% in value and a decrease of 62% in quantity compared with the 1997 surplus of $923 million and 5.8 million tons.

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 51 countries (8 fewer than during the previous year) and totaled 4.53 million tons (a 41% decrease) valued at $514 million (a 47% decrease) for an average of $113 per metric ton (Bureau of the Census, unpub. data, 1998). The largest tonnages went to the Republic of Korea, 1.35 million; Canada, 1.07 million; Mexico, 694,000; Turkey, 451,000; and Taiwan, 242,000. These countries received 84% of the total quantity, valued at $400 million, which was 78% of the total value.

Total U.S. exports of stainless steel scrap went to 52 countries (14 more than during the previous year) and consisted of 299,000 tons (a 19% decrease) valued at $176 million (a 24% decrease) averaging $589 per metric ton (a 5% decrease) (Bureau of the Census, unpub. data, 1998). The largest tonnages went to Spain, 74,000; the Republic of Korea, 70,300; Taiwan, 25,500; and Italy, 19,200. These countries received 76% of the total quantity valued at $134 million, which was 63% of the total value.

U.S. exports of alloy steel scrap (excluding stainless steel) were shipped to 43 countries (2 fewer than the previous year) and consisted of 742,000 tons (a 23% decrease) valued at $117 million (a 19% decrease) for an average of $157 per metric ton (a 5% increase) (Bureau of the Census, unpub. data, 1998). The largest tonnages went to Canada, 365,000, and Mexico, 266,000. These countries received 85% of the total quantity valued at $84.7 million, which was 72% 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 northern Europe to the less developed countries of southern Europe and the Pacific Rim.

The United States continued to be the leading exporting country of iron and steel scrap in 1997, as reported by the International Iron and Steel Institute (1998, p. 257). Other major exporters of ferrous scrap were Canada, France, Germany, Japan, the Netherlands, and the United Kingdom. The four most significant importing nations were, in decreasing order of importance, the Republic of Korea, Spain, Italy, and Belgium-Luxembourg. China and Germany individually imported only about one-third of that imported by the Republic of Korea.

Outlook

The International Iron and Steel Institute (IISI) forecast declining world steel consumption during 1999 of about 2.7% from that of 1998 (Burgert, 1999). Apparent consumption in the United States will fall by about 7%. The IISI also forecast declining apparent consumption in Brazil of 3%; China, 6.2%; European Union, 4.3%; and Japan, 2.1%. Consumption will increase in Turkey by 7% and in the Republic of Korea by 12%. To the contrary, the Organization for Economic Cooperation and Development (OECD) forecast slight increases in apparent steel consumption in Europe, Japan, Mexico, and Brazil for 1999 (Steel Times International, 1999). The OECD also forecast a continuing average annual steel capacity growth of over 6% through 1999 in non-OECD countries, including those in the Middle East, Southeast Asia, Central Europe, Eastern Europe, and the former Soviet Union. In the United States, imports, exports, shipments, and prices are expected to decline during 1999 (Carter, 1999). As oversupply dominates the global market, the downward pressure on prices will continue and steel production and ferrous scrap demand throughout the world will decline during 1999 (Fish, 1999).

EAF will be the primary steel production method in the United States by 2000 and in the world by 2010 (Forster, 1999). Ferrous scrap will be available in sufficient quantities worldwide (Katrak and others, 1999). Prices of quality scrap will be controlled for several reasons—increasing quantities of scrap will be generated, particularly in developing countries; increasingly, merchant HBI will be available; on-site production of DRI will increase; and the ability to blend HBI and pig iron with scrap so that more low-quality scrap can be used will improve. North America increasingly will use more and export less of its ferrous scrap and Japan, Russia, and Western Europe are expected to increase their export of scrap. Any short-term scrap shortage that develops will be one of quality rather than quantity.

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[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)

		1994	1995	1996	1997	1998
Manufacturers of pig iron and raw steel and castings: 2/						
Ferrous scrap consumption		54,000	56,000	56,000	58,000	58,000
Pig iron consumption		50,000	51,000	50,000	51,000	49,000
Direct-reduced iron consumption		1,500	1,500	1,300	1,300	1,300
Net receipts of ferrous scrap 3/		40,000	42,000	41,000	43,000 r/	44,000
Home scrap production 4/		14,000	15,000	15,000	14,000	14,000
Ending stocks of ferrous scrap, December 31		3,600	3,700	4,800	4,900 r/	4,700
Manufacturers of steel castings: 5/						
Ferrous scrap consumption		2,000	2,000	2,000	1,800	2,000
Pig iron consumption		10	10	11	13	14
Net receipts of ferrous scrap 3/		1,400	1,300	1,300	1,200	1,300
Home scrap production 4/		660	680	640	660	710
Ending stocks of ferrous scrap, December 31		95	93	84 r/	77 r/	83
Iron foundries and miscellaneous users: 5/						
Ferrous scrap consumption		13,000	13,000	13,000	13,000	13,000
Pig iron consumption		1,000	1,100	1,100	1,200	1,200
Direct-reduced iron consumption		2	2	13	13	12
Net receipts of ferrous scrap 3/		8,300	8,300	8,300	8,200	7,900
Home scrap production 4/		5,100	4,900	4,900	5,200	5,100
Ending stocks of ferrous scrap, December 31		370	390	360	470	440
Totals, all manufacturing types:						
Ferrous scrap consumption		70,000	72,000	71,000	73,000	73,000
Pig iron consumption		51,000	52,000	52,000	52,000	50,000
Direct-reduced iron consumption		1,500	1,500	1,300	1,300	1,300
Net receipts of ferrous scrap 3/		50,000	51,000	50,000	52,000 r/	53,000
Home scrap production 4/		20,000	20,000	20,000	20,000	20,000
Ending stocks, December 31:						
Ferrous scrap at consumer plants		4,100	4,200	5,200	5,500	5,200
Pig iron at consumer and supplier plants		400	620	600	510	560
Direct-reduced iron at consumer plants		240	190	270	160	280
Exports: 6/						
Ferrous scrap (includes tinplate and terneplate) 7/		8,810	10,400	8,440	8,930	5,570
Value	thousands	$1,270,000	$1,700,000	$1,340,000	$1,350,000	$805,000
Pig iron (all grades)		56	54	58	86	87
Value	thousands	$6,780	$6,450	$8,320	$12,300	$11,700
Direct-reduced iron (steelmaking grade)		17	5	3	8	5
Value	thousands	$1,850	$490	$304	$852	$487
Imports for consumption: 6/						
Ferrous scrap (includes tinplate and terneplate) 7/		1,740	2,090	2,600	2,870	3,060
Value	thousands	$218,000	$284,000	$342,000	$384,000	$402,000
Pig iron (all grades)		2,500	2,360	2,660	3,150	5,150
Value	thousands	$344,000	$391,000	$411,000	$465,000	$722,000
Direct-reduced iron (steelmaking grade)		1,170	1,190	1,050	987	939
Value	thousands	$138,000	$145,000	$136,000	$127,000	$118,000

r/ Revised.

1/ Data are rounded to two significant digits, except trade data which are rounded to 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 resulting 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 1998, BY GRADE 1/

(Thousand metric tons)

	Receipts of scrap		Production of home scrap				
Grade	From brokers, dealers and other outside sources	From other own-company plants	Recirculating scrap from current operations	Obsolete scrap 2/	Consumption of both purchased and home scrap	Shipments of scrap	Ending stocks, December 31
Manufacturers of pig iron and raw steel and castings:							
Carbon steel:							
Low-phosphorus plate and punchings	400	--	1	--	390	19	21
Cut structural and plate	3,900	29	700	75	4,500	82	270
No. 1 heavy melting steel	6,100	340	3,900	17	10,000	200	670
No. 2 heavy melting steel	5,600	94	610	3	6,100	3	550
No. 1 and electric furnace bundles	5,500	390	1,400	(3/)	6,700	530	410
No. 2 and all other bundles	1,000	21	2	--	990	--	120
Electric furnace, 1 foot and under (not bundles)	--	12	170	--	130	44	(3/)
Railroad rails	200	--	42	--	220	(3/)	13
Turnings and borings	1,900	98	62	(3/)	2,100	(3/)	98
Slag scrap	670	150	1,400	--	2,000	240	210
Shredded or fragmentized	8,200	1,100	330	--	9,900	19	440
No. 1 busheling	4,400	100	150	--	4,600	85	250
Steel cans (post consumer)	230	11	87	--	350	--	73
All other carbon steel scrap	2,500	72	2,800	5	5,000	320	390
Stainless steel scrap	610	9	410	--	1,000	5	53
Alloy steel (except stainless)	280	10	620	--	860	10	130
Ingot mold and stool scrap	12	--	120	83	92	140	17
Machinery and cupola cast iron	54	--	4	--	55	1	3
Cast-iron borings	230	--	(3/)	--	230	(3/)	14
Motor blocks	W	--	--	--	W	--	W
Other iron scrap	370	55	380		830	150	350
Other mixed scrap	940	7	470	(3/)	1,400	56	610
Total	43,000	2,500	14,000	180	58,000	1,900	4,700
Manufacturers of steel castings:							
Carbon steel:							
Low-phosphorus plate and punchings	360	1	60	(3/)	420	(3/)	16
Cut structural and plate	190	--	11	(3/)	200	(3/)	11
No. 1 heavy melting steel	66	17	44	--	120	--	9
No. 2 heavy melting steel	19	--	13	--	30	--	3
No. 1 and electric furnace bundles	31	--	--	--	30	--	2
No. 2 and all other bundles	--	--	--	--	--	--	--
Electric furnace, 1 foot and under (not bundles)	6	5	4	--	15	--	4
Railroad rails	58	--	1	--	60	--	1
Turnings and borings	46	--	6	--	51	--	1
Slag scrap	--	--	4	--	4	--	(3/)
Shredded or fragmentized	92	--	--	--	92	--	2
No. 1 busheling	93	--	6	--	100	--	5
Steel cans (post consumer)	--	--	--	--	--	--	--
All other carbon steel scrap	120	--	370	2	490	(3/)	7
Stainless steel scrap	32		41	(3/)	71	2	7
Alloy steel (except stainless)	80	(3/)	60	--	140	(3/)	7
Ingot mold and stool scrap	10	--	--	(3/)	9		1
Machinery and cupola cast iron	--	--	(3/)	--	(3/)	--	(3/)
Cast-iron borings	--	--	1	--	1	--	(3/)
Motor blocks	1	--	--	--	1	--	(3/)
Other iron scrap	10	--	62	(3/)	71	1	2
Other mixed scrap	54	--	2	14	68	1	5
Total	1,300	23	690	17	2,000	4	83

See footnotes at end of table.

TABLE 2--Continued
U.S. CONSUMER RECEIPTS, PRODUCTION, CONSUMPTION, SHIPMENTS, AND STOCKS
OF IRON AND STEEL SCRAP IN 1998, BY GRADE 1/

(Thousand metric tons)

	Receipts of scrap		Production of home scrap				
Grade	From brokers, dealers and other outside sources	From other own-company plants	Recirculating scrap from current operations	Obsolete scrap 2/	Consumption of both purchased and home scrap	Shipments of scrap	Ending stocks, December 31
Iron foundries and miscellaneous users:							
Carbon steel:							
Low-phosphorus plate and punchings	940	5	150	(3/)	1,100	2	18
Cut structural and plate	1,300	54	100	(3/)	1,500	(3/)	130
No. 1 heavy melting steel	270	3	26	(3/)	290	2	10
No. 2 heavy melting steel	150	1	--	--	150	--	4
No. 1 and electric furnace bundles	97	140	32	--	260	--	12
No. 2 and all other bundles	150	--	1	--	150	1	5
Electric furnace, 1 foot and under (not bundles)	140	1	1	--	140	1	3
Railroad rails	150	--	9	(3/)	160	--	8
Turnings and borings	56	65	8	--	130	4	2
Slag scrap	58	--	3	--	64	3	4
Shredded or fragmentized	1,300	120	(3/)	--	1,400	--	52
No. 1 busheling	720	62	38	--	780	38	18
Steel cans (post consumer)	14	--	--	--	14	--	(3/)
All other carbon steel scrap	130	(3/)	10	--	140	(3/)	4
Stainless steel scrap	4	--	5	--	8	(3/)	1
Alloy steel (except stainless)	13	--	1	--	14	--	2
Ingot mold and stool scrap	61	--	2	--	62	(3/)	10
Machinery and cupola cast iron	810	(3/)	290	2	1,100	3	69
Cast-iron borings	280	82	31	1	390	4	7
Motor blocks	290	10	730	--	1,000	2	15
Other iron scrap	260	10	3,500	(3/)	3,800	8	60
Other mixed scrap	240	3	160	(3/)	410	(3/)	9
Total	7,500	550	5,100	3	13,000	69	440
Totals for all manufacturing types:							
Carbon steel:							
Low-phosphorus plate and punchings	1,700	6	210	(3/)	1,900	21	54
Cut structural and plate	5,400	84	810	75	6,200	82	400
No. 1 heavy melting steel	6,400	360	4,000	17	11,000	200	690
No. 2 heavy melting steel	5,800	95	620	3	6,300	3	560
No. 1 and electric furnace bundles	5,600	530	1,400	(3/)	7,000	530	420
No. 2 and all other bundles	1,200	21	3	--	1,100	1	120
Electric furnace, 1 foot and under (not bundles)	150	17	170	--	290	45	7
Railroad rails	400	--	52	(3/)	440	(3/)	22
Turnings and borings	2,000	160	75	(3/)	2,300	4	100
Slag scrap	730	150	1,400	--	2,100	250	210
Shredded or fragmentized	9,600	1,200	330	--	11,000	19	500
No. 1 busheling	5,200	160	200	--	5,400	120	270
Steel cans (post consumer)	250	11	87	--	360	--	73
All other carbon steel scrap	2,800	72	3,200	8	5,600	320	410
Stainless steel scrap	650	9	460	(3/)	1,100	6	61
Alloy steel (except stainless)	370	10	680	--	1,000	11	140
Ingot mold and stool scrap	84	--	120	83	160	140	28
Machinery and cupola cast iron	870	(3/)	300	2	1,200	4	73
Cast-iron borings	520	82	33	1	630	4	21
Motor blocks	300	10	730	--	1,000	2	15
Other iron scrap	630	64	4,000	(3/)	4,700	150	410
Other mixed scrap	1,200	10	630	14	1,800	57	620
Total	52,000	3,100	20,000	200	73,000	2,000	5,200

W/ Withheld to avoid disclosing company proprietary data; included with "Other iron scrap."
1/ Data are rounded to 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 IN 1998 1/

(Thousand metric tons)

	Receipts	Production	Consumption	Shipments	Stocks, December 31
Manufacturers of pig iron, raw steel, castings:					
Pig iron	8,600 2/	45,000	49,000	3,300	500
Direct-reduced iron	1,400 3/	W	1,300	--	280
Manufacturers of steel castings:					
Pig iron	14	(4/)	14	W	1
Direct-reduced iron	--	--	--	--	--
Iron foundries and miscellaneous users:					
Pig iron	1,200	(4/)	1,200	27	65
Direct-reduced iron	16	--	W	W	3
Totals for all manufacturing types:					
Pig iron	9,900	45,000	50,000	3,300	560
Direct-reduced iron	1,400	W	1,300	W	280

W Withheld to avoid disclosing company proprietary data.
1/ Data are rounded to two significant digits; may not add to totals shown.
2/ Includes 1,700 tons purchased by electric furnace steel producers.
3/ Includes 360 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 1998,
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	1,500	--	290	--	--	--	--	--	--	1,500	--	290
Basic oxygen process	14,000	46,000	110	--	--	--	--	--	--	14,000	46,000	110
Electric furnace	42,000	3,400	920	1,900	13	--	5,700	640	1	49,000	4,000	930
Cupola furnace	--	--	--	100	1	--	7,400	590	11	7,500	590	11
Other (including air furnaces)	W	--	--	3	--	--	W	W	--	23	W	--
Direct castings 2/	--	36	--	--	--	--	--	--	--	--	36	--
Total	58,000	49,000	1,300	2,000	14	--	13,000	1,200	12	73,000	50,000	1,300

W Withheld to avoid disclosing company proprietary data; included with "Electric furnace."
1/ Data are rounded to 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 1998, BY REGION AND STATE 1/ 2/

(Thousand metric tons)

Region and State	Receipts of scrap: From brokers, dealers, and other outside sources	Receipts of scrap: From other own company plants	Production of home scrap: Recirculating scrap resulting from current operations	Production of home scrap: Obsolete scrap 3/	Shipments of scrap 4/	New supply available for consumption
New England and Middle Atlantic:						
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	50	--	28	(5/)	(5/)	78
New Jersey and New York	1,800	--	95	--	3	1,900
Pennsylvania	4,700	110	2,600	83	76	7,400
Total	6,500	110	2,700	84	79	9,300
North Central:						
Illinois	4,200	96	1,300	4	74	5,500
Indiana	4,000	180	4,700	39	590	8,300
Iowa, Nebraska, South Dakota	1,400	3	200	--	(5/)	1,600
Kansas and Missouri	1,000	10	160	(5/)	--	1,200
Michigan	3,200	420	2,000	(5/)	130	5,400
Minnesota	470	170	120	--	(6/)	750
Ohio	7,400	920	2,700	23	800	10,000
Wisconsin	1,200	--	1,100	(5/)	2	2,300
Total	23,000	1,800	12,000	66	1,600	35,000
South Atlantic:						
Delaware and Maryland	670	1	450	--	(6/)	1,100
Florida and Georgia	1,000	--	120	--	(5/)	1,100
North Carolina and South Carolina	2,000	(6/)	220	--	(6/)	2,200
Virginia and West Virginia	1,400	(6/)	480	(6/)	(6/)	2,000
Total	5,100	130	1,300	(6/)	110	6,400
South Central:						
Alabama and Mississippi	3,000	(6/)	800	(6/)	57	3,800
Arkansas, Louisiana, Oklahoma	3,900	(6/)	300	(6/)	(6/)	4,300
Kentucky and Tennessee	2,500	13	600	--	(6/)	3,000
Texas	3,500	890	690	7	19	5,100
Total	13,000	1,000	2,400	25	120	16,000
Mountain and Pacific:						
Arizona, Colorado, Idaho, Montana, Utah	2,200	(5/)	590	(6/)	(6/)	2,700
California, Oregon, Washington	2,200	W	320	1	(6/)	2,500
Total	4,400	W	910	(6/)	49	5,300
Grand total	52,000	3,000	19,000	200	2,000	73,000

W Withheld to avoid disclosing company proprietary data.

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 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 1998, 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 miscel-laneous 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	1,600	24	20	(4/)	410	17	2,000	41
Pennsylvania	6,700	2,800	210	4	640	87	7,600	2,900
Total	8,300	2,800	230	4	1,000	100	9,600	3,000
North Central:								
Illinois	4,800	2,800	130	2	650	37	5,500	2,800
Indiana	7,300	17,000	83	1	1,300	170	8,600	17,000
Iowa, Kansas, Minnesota, Missouri, Nebraska, South Dakota, Wisconsin	2,400	4	490	2	2,600	370	5,500	380
Michigan	2,800	4,900	37	(4/)	2,500	140	5,300	5,000
Ohio	8,500	10,000	380	2	1,200	140	10,000	11,000
Total	26,000	35,000	1,100	8	8,300	860	35,000	36,000
South Atlantic:								
Delaware, Maryland, Virginia, West Virginia	2,500	W	W	W	470	21	3,000	4,600
Florida, Georgia, North Carolina, South Carolina	2,900	W	W	W	500	45	3,400	110
Total	5,400	4,700	5	W	970	65	6,400	4,700
South Central:								
Alabama, Kentucky, Mississippi, Tennessee	4,700	W	350	W	1,800	W	6,800	4,600
Arkansas, Louisiana, Oklahoma	4,400	W	27	W	130	W	4,500	600
Texas	4,500	110	96	W	510	42	5,100	150
Total	14,000	5,200	470	W	2,400	180	16,000	5,400
Mountain and Pacific:								
Arizona, Colorado, Idaho, Montana, Utah	2,600	W	21	(4/)	130	W	2,800	1,700
California, Oregon, Washington	2,200	W	140	(4/)	240	W	2,600	77
Total	4,800	1,800	160	(4/)	370	13	5,400	1,800
Grand total	58,000	49,000	2,000	14	13,000	1,200	73,000	50,000

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 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, 1998,
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	73	2	1	2	W	78	1
Pennsylvania	330	35	21	28	11	430	15
Total	410	37	22	31	12	510	17
North Central:							
Illinois	350	(5/)	W	11	4	360	16
Indiana	510	5	W	110	13	640	210
Iowa, Kansas, Missouri, Nebraska, South Dakota	110	(5/)	1	16	W	130	5
Michigan	170	(5/)	6	17	50	240	15
Minnesota and Wisconsin	45	3	(5/)	10	2	61	18
Ohio	540	12	83	38	W	680	48
Total	1,700	20	93	200	69	2,100	310
South Atlantic:							
Delaware, Maryland, Virginia, West Virginia	180	(5/)	W	12	1	200	59
Florida, Georgia, North Carolina, South Carolina	130	(5/)	W	22	4	150	23
Total	310	(5/)	3	34	4	350	81
South Central:							
Alabama, Kentucky, Mississippi, Tennessee	520	W	W	260	W	1,300	5
Arkansas, Louisiana, Oklahoma	280	W	W	2	W	280	85
Texas	330	W	W	8	W	350	35
Total	1,100	2	16	270	490	1,900	120
Mountain and Pacific:							
Arizona, Colorado, Idaho, Montana, Utah	210	(5/)	W	2	--	210	W
California, Oregon, Washington	67	1	W	8	46	120	W
Total	280	1	3	10	46	340	27
Grand total	3,800	61	140	550	620	5,200	560

W Withheld to avoid disclosing company proprietary data; included in "Total" or "Grand total."
1/ Data are rounded to 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
1998:				
January	142.01	127.38	138.28	135.89
February	138.17	119.09	132.87	130.04
March	133.36	114.17	122.53	123.35
April	131.39	112.20	122.53	122.04
May	133.16	110.23	124.31	122.56
June	133.36	107.42	121.69	120.82
July	129.42	105.31	115.64	116.80
August	118.97	94.53	105.63	106.38
September	106.09	87.59	95.47	96.38
October	84.29	75.78	83.00	81.02
November	77.47	69.67	70.94	72.69
December	75.47	69.88	69.39	71.58
Annual average:				
1998	116.93	99.44	108.52	108.30
1997	137.31	122.61	131.50	130.45

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	1997		1998	
	Quantity	Value	Quantity	Value
Belgium	3	1,930	5	1,890
Canada	1,490	193,000	1,470	165,000
China	234	46,500	216	57,500
Colombia	17	1,630	16	1,620
Germany	2	698	10	3,690
Greece	(3/)	22	--	--
Hong Kong	93	22,800	62	13,900
India	111	17,400	19	5,390
Indonesia	105	12,700	3	767
Italy	9	3,140	26	13,400
Japan	101	20,700	26	12,900
Korea, Republic of	3,190	484,000	1,420	183,000
Malaysia	313	38,400	138	15,300
Mexico	1,760	230,000	961	123,000
Netherlands	5	2,720	13	4,130
Pakistan	2	466	2	952
Peru	(3/)	31	1	231
Philippines	58	9,410	60	10,400
Singapore	--	--	1	392
South Africa	17	10,800	12	10,500
Spain	60	44,400	75	44,100
Sweden	4	2,760	14	3,760
Taiwan	576	95,200	270	44,600
Thailand	124	17,800	109	13,200
Turkey	555	68,800	452	50,300
United Kingdom	8	4,890	23	4,550
Venezuela	54	5,540	132	14,300
Other	42	9,970	26	6,800
Total	8,930	1,350,000	5,570	805,000

1/ Data are rounded to 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 71 countries in 1997 and 74 countries in 1998.
3/ Less than 1/2 unit.

Source: Bureau of the Census.

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

(Thousand metric tons and thousand dollars)

Customs district	1997 Quantity	1997 Value	1998 Quantity	1998 Value
Boston, MA	633	77,400	452	46,800
Buffalo, NY	177	41,900	133	29,100
Chicago, IL	(3/)	16	2	149
Cleveland, OH	(3/)	26	(3/)	8
Columbia - Snake	118	19,900	46	8,290
Detroit, MI	303	47,800	301	37,500
Honolulu, HI	124	17,200	133	14,400
Houston-Galveston, TX	87	43,800	71	30,600
Laredo, TX	914	119,000	345	46,300
Los Angeles, CA	1,320	215,000	772	118,000
Miami, FL	49	7,670	14	2,520
New Orleans, LA	74	56,900	64	38,300
New York, NY	1,320	199,000	635	108,000
Norfolk, VA	123	15,200	190	21,500
Pembina, ND	332	33,900	271	26,400
Philadelphia, PA	321	37,300	98	10,800
Portland, ME	61	7,510	16	1,810
Providence, RI	370	44,800	50	5,290
San Francisco, CA	945	153,000	718	101,000
Seattle, WA	387	60,700	232	42,000
Tampa, FL	280	36,300	21	1,510
Other	1,000	113,000	1,000	114,000
Total	8,930	1,350,000	5,570	805,000

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 three significant digits; may not add to totals shown.
3/ Less than 1/2 unit.

Source: Bureau of the Census.

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

(Thousand metric tons and thousand dollars)

Grade	1997 Quantity	1997 Value	1998 Quantity	1998 Value
No. 1 heavy melting scrap	1,820	230,000	1,130	117,000
No. 2 heavy melting scrap	448	52,200	222	26,100
No. 1 bundles	91	10,700	20	2,350
No. 2 bundles	142	14,200	31	2,970
Shredded steel scrap	2,450	327,000	1,370	152,000
Borings, shovelings and turnings	291	26,600	233	17,100
Cut plate and structural	759	101,000	131	15,700
Tinned iron or steel	79	21,600	109	19,800
Remelting scrap ingots	2	933	9	1,870
Stainless steel scrap	370	231,000	298	176,000
Other alloy steel scrap	962	144,000	737	116,000
Other steel scrap 3/	692	92,500	690	91,000
Iron scrap	823	94,200	580	67,900
Total	8,930	1,350,000	5,570	805,000
Ships, boats, other vessels for scrapping	38	4,580	3	925
Used rails for rerolling and other uses 4/	43	17,200	39	14,200
Total exports	9,010	1,370,000	5,610	820,000

1/ Data are rounded to 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: Bureau of the Census.

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

(Thousand metric tons and thousand dollars)

Country	1997		1998	
	Quantity	Value	Quantity	Value
Bahamas, The	(3/)	4	(3/)	2
Belgium	33	4,100	(3/)	46
Brazil	16	1,180	38	3,770
Canada	2,070	269,000	2,080	258,000
China	2	1,720	2	1,390
Colombia	--	--	(3/)	3
Costa Rica	(3/)	85	(3/)	6
Dominican Republic	10	1,030	18	1,650
France	(3/)	146	5	792
Germany	1	1,650	6	1,100
Israel	--	--	1	84
Jamaica	4	339	10	812
Japan	50	6,980	30	4,790
Korea, Republic of	--	--	(3/)	198
Mexico	171	31,300	75	27,600
Netherlands	35	4,610	237	27,900
Panama	3	533	(3/)	243
Peru	(3/)	30	--	--
Poland	23	4,390	--	--
Russia	(3/)	252	41	3,850
Singapore	--	--	(3/)	245
South Africa	--	--	5	546
Switzerland	2	67	(3/)	7
Trinidad and Tobago	(3/)	11	(3/)	6
United Kingdom	336	47,600	371	52,200
Venezuela	68	4,580	11	1,670
Other	44	4,310	135	15,300
Total	2,870	384,000	3,060	402,000

1/ Data are rounded to 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 57 countries in 1997 and from 51 countries in 1998.
3/ Less than 1/2 unit.

Source: Bureau of the Census.

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

(Thousand metric tons and thousand dollars)

	1997		1998	
Customs district	Quantity	Value	Quantity	Value
Baltimore, MD	33	2,210	19	1,640
Buffalo, NY	394	61,200	334	49,500
Charleston, SC	12	1,450	54	6,330
Chicago, IL	103	9,690	47	8,140
Cleveland, OH	90	9,300	52	5,880
Detroit, MI	1,100	145,000	1,210	150,000
El Paso, TX	44	5,470	24	4,910
Laredo, TX	106	20,400	40	14,700
New Orleans, LA	480	65,000	780	99,200
New York, NY	19	2,040	1	271
Ogdensburg, NY	20	4,970	24	4,710
Pembina, ND	23	4,950	28	4,260
San Diego, CA	13	4,900	13	7,360
Seattle, WA	394	40,500	347	33,300
Other	32	7,130	90	11,900
Total	2,870	384,000	3,060	402,000

1/ Data are rounded to 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: Bureau of the Census.

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

(Thousand metric tons and thousand dollars)

	1997		1998	
Class	Quantity	Value	Quantity	Value
No. 1 heavy melting scrap	122	15,100	157	20,000
No. 2 heavy melting scrap	19	2,100	30	2,360
No. 1 bundles	270	33,600	311	34,600
No. 2 bundles	42	5,640	5	603
Shredded steel scrap	325	44,200	535	65,900
Borings, shovelings and turnings	127	13,300	163	19,100
Cut plate and structural	68	6,670	40	5,100
Tinned iron or steel	34	5,120	72	6,380
Remelting scrap ingots	53	5,270	15	3,650
Stainless steel scrap	64	33,700	57	21,600
Other alloy steel scrap	373	49,600	284	43,200
Other steel scrap 3/	1,150	142,000	1,210	158,000
Iron scrap	216	27,700	180	21,400
Total	2,870	384,000	3,060	402,000
Ships, boats, and other vessels for scrapping	(4/)	43	--	--
Used rails for rerolling and other uses 5/	328	63,000	308	46,000
Total imports	3,190	447,000	3,370	448,000

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Import valuation is Customs value.
3/ Includes tinplate and terneplate.
4/ Less than 1/2 unit.
5/ Includes mixed (used plus new) rails. See table 16 for details.

Source: Bureau of the Census.

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

(Thousand metric tons and thousand dollars)

Country	1997 Quantity	1997 Value	1998 Quantity	1998 Value
Bahamas, The	850	$283	101	$284
Canada	8,026	2,343	8,636	1,992
Chile	79	125	2,943	1,096
Dominican Republic	21 r/	43 r/	631	263
Mexico	30,252	9,880	24,642	7,069
Peru	5	26	61	56
Venezuela	1,232	1,099	710	281
Other	2,707 r/	3,378 r/	1,736	3,206
Total	43,173	17,176	39,459	14,248

r/ Revised.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Exports contain mixed (used plus new) rails totaling 8,890 tons valued at $8,380,000 in 1997 and 6,670 tons valued at $6,290,000 in 1998. Export valuation is free-alongside-ship (f.a.s.) value.

Source: Bureau of the Census.

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	1997 Quantity	1997 Value	1998 Quantity	1998 Value
Canada	131,484	$34,772	87,087	$19,284
Germany	722	332	1	3
Japan	35	31	657	87
Liberia	6,351	582	--	--
Poland	15,020	2,006	--	--
Russia	164,832	24,203	203,805	24,336
Ukraine	9,499	997	11,547	1,293
Other	18	48	5,094	946
Total	327,960	62,971	308,191	45,950

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Import valuation is Customs value.

Source: Bureau of the Census.

TABLE 17

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

Country	1997 Quantity (metric tons)	1997 Value (thousands)	1998 Quantity (metric tons)	1998 Value (thousands)
Argentina	34	$4	--	--
Australia	1,310	$138	424	$45
Canada	--	--	21	3
Chile	--	--	385	41
Colombia	40	4	--	--
Germany	252	29	38	4
Indonesia	1,150	105	1,310	118
Japan	36	4	--	--
Korea, Republic of	1,230	130	--	--
Mexico	187	20	1,480	156
Paraguay	2,440	259	588	62
Other	1,410	159	472	58
Total	8,100	852	4,720	487

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

2/ Data are for steelmaking-grade DRI only.

Source: Bureau of the Census.

TABLE 18

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

Country	1997 Quantity (metric tons)	1997 Value (thousands)	1998 Quantity (metric tons)	1998 Value (thousands)
Australia	--	--	13,100	$1,780
South Africa	--	--	17,100	929
Canada	331	$41	18,300	2,500
Mexico	--	--	41	6
South Africa	11,400	1,300	--	--
Trinidad and Tobago	42,400	$5,860	72,300	8,530
Venezuela	933,000	120000	818,000	104000
Total	987,000	127,000	939,000	118,000

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

2/ Data are for steelmaking-grade DRI only.

Source: Bureau of the Census.

TABLE 19

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

Country	1997 Quantity (metric tons)	1997 Value (thousands)	1998 Quantity (metric tons)	1998 Value (thousands)
Australia	12	$3	6	$3
Brazil	251	22	--	--
Canada	26,700	5,090	22,100	3,930
China	2,230	230	102	28
Hong Kong	1,150	102	--	--
Japan	1,280	113	5	4
Korea, Republic of	154	14	171	15
Mexico	30,900	4,200	48,300	6,140
Saudi Arabia	1,070	94 r/	178	17
Taiwan	19,100	2,100	9,850	867
United Kingdom	30	3	689	63
Venezuela	396	86	860	76
Other	2,740 r/	281 r/	4,910	526
Total	85,900	12,300	87,200	11,700

r/ Revised.

1/ Data are rounded to 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: Bureau of the Census.

TABLE 20

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

Country	1997 Quantity (metric tons)	1997 Value (thousands)	1998 Quantity (metric tons)	1998 Value (thousands)
Argentina	61,800	$8,790	125,000	$18,000
Australia	--	--	5,540	592
Brazil	1,670,000	246,000	2,290,000	327,000
Canada	117,000	26,700	153,000	29,600
China	60,100	8,610	157,000	20,600
Estonia	70,200	10,400	119,000	14,600
India	25,300	3,620	79,000	11,100
Japan	--	--	475,000	59,600
Poland	14,700	2,340	--	--
Russia	576,000	78,900	776,000	104,000
South Africa	106,000	17,400	189,000	29,900
Switzerland	114,000	16,000	130,000	16,800
Ukraine	231,000	32,800	555,000	77,700
United Kingdom	--	--	10,000	1,600
Venezuela	105,000	12,800	86,400	10,500
Other	5,140 r/	902 r/	1	5
Total	3,150,000	465,000	5,150,000	722,000

r/ Revised.

1/ Data are rounded to 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: Bureau of the Census.