USGS
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2005 Minerals Yearbook

IRON AND STEEL

U.S. Department of the Interior
U.S. Geological Survey

February 2007

IRON AND STEEL

By Michael D. Fenton

Domestic survey data and tables were prepared by Steven H. Diamond, statistical assistant, and world production tables were prepared by Linder Roberts (pig iron) and Glenn J. Wallace (steel), international data coordinators.

The gradual recovery in the global economy, beginning in late 2003, continued through 2004, but showed signs of declining slightly in 2005, according to the World Bank (World Bank, The, 2005§[1]). The World Bank reported that the world's economy had an estimated gross domestic product (GDP) increase of 3.8% for 2004, and forecast a reduction to be about 3.2% for 2005. The United States continued to be the world's leading economy, having an estimated GDP of about $12.0 trillion in 2005 (U.S. Office of Management and Budget, 2005§). The U.S. GDP increased during 2005, according to the World Bank, the Bureau of Economic Analysis, and the Organisation for Economic Co-operation and Development (OECD), at a rate of 3.6%, 3.5%, and 3.2%, respectively (Newratings, 2005§; World Bank, The, 2005§; Bureau of Economic Analysis, 2006§). The International Monetary Fund (IMF) forecast the U.S. GDP growth of 3.5% for 2005 (Newratings, 2005§).

U.S. apparent steel consumption, an indicator of economic growth, decreased to 109 million metric tons (Mt) in 2005 from 117 Mt in 2004.

Mittal Steel Co., the largest steel company in the world, valued at $17.8 billion with a capacity of 58 million metric tons per year (Mt/yr) and projected annual revenue of $32 billion, made a surprise $23 billion bid for its closest rival, Arcelor SA of Luxembourg, on January 27, 2006. If this takeover succeeds, Mittal would control an estimated 11% of the world's annual crude-steel output and produce more than 91 Mt/yr. Mittal's North American steelmaking capacity comprises 21 mills, 17 of which are in the United States. Mittal would be in a strong position to influence steel and raw material prices. Mittal is seen by many industry experts as signifying the future of the world steel industry, which would consist of international consolidations that result in several very large, high-capacity companies offering a wide range of products, having global buying power, and raw materials security.

Company consolidation activity was high during 2005, as companies sought to reinvest their gains from the prior year's steel sales. Major deals included: Mittal Steel Co.'s acquisition of International Steel Group; Nucor Corp.'s purchase of Fort Howard Steel Co. and Marion Steel Co.; Steel Dynamics, Inc.'s plan to purchase Roanoke Electric Steel Corp.; the purchase of Republic Engineered Products Inc. by Mexico's Grupo Simec SA de CV; the purchase of Copperweld Holding Co. by Dofasco Inc.; and ThyssenKrupp AG's friendly takeover offer for Dofasco. The steel industry generates 1.2 million jobs and contributes $350 billion to the U.S. economy (American Iron and Steel Institute, 2006§). Steel productivity has more than tripled during the past 25 years.

[1]References that include a section mark (§) are found in the Internet References Cited section.

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

Environment

The U.S. Environmental Protection Agency proposed in 2003 amendments to national emissions standards for hazardous air pollutants (NESHAP) for integrated iron and steel manufacturing (American Metal Market, 2005). The NESHAP established limitations for emissions sources in each new sinter plant, blast furnace, and basic oxygen processing shop. Later, the final standards were overturned as a result of a challenge in a lawsuit by five U.S. integrated steel producers and the AISI.

During the past decade, U.S. steelmakers have reduced the energy required to produce one ton of steel by 28%, and plant emissions have been reduced below greenhouse gas emission limits set by the Kyoto Protocol, an agreement made under the United Nations Framework Convention on Climate Change (American Iron and Steel Institute, 2006§).

Production

Raw steel production in the United States decreased during 2005 by 6.4% (American Iron and Steel Institute, 2005, p. 76). Production of raw steel in the United States decreased to 94.9 Mt in 2005 from 99.7 Mt in 2004 (table 1). The AISI estimated raw steel production capability to be 108 Mt, up from 105 Mt in 2004. Production represented 87.5% of estimated capacity compared with 94.6% in 2004.

Integrated steel producers smelted iron ores to liquid iron in blast furnaces and used basic oxygen furnaces to refine this iron with some scrap to produce raw liquid steel. The basic oxygen process was used to make 42.7 Mt of steel in the United States (American Iron and Steel Institute, 2005, p. 72). The use of this process declined to 45.0% of total steel production in 2005 from 47.9% in 2004. The integrated steel industry in the United States consisted of 8 companies operating ironmaking and steelmaking facilities at 18 locations (Association for Iron & Steel Technology, 2005). Two companies operated combined oxygen and electric arc furnace (EAF) facilities.

Minimills and specialty mills are nonintegrated steel producers that use EAF to melt low-cost raw materials (usually scrap). They also employ continuous casting machines and

hot-rolling mills that are often closely coupled to the casting operation. Specialty mills include producers of stainless, alloy-electrical, and tool steel; high-temperature alloys; forged ingots; and other low-volume steel products. In the United States, 51 companies operated 88 EAF plant facilities. These U.S. mills used the EAF steelmaking process to produce 52.1 Mt of steel, about the same as in 2004, and accounted for 55.0% of total steelmaking (American Iron and Steel Institute, 2005, p. 72).

In Canada, three integrated steel companies operated four oxygen steelmaking facilities and one combined oxygen and EAF facility, while seven companies operated nine EAF facilities. In Mexico, two integrated steel companies operated two oxygen steelmaking facilities and 6 companies operated eight EAF facilities.

Raw liquid steel is mostly cast into semifinished products in continuous casting machines. Only 3.2% of U.S. production was cast in ingot form and subsequently rolled into semifinished forms; this represented about the same as that of 2004. Continuous casting production was 91.8 Mt, or 96.8% of total steel production, compared with 96.8 Mt, or 96.1%, in 2004 (American Iron and Steel Institute, 2005, p. 73).

Consumption

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

The U.S. apparent consumption of steel mill products was 109 Mt, a 7% decrease from that in 2004. Shipments of steel mill products by U.S. companies decreased by 6% to 95.2 Mt compared with those of 2004 (American Iron and Steel Institute, 2005, p. 25). Export shipments by AISI reporting companies increased to 8.5 Mt from 7.2 Mt in 2004 (American Iron and Steel Institute, 2005, p. 38). Shipments to domestic customers decreased by 5.8% during 2005 (American Iron and Steel Institute, 2005, p. 29). Shipments of construction and contractors' products, the leading single end-use market, was about the same as in 2004. Automotive product shipments increased by 4.5% in 2005. Lumbering, mining, oil and gas, and quarrying industries shipments increased by nearly 20%. Shipments of industrial and agricultural machinery, equipment, and tools decreased by 8%. Appliance shipments; containers, packaging, and shipping material shipments; and steel service center shipments increased by 17%.

Prices

The U.S. Department of Labor, Bureau of Labor Statistics, producer price index for steel mill products was up by 18% to 159.7 for 2005 from 147.2 in 2004 (1982 base=100) (table 1) (U.S. Department of Labor, Bureau of Labor Statistics, 2006§).

Foreign Trade

Exports of steel mill products increased to 8.5 Mt from 7.2 Mt in 2004 (American Iron and Steel Institute, 2005, p. 40). Canada received the largest amount of U.S. exported steel, 5.3 Mt, 14% more than in 2004. Mexico was again in second place, receiving 1.7 Mt, up from 1.5 Mt in 2004 (table 4). Imports of steel mill products decreased by 11% to 29 Mt from 33 Mt in 2004. Brazil, Canada, China, the European Union (EU), Germany, Japan, the Republic of Korea, Mexico, Russia, and Turkey were major sources of steel mill product imports.

The U.S. International Trade Commission voted to keep steel tariffs on some foreign imports for 5 years to avoid harm to the U.S. steel industry, which has been recovering from several bankruptcies since the late 1990s (Wall Street Journal, 2005). The U.S. Department of Commerce had determined that lifting tariffs, established in 1999, would result in more dumped imports of hot-rolled steel from Brazil, Japan, and Russia. The steel industry, which earned its first profit in 2004 after many years, said the tariffs would allow them to maintain financial viability, implement technological improvements, and fund retiree benefits.

On November 18, the U.S. House of Representatives voted to repeal the 5-year-old Continued Dumping & Subsidy Offset Act (CDSOA), also known as the Byrd Amendment, which granted to companies the financial penalties gained from trade dumping cases. Earlier, the World Trade Organization (WTO) ruled several times against the legality of this Act and allowed certain tariffs of as much as $134 million to be assessed against the United States because of its refusal to repeal or modify the CDSOA. Also, the U.S. Government Accountability Office found that about one-half of the $1 billion in penalties collected went to five companies, with about two-thirds of that amount going to three industries, of which steel was one. In December, the Senate agreed on a motion to instruct the conferees to insist that the conference report on the Deficit Reduction Omnibus Reconciliation Act of 2005 (S. 1932) exclude any provision to repeal the CDSOA (Levine, 2005§).

On December 8, the AISI, Canadian Steel Producers Association, Mexican Steel Producers Association, Specialty Steel Industry of North America, and Steel Manufacturers Association made a joint statement about how China's economic strategy constituted the greatest economic and security challenge facing North America (American Iron and Steel Institute, 2005§). These associations, located in North American Free Trade Agreement countries, agree, in part, on the following allegations: (1) Existing trade laws remain underutilized, are inadequately enforced and will probably be strengthened in the context of addressing unfair and disruptive imports of manufactured goods from China; (2) China continues to derive major artificial competitive advantages from its highly undervalued currency, extensive government subsidies, failure to protect intellectual property rights, denial of fundamental worker rights, and lack of environmental controls; (3) China's currency, subsidies, and other unfair trade practices are causing significant harm to competitive U.S. and North American manufacturers; (4) China remains a nonmarket economy, and continues to violate many of its WTO commitments; (5) China's

economic strategy focuses on the strategic accumulation of productive capacity, export-led growth, and long-term access to raw materials and energy resources; and (6) China's economic strategy has important national security implications for the United States and North America as a whole.

Imports of semifinished steel by steel companies must be taken into consideration in evaluating apparent consumption (supply) of steel mill products in the United States and the share of the market represented by imported steel (table 6). To avoid double counting the imported semifinished steel and the products produced from it, the amount of semifinished steel consumed by companies that also produced raw steel must be subtracted from domestic consumption. Between 1993 and 2005, semifinished steel imports were in a range between 2.5 and 8.0 Mt/yr. Prior to 1993, the amount was less than 0.2 Mt/yr. Taking the imported semifinished steel into consideration, the share of the U.S. steel market represented by imported steel was an estimated 27% in 2005 compared with 28% in 2004.

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

World Review

World production of pig iron totaled about 789 Mt, 11% more than that of 2004 (table 10). The pig iron production of the EU was about 107 Mt, slightly less than that of 2004. Germany was the top producer in the EU, producing about 29 Mt, slightly less than that of 2004. China continued to be the leading producer of pig iron in the world, producing more than 330 Mt, 31% more than that of 2004. Japan, Russia, and the United States followed with 83 Mt, 48 Mt, and 37 Mt, respectively. The Republic of Korea's production decreased slightly. Russia and Ukraine were the only major pig iron producers in the Commonwealth of Independent States (CIS). In North America, the only major producer of pig iron was the United States, where production in 2005 decreased 12% from that of 2004. In South America, the only major pig iron producer was Brazil, producing more than 32 Mt. India's production increased slightly above that of 2004.

World capacity for DRI production was estimated to be nearly 53 Mt/yr (Midrex Direct Reduction Corp., 2006). DRI production worldwide was about 55.9 Mt, a 2.3% increase from 54.6 Mt (revised) of 2004. The leading producer of DRI was Venezuela, followed by, in descending order of tonnage, Iran, Mexico, and India (table 10). World DRI production increase in 2005 resulted entirely from new small-capacity rotary kilns started in India. All gas-base DRI capacity in the United States and Canada closed in 2005, as did one plant in Mexico, owing to the significant increase in the price of natural gas in North America. The wholesale price of gas in the United States increased by about 8 times that in the mid-1990s—more than $15 per million British thermal units. DRI production in Australia ended, owing to the closure of a Finmet plant. In 2005, additional DRI capacity of 13 Mt was under construction in India, Malaysia, Qatar, Oman, Russia, Saudi Arabia, Trinidad and Tobago, and the United Arab Emirates. The leading technology was the Midrex process, followed by the HYL I and the HYL III processes.

World production of raw steel was 1.13 billion metric tons (Gt), up from 1.06 Gt (revised) produced during 2004 (table 11). As in previous years, production varied widely among major regions of the world. Asian countries produced about 51% of the world's steel; the EU, 17%; North America, 11%; and the CIS, 10%. During 2005, China was again the world's leading steel producer, exceeding 349 Mt, a gain of 28% compared with that of 2004. In descending order, the leading producers behind China were Japan, the United States, Russia, the Republic of Korea, and Germany. These six countries accounted for 63% of world production. The combined steel production of the six steel-producing countries in the CIS was more than 113 Mt, about the same as that in 2004. Russia and Ukraine remained the top producers in the CIS (table 11).

Outlook

GDP growth may be considered a predictor of the health of the steelmaking and steel manufacturing industries, worldwide and domestically. In 2005, the World Bank forecast that the world's economy would decline slightly after 2004, from an estimated GDP increase of 3.8% in 2004, 3.2% in 2005, 3.2% in 2006, and 3.5% in 2007 (World Bank, The, 2005§). Global economic increase was expected to slow in 2006 by the Institute for International Economics, but with slightly higher GDP increase—4.0% in 2005 and 3.5% in 2006 (Institute for International Economics, 2005§).

The U.S. Office of Management and Budget estimated that the U.S. GDP would be $14,701 trillion in 2009, up 22% from that of 2005 (U.S. Office of Management and Budget, 2005§). The U.S. Congressional Budget Office (2006§) forecast an increase of U.S. GDP by about 3.6% in 2006, 3.4% in 2007, 3.1% on average from 2008 through 2011, and 2.6% on average from 2012 through 2016. The Bureau of Economic Analysis reported GDP growth in the United States for the first 2 quarters of 2006 as 5.6% and 2.5%, respectively (Bureau of Economic Analysis, 2006§). The OECD expected the U.S. GDP to increase by 3.5% in 2006, but only 3.3% in 2007 (Newratings, 2005§). The International Monetary Fund (IMF) and the United Nations Economic Commission for Europe forecast U.S. GDP growth of 3.3% for 2006, whereas, the World Bank forecast 3.5% for 2006 and 3.6% for 2007 (Newratings, 2005§; World Bank, The, 2005§; United Nations, 2006§). The Institute for International Economics (2005§) forecast only 2.0% U.S. GDP increase in 2006.

Forecasts for increase in GDP in the EU made by the European Confederation of Iron and Steel Industries (Eurofer) and the European Central Bank were 1.3% and 1.4%, respectively, for 2005 and 1.8% and 1.9%, respectively, for 2006 (Metal Center News Online, 2006§; Newratings, 2005§). The OECD forecast Japanese GDP growth for 2006 and 2007 was 2.0%, whereas the World Bank forecast 1.8% and 1.7% for these years, and the IMF forecast 2.0% for 2006 (Newratings,

2005§; World Bank, The, 2005§). The Institute for International Economics (2005§) forecast only 1.5% GDP increase for Japan in 2006. For East Asia and the Pacific, the World Bank forecast for 2006 and 2007 GDP growth of 7.6% and 7.4%, respectively. For South America and the Caribbean, the World Bank forecast for 2006 and 2007 GDP growth of 3.9% and 3.6%, respectively, and the Institute for International Economics (2005§) forecast 3.3% GDP growth for 2006 in South America.

The OECD and the IISI forecast China's 2005 GDP growth as 7.8% (OECD) and 8.0% (IISI), after peaking at 9.1% in 2004. Eurofer and ThyssenKrupp AG forecast the GDP growth for China in 2006 as 8.0% and 8.5%, respectively (ThyssenKrupp, 2005§; Metal Center News Online, 2006§). The Institute for International Economics (2005§) forecast only 7.5% GDP growth for China in 2006, down from 9.5% in 2004.

There appears to be a consensus that GDPs worldwide will decline somewhat after 2005, suggesting that steel manufacturing will decline, as well as the demand for steelmaking raw materials. Nevertheless, the OECD forecasts that global raw steelmaking capacity will increase to more than 1.31 billion metric tons per year (Gt/yr) in 2006 from 1.18 Gt/yr in 2004 (Organisation for Economic Cooperation and Development, 2005§). China accounts for most of this increase—360 Mt in 2006 from 330 Mt in 2005 (China Metal Market, 2006).

Global steel production may reach 1.18 Gt in 2007 (MEPS Steel News, 2006§). Economic activity in China continued to be an important influence on the world economy and steel markets, while being the world's leading steel producer. China's steel production was 350 Mt in 2005, up from 280 Mt in 2004, and would be an estimated 385 Mt in 2006 (China Metal Market, 2006).

Global consumption of finished steel products was estimated to increase about 5.8% to 1,150 Mt in 2007 from 1,087 Mt in 2006—7.3% more than that in 2006. Demand in the United States is expected to increase in 2006 and 2007 by 5.0% and 6.7%, respectively; in the EU to increase by 3.9% and 1.5%, respectively; in Russia and Ukraine to increase by 3.2% and 1.6%, respectively; and in India to increase about 8% during 2006 and 2007. China's steel-product consumption is expected to be 356 Mt, 32% of world demand in 2006 (International Iron and Steel Institute, 2006§).

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TABLE 1
SALIENT IRON AND STEEL STATISTICS[1]

(Thousand metric tons unless otherwise specified)

	2001	2002	2003	2004	2005
United States:					
Pig iron:					
Production[2]	42,100	40,200	40,600	42,300	37,200
Exports[3]	44	34	86	48	51
Imports for consumption[3]	4,370	4,620	3,890	6,400	6,030
Direct-reduced iron:					
Production[4]	120	470	210	180	220
Exports[3]	1	1	5	13	--
Imports for consumption[3]	1,650	2,010	1,940	2,450	2,170
Raw steel production:[5]					
Carbon steel	82,400	83,700	86,100	90,700	85,900
Stainless steel	1,820	2,180	2,220	2,400	2,240
All other alloy steel	5,920	5,680	5,350	6,560	6,710
Total	90,100	91,600	93,700	99,700	94,900
Capability utilization, percent	79.2	88.8	84.9	94.6	87.5
Steel mill products:					
Net shipments[2]	89,700	90,700	96,100	101,000	95,200
Exports[3]	5,570	5,450	7,460	7,200	8,460
Imports[3]	27,300	29,600	21,000	32,800 r	29,200
Producer price index (1982=100.0)[6]	101.3	104.8	109.5	147.2	173.6
World production:[7]					
Pig iron	585,000	610,000	664,000	712,000	761,000
Direct-reduced iron[4]	39,300	43,400	45,200	47,900 r	49,200
Raw steel	853,000	906,000	972,000	1,060,000 r	1,130,000

rRevised. --Zero.

[1]Data are rounded to no more than three significant digits, except producers price index; may not add to totals shown.

[2]Data are from the American Iron and Steel Institute (AISI).

[3]Data are from the U.S. Census Bureau.

[4]Data are from Midrex Direct Reduction Corp., government, and companies.

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

[6]Data are from the U.S. Department of Labor, Bureau of Labor Statistics.

[7]Data are from the U.S. Geological Survey and the International Iron and Steel Institute.

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

(Thousand metric tons)

Material	2004	2005
Iron oxides:[2]		
Ores	26	34
Pellets	54,900	50,100
Sinter[3]	7,900	8,200
Total	62,900	58,300
Scrap[4]	1,090	1,250
Coke[2]	15,100	13,800
Pig iron, produced	42,300	37,200

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

[2]American Iron and Steel Institute.

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

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

TABLE 3

DISTRIBUTION OF SHIPMENTS OF STEEL MILL PRODUCTS, BY STEEL TYPE, PRODUCT, AND MARKET[1]

	Quantity (thousand metric tons)		Percentage	
	2004	2005	2004	2005
Shipments by steel type:				
Carbon steel	94,700	88,800	93.76	93.25
Alloy steel	4,420	4,700	4.38	4.94
Stainless steel	1,880	1,730	1.86	1.81
Total	101,000	95,200	100.00	100.00
Steel mill products:				
Ingots, blooms, billets and slabs	976	1,160	0.97	1.22
Wire rods	2,350	1,760	2.32	1.84
Structural shapes, heavy	6,640	6,730	6.57	7.07
Steel piling	452	582	0.45	0.61
Plates, cut lengths	5,260	5,830	5.21	6.12
Plates, in coils	4,540	3,470	4.50	3.64
Rails	605	633	0.60	0.66
Railroad accessories	193	196	0.19	0.21
Bars, hot-rolled	6,560	6,300	6.49	6.61
Bars, light-shaped	1,390	1,470	1.37	1.54
Bars, reinforcing	7,340	6,350	7.27	6.67
Bars, cold finished	1,370	1,470	1.36	1.55
Tool steel	22	20	0.02	0.02
Pipe and tubing, standard pipe	1,070	1,030	1.06	1.08
Pipe and tubing, oil country goods	1,850	2,030	1.83	2.14
Pipe and tubing, line pipe	679	366	0.67	0.38
Pipe and tubing, mechanical tubing	1,010	998	1.00	1.05
Pipe and tubing, pressure tubing	39	38	0.04	0.04
Pipe and tubing, stainless	13	14	0.01	0.01
Pipe and tubing, structural	141	130	0.14	0.14
Pipe for piling	30	11	0.03	0.01
Wire	514	607	0.51	0.64
Tin mill products, blackplate	196	163	0.19	0.17
Tin mill products, tinplate	2,070	1,860	2.05	1.95
Tin mill products, tin-free steel	567	493	0.56	0.52
Tin mill products, tin coated sheets	114	96	0.11	0.10
Sheets, hot-rolled	20,600	20,300	20.39	21.30
Sheets, cold-rolled	13,400	11,600	13.25	12.19
Sheets and strip, hot dip galvanized	14,800	13,600	14.64	14.29
Sheets and strip, electrogalvanized	2,310	2,240	2.28	2.35
Sheets and strip, other metallic coated	2,020	1,710	1.99	1.80
Sheets and strip, electrical	403	424	0.40	0.45
Strip, hot rolled	50	36	0.05	0.04
Strip, cold rolled	1,480	1,520	1.47	1.59
Total	101,000	95,200	100.00	100.00
Shipments by markets:				
Service centers and distributors	30,700	27,700	30.36	29.11
Construction	19,900	21,700	19.69	22.83
Automotive	15,000	13,100	14.88	13.79
Machinery	1,300	1,500	1.29	1.57
Containers	2,700	2,740	2.67	2.88
All others	31,400	28,400	31.12	29.81
Total	101,000	95,200	100.00	100.00

[1]Data are rounded to no more than three significant digits, except percentages; may not add to totals shown.

Source: American Iron and Steel Institute.

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

(Thousand metric tons)

Country	2004		2005	
	Imports	Exports	Imports	Exports
Argentina	343	4	258	4
Australia	586 [r]	7 [r]	533	14
Brazil	3,070	22	2,340	24
Canada	4,960	4,680	5,350	5,310
China	1,680	118	2,150	157
European Union	5,020	230	5,270	421
Germany	1,380	35	1,360	105
Japan	1,280	10	1,250	24
Korea, Republic of	1,490	25	1,640	29
Mexico	3,880	1,540	3,730	1,730
Russia	2,180	--	1,430	--
South Africa	365 [r]	4	297	7
Sweden	212	2	286	2
Taiwan	801	37	551	24
Turkey	1,990	--	1,220	--
Ukraine	436	--	587	--
Venezuela	384 [r]	35	441	55
Other	2,770 [r]	454	493	551
Total	32,800 [r]	7,200	29,200	8,460

[r]Revised. -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.

Source: American Iron and Steel Institute.

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

(Thousand metric tons)

	2004	2005
Steel mill products:		
Ingots, blooms, billets, slabs	258	304
Wire rods	91	146
Structural shapes, heavy	601	666
Steel piling	13	39
Plates, cut lengths	826	1,050
Plates, in coils	533	673
Rails, standard	59	71
Rails, other	23	15
Railroad accessories	26	28
Bars, hot-rolled	410	333
Bars, light-shaped	112	90
Bars, concrete reinforcing	224	253
Bars, cold-finished	131	127
Tool steel	19	19
Pipe and tubing, standard pipe	83	82
Pipe and tubing, oil country goods	285	327
Pipe and tubing, line pipe	150	189
Pipe and tubing, mechanical tubing	8	28
Pipe and tubing, stainless	33	50
Pipe and tubing, nonclassified	298	269
Pipe and tubing, structural	122	161
Pipe for piling	3	4
Wire	144	141
Tin mill products, blackplate	5	7
Tin mill products, tinplate	261	250
Tin mill products, tin-free steel	30	29
Sheets, hot-rolled	582	906
Sheets, cold-rolled	530	565
Sheets and strip, hot-dip galvanized	492	637
Sheets and strip, electrogalvanized	136	232
Sheets and strip, other metallic coated	136	163
Sheets and strip, electrical	122	131
Strip, hot-rolled	183	212
Strip, cold-rolled	266	264
Total	7,200	8,460
Fabricated steel products:		
Structural shapes, fabricated	233	257
Rails, used	28	34
Railroad products	58	94
Wire rope	12	12
Wire, stranded products	21	29
Wire, other products	23	26
Springs	99	112
Nails and staples	27	29
Fasteners	779	931
Chains and parts	26	26
Grinding balls	11	11
Pipe and tube fittings	34	35
Other[2]	119 r	112
Total	1,470 r	1,710
Grand total	8,670 r	10,200

See footnotes at end of table.

TABLE 5—Continued
U.S. EXPORTS OF IRON AND STEEL PRODUCTS[1]

(Thousand metric tons)

	2004	2005
Cast iron and steel products:		
Cast steel pipe fittings	34	35
Cast iron pipe and fittings	76	23
Cast steel rolls	17	20
Cast grinding balls	25	18
Granules, shot and grit	27	30
Other castings	55	67
Total	234	193

[r]Revised.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes shapes cold formed, sashes and frames, fence and sign post, architectural and ornamental work, and conduit.

Source: American Iron and Steel Institute.

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

(Thousand metric tons)

	2004	2005
Steel mill products:		
Ingots, blooms, billets, and slabs	6,730	6,270
Wire rods	3,420	2,270
Structural shapes-heavy	564	575
Steel piling	107	94
Plates, cut lengths	814	997
Plates, in coils	1,060	941
Rails and railroad accessories	222	215
Bars, hot-rolled	1,580	1,500
Bars, light-shaped	226	225
Bars, reinforcing	1,740	1,290
Bars, cold-finished	307	414
Tool steel	163	192
Pipe and tubing, standard pipe	1,170	1,190
Pipe and tubing, oil country goods	1,010	1,510
Pipe and tubing, line pipe	992	1,080
Pipe and tubing, mechanical tubing	558	653
Pipe and tubing, pressure tubing	97	168
Pipe and tubing, stainless	108	122
Pipe and tubing, nonclassified	15	15
Pipe and tubing, structural	495	512
Pipe for piling	9	22
Wire	857	776
Tin mill products-blackplate	58	36
Tin mill products-tinplate	328	391
Tin mill products-tin-free steel	100	92
Sheets, hot-rolled	3,850	2,870
Sheets, cold-rolled	2,350	1,740
Sheets and strip, hot-dip galvanized	2,690	2,100
Sheets and strip, electrogalvanized	105	147
Sheets and strip, other metallic coated	425	431
Sheets and strip, electrical	79	75
Strip, hot-rolled	98	96
Strip, cold-rolled	160	170
Total	32,500	29,200
Fabricated steel products:		
Structural shapes, fabricated	614	808
Rails, used	131	164
Railroad products	126	178
Wire rope	124	127
Wire-stranded products	261	256
Springs	505	529
Nails and staples	928	930
Fasteners	1,370	1,340
Chains and parts	119	133
Pipe and tube fittings	161	185
Other	400	475
Total	4,740	5,120
Grand total	37,200	34,300

See footnotes at end of table.

TABLE 6—Continued
U.S. IMPORTS OF MAJOR IRON AND STEEL PRODUCTS[1]

(Thousand metric tons)

	2004	2005
Cast iron and steel products:		
Cast steel pipe fittings	161	185
Cast iron pipe and fittings	54	64
Other products	396	498
Total	611	744

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

Source: American Iron and Steel Institute.

TABLE 7
U.S. IMPORTS OF STAINLESS STEEL[1]

(Metric tons)

Product	2004	2005
Semifinished	175,000	145,000
Plate	62,300	75,700
Sheet and strip	54,600	51,300
Bars and shapes	84,300	117,000
Wire and wire rods	75,700	75,400
Pipe and tube	108,000	122,000
Total	560,000	585,000

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

Source: American Iron and Steel Institute.

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

(Thousand metric tons)

	2004	2005
Ductile iron castings	NA	NA
Gray iron castings	NA	NA
Malleable iron castings	NA	NA
Steel castings	NA	NA
Steel investment castings	NA	NA
Total	NA	NA

NA Not available.

Source: U.S. Census Bureau.

TABLE 9
COAL AND COKE AT COKE PLANTS[1, 2]

(Thousand metric tons)

	2004	2005
Coal, consumption	24,100 [r]	18,700
Coke:[3]		
Production	15,300	15,200
Exports	1,200	1,590
Imports	6,230	3,200
Consumption, apparent	20,400	16,500

[r]Revised.
[1]Data are rounded to no more than three significant digits.
[2]Includes furnace and merchant coke plants.
[3]Coke production and consumption do not include breeze.

Source: Energy Information Administration, Quarterly Coal Report, DOE/EIA-0121(2006/01Q).

TABLE 10

PIG IRON AND DIRECT-REDUCED IRON: WORLD PRODUCTION, BY COUNTRY[1, 2, 3, 4]

(Thousand metric tons)

Country[5]	2001	2002	2003	2004	Unrou 2005
Albania[e]	-- [r]	-- [r]	-- [r]	-- [r]	-
Algeria[e]	1,250,000	1,300,000	1,300,000	994,000 [r, 6]	950,000
Argentina:					
Pig iron	1,916,500 [r]	2,180,200 [r]	2,402,200 [r]	2,392,200 [r]	2,645,600
Direct-reduced iron	1,276,300 [r]	1,475,600 [r]	1,736,400 [r]	1,755,300 [r]	1,820,900
Australia[e]	7,200,000	7,300,000 [6]	7,300,000 [6]	7,300,000	7,300,000
Austria	4,300,000	4,300,000	4,300,000 [e]	4,300,000 [e]	4,300,000
Belgium	7,732,000	8,053,000	8,000,000	8,000,000 [e]	8,000,000
Bosnia and Herzegovina[e]	60,000 [r]	60,000 [r]	60,000 [r]	60,000 [r]	60,000
Brazil:					
Pig iron	27,623,000	29,667,000 [r]	32,036,000 [r]	34,579,000 [r]	34,382,000
Direct-reduced iron[e]	400,000	400,000 [6]	410,000 [r]	440,000	411,000
Bulgaria	1,160,000	1,072,000	1,386,000	1,200,000 [r]	1,200,000
Burma:[e]					
Pig iron	1,500	1,500	1,500	1,500	1,500
Direct-reduced iron	40,000	40,000	40,000	40,000	40,000
Canada:					
Pig iron	8,780,000	8,800,000	8,800,000 [e]	8,800,000 [e]	8,800,000
Direct-reduced iron	920,000	920,000	920,000 [e]	920,000 [e]	920,000
Chile	897,000	933,855	987,869	1,137,000 [r]	1,100,000
China[7]	155,540,000	170,850,000	213,660,000	251,850,000	330,410,000
Colombia	318,993 [r]	312,879 [r]	288,214 [r]	316,025 [r]	315,000
Czech Republic	4,671,000	4,840,000	5,207,000	5,384,000 [r]	5,400,000
Egypt:					
Pig iron[e]	1,400,000	1,800,000	1,500,000	1,500,000	1,500,000
Direct-reduced iron	2,370,000	2,530,000	2,870,000	2,800,000 [e]	2,800,000
Finland	2,852,000	2,828,000	6,000,000 [r]	1,000,000 [r]	2,000,000
France	12,004,000	13,217,000	12,756,000	13,000,000 [e]	13,000,000
Germany:					
Pig iron	29,184,000	29,427,000	29,481,000	30,018,000	28,854,000
Direct-reduced iron[e]	210,000 [r]	540,000 [r]	590,000 [r]	610,000 [r]	610,000
Hungary	1,226,000	1,335,000	1,333,000	1,351,000 [r]	1,350,000
India:					
Pig iron	21,900,000	24,315,000	24,000,000	25,000,000 [e]	25,500,000
Direct-reduced iron	5,590,000	5,731,000	5,800,000	5,800,000 [e]	5,900,000
Indonesia, direct-reduced iron[e]	1,480,000	1,500,000	1,170,000 [r]	1,440,000 [r]	1,500,000
Iran:					
Pig iron	2,300,000	2,400,000	2,300,000 [e]	2,700,000 [e]	2,300,000
Direct-reduced iron	5,000,000	5,280,000	5,620,000 [e]	6,410,000 [e]	6,850,000
Italy	10,650,000	9,736,000	10,000,000	10,000,000	10,000,000
Japan	78,835,836	80,979,161	82,091,744	82,974,493	83,058,130
Kazakhstan	3,906,500	4,089,100	4,140,000 [e]	4,283,142 [r]	3,581,090
Korea, North[e]	800,000	800,000	900,000	900,000	900,000
Korea, Republic of	25,898,000	26,570,000	27,314,000	27,556,000 [r]	27,308,000
Libya, direct-reduced iron	1,090,000 [e]	1,170,000	1,340,000 [e]	1,580,000 [e]	1,650,000
Malaysia, direct-reduced iron	1,024,000 [r]	1,061,000 [r]	1,600,000	1,710,000 [r]	1,750,000
Mexico:					
Pig iron	4,373,000	3,996,000	4,183,000	4,278,000	4,047,000
Direct-reduced iron	3,672,000	4,741,000	5,473,000	6,345,000	5,973,000

See footnotes at end of table

TABLE 10—Continued

PIG IRON AND DIRECT-REDUCED IRON: WORLD PRODUCTION, BY COUNTRY[1, 2, 3, 4]

(Thousand metric tons)

Country[5]	2001	2002	2003	2004	Unrounded 2005[e]
Morocco[e]	15,000	15,000	15,000	15,000	15,000
Netherlands[8]	5,305,000	5,381,000	5,300,000 [e]	5,300,000 [e]	5,300,000
New Zealand[e]	600,000	600,000 [6]	600,000	600,000	600,000
Norway[e]	60,000	80,000	90,000	90,000	90,000
Pakistan[e]	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Paraguay	72,000	87,600 [r]	98,000	100,000 [e]	100,000
Peru:					
Pig iron	330,000	330,000	330,000 [e]	330,000 [e]	330,000
Direct-reduced iron[e]	80,000	80,000 [6]	80,000	80,000	80,000
Poland	5,440,000	5,296,000	5,632,000	6,399,000 [r]	6,500,000
Portugal	82,000	100,000 [r]	100,000 [r]	100,000 [r]	100,000
Qatar, direct-reduced iron	730,000	750,000	780,000 [e]	830,000 [e]	830,000
Romania	3,243,000	3,979,000	4,101,000	4,344,000 [r]	4,400,000
Russia:					
Pig iron	44,980,000	46,060,000	48,368,000	50,426,700 [r]	48,419,000 [6]
Direct-reduced iron	2,510,000	2,910,000	2,900,000 [e]	3,140,000 [r, e]	3,340,000
Saudi Arabia, direct-reduced iron	2,880,000	3,290,000	3,290,000	3,141,000 [r]	3,630,000
Serbia and Montenegro	461,000	485,000	635,000	994,000 [r]	950,000
Slovakia	3,255,000	3,533,000	3,892,000	3,765,000 [r]	3,800,000
South Africa:					
Pig iron	5,820,000	5,823,000	6,234,000 [r]	6,011,000 [r]	6,130,000 [6]
Direct-reduced iron	1,556,000	1,702,000	1,542,000	1,630,000 [e]	1,630,000
Spain	4,094,000	3,978,000	4,000,000 [e]	4,000,000 [e]	4,000,000
Sweden	3,614,000	3,703,000	3,700,000 [e]	3,600,000 [e]	3,500,000
Switzerland[e]	100,000	100,000	100,000	100,000 [r]	100,000
Taiwan	10,316,000	10,524,000	10,799,000	10,198,000	10,354,000 [6]
Trinidad and Tobago, direct-reduced iron	2,186,382	2,316,300	2,275,000	2,336,500 [r]	2,340,000
Tunisia	192,000	152,000	36,000	-- [e]	--
Turkey	247,598	157,622	181,080	200,000 [e]	5,950,000
Ukraine	26,400,000	27,560,000	29,570,000	31,000,000	30,747,000
United Kingdom	9,861,000	8,579,000	8,560,500	10,200,000 [e]	10,200,000
United States:					
Pig iron	42,125,000	40,217,287	40,635,545	42,283,000	37,214,000 [6]
Direct-reduced iron	120,000	470,000	210,000	180,000	220,000 [6]
Venezuela, direct-reduced iron	5,903,298	6,824,370	6,645,256	6,800,000	6,900,000
Zimbabwe[e]	156,000	122,000	131,000	72,000	170,000
Grand total	624,085,907 [r]	653,256,474 [r]	711,627,308 [r]	760,489,860 [r]	837,926,220
Of which:					
Pig iron	585,047,927 [r]	609,525,204 [r]	666,335,652 [r]	712,502,060 [r]	788,731,320
Direct-reduced iron	39,037,980 [r]	43,731,270 [r]	45,291,656 [r]	47,987,800 [r]	49,194,900

[e]Estimated. [p]Preliminary. [r]Revised. -- Zero.

[1]World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Production is pig iron unless otherwise specified.

[3]Direct-reduced iron is obtained from ore by reduction of oxides to metal without melting.

[4]Table excludes ferroalloy production except where otherwise noted. Table includes data available through August 10, 2006.

[5]In addition to the countries listed, Vietnam has facilities to produce pig iron and may have produced limited quantities during 2001-05, but output is not reported and available information is inadequate to make reliable estimates of output levels.

[6]Reported figure.

[7]Figures reported by State Statistical Bureau that the Chinese Government considers to be official statistical data.

[8]Includes blast furnace ferroalloys.

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

(Thousand metric tons)

Country[4]	2001	2002	2003	2004	2005[e]
Albania[e]	94	100	100	100	100
Algeria	850	1,091	1,051	1,014	1,007 [5]
Argentina	4,107	4,363	5,033	5,125	5,382 [5]
Australia	7,600	8,242	8,300 [e]	4,811	5,010 [5]
Austria	5,887	6,208	6,261	6,530	7,031 [5]
Bangladesh[e, 6]	30	30	25	25	20
Belarus[e]	1,500 [5]	1,500	1,570	1,900 [r]	2,076 [5]
Belgium	10,783	11,495	11,114	11,698	10,422 [5]
Bosnia and Herzegovina[e]	84	85	90	120 [r]	120
Brazil[7]	26,718	29,605	31,150 [r]	32,918 [r]	31,631 [5]
Bulgaria	1,942	1,860 [e]	2,317 [r]	2,106 [r]	2,200
Burma[e]	25	25	25	25	25
Canada	16,300	16,300	17,000	17,000 [e]	1,700
Chile[7]	1,247	1,279	1,377	1,579 [r]	1,570
China[8]	151,630	182,370	222,340	272,450	349,360 [5]
Colombia	638	664	668	745	750
Croatia	58	34	41 [r]	68 [r]	70
Cuba	270	264	268 [e]	197 [r]	200
Czech Republic	6,316	6,512	6,783 [r]	7,033 [r]	6,200
Denmark	746	392	-- [e]	-- [e]	--
Dominican Republic	33	61	61 [e]	61 [e]	61
Ecuador	60	69	80	72 [r]	72
Egypt	3,800	4,358	4,398	4,757	4,760
El Salvador	39	49 [r]	57	59 [r]	60
Finland	3,938	4,004	4,766	4,833	4,800
France	19,431	20,524	19,578	20,770	19,481 [5]
Germany	44,775	44,999	44,809	46,374	44,524 [5]
Ghana, all from scrap[e]	75	75	75	75	75
Greece	1,281	1,835	1,701	1,967	2,266 [5]
Guatemala	202	216	226	232 [r]	235
Hong Kong[e]	500	500	500	500	500
Hungary	2,056	2,141	2,100 [e]	1,984 [r]	1,946 [5]
India	27,291	28,814	31,779	32,000 [e]	34,000
Indonesia[e]	2,781 [r]	2,462 [r]	2,042 [r]	2,412 [r]	2,800
Iran	6,890	7,293	7,869	9,382	9,400
Iraq[e]	50	--	--	-- [e]	--
Ireland	110	--	-- [e]	-- [e]	--
Israel[e]	220	150	150	280 [r]	300
Italy	26,483	25,930	26,832	28,317	29,061 [5]
Japan	102,866	107,745	110,511	112,718	112,471 [5]
Jordan	30 [e]	134 [r]	135 [r]	140 [r]	140
Kazakhstan	4,691	4,868	5,067	5,400 [e]	4,452 [5]
Korea, North[e]	1,000	1,030	1,090	1,070	1,070
Korea, Republic of	43,852	45,390	46,310	47,521 [r]	47,820 [5]
Latvia	510 [e]	507	546	554 [r]	550
Libya	846 [e]	886	1,007	1,026	1,300
Luxembourg	2,725	2,736	2,675	2,684	2,194 [5]
Macedonia	218	225	291	309 [r]	300
Malaysia	4,100	4,722	3,960	5,698 [r]	6,200

See footnotes at end of table.

TABLE 11—Continued
RAW STEEL: WORLD PRODUCTION, BY COUNTRY[1, 2, 3]

(Thousand metric tons)

Country[4]	2001	2002	2003	2004	2005[e]
Mauritania[e]	5	5	5	5	5
Mexico	13,300	14,010	15,159	16,730	16,400
Moldova	966	514	886 [r]	1,013 [r]	1,000
Morocco[e]	5	5	5	5	5
Netherlands	6,037	6,144	6,571	6,848	6,919 [5]
New Zealand[e]	770	750	750	800	800
Norway[e]	635 [5]	694	698	695	690
Pakistan[e]	500	500	500	500	500
Paraguay	67 [r]	80 [r]	91 [r]	107 [r]	100
Peru[e]	750	750	750	750	750
Philippines[e]	530	530	340	360	360
Poland	8,809	8,369	9,107 [r]	10,593 [r]	8,514 [5]
Portugal	728	800 [e]	722	720	720
Qatar	908	1,027	1,054	1,046	1,070
Romania	4,930	5,491	5,691 [r]	6,042 [r]	5,854 [5]
Russia	59,030	59,777	62,710	65,646 [r]	66,186 [5]
Saudi Arabia	3,413	3,570 [e]	3,944	3,902	4,190
Serbia and Montenegro	598	596	569 [r]	1,167 [r]	1,286 [5]
Singapore[e]	400	400	400	500 [r]	600
Slovakia	3,676	4,275	4,588 [r]	4,454 [r]	4,482 [5]
Slovenia	462	481 [e]	541 [r]	565 [r]	585
South Africa	8,821	9,095	9,481	9,504	9,492 [5]
Spain	16,500	16,358	16,287	17,684	17,711 [5]
Sri Lanka[e]	30	30	30	30	30
Sweden	5,518	5,754	5,707	5,949	6,000
Switzerland[e]	1,000 [5]	1,000	1,000	1,000	1,000
Syria[e]	70	70	70	70	70
Taiwan	17,336	18,255	18,832	19,604	18,567 [5]
Thailand	2,127	2,538	3,572	4,533 [r]	5,300
Trinidad and Tobago	696	839	923	783 [r]	800
Tunisia	239	200 [e]	86 [e]	63	60
Turkey	14,382	16,046	18,298	20,478	20,960 [5]
Uganda[e]	7	7	7	7	7
Ukraine	33,110	34,538	36,900 [e]	38,740	38,636 [5]
United Arab Emirates[e]	70	70	50	70 [r]	70
United Kingdom	13,610	11,718	13,128	13,766	13,210 [5]
United States	90,100	91,600	93,700	99,700	93,300 [5]
Uruguay	31	35 [r]	41	55 [r]	55
Uzbekistan[e]	460 [5]	450	472	602	607 [5]
Venezuela	3,813	4,164	3,930	4,575	5,000
Vietnam	319	409	544	658	780
Zimbabwe[e]	149	105	152	150	150
Total	853,000	906,000	972,000	1,060,000 [r]	1,120,000

[e]Estimated. [r]Revised. -- Zero.

[1]World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

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

[3]Table includes data available through July 28, 2006.

[4]In addition to the countries listed, Mozambique is known to have steelmaking plants, but available information is inadequate to make reliable estimates of output levels.

TABLE 11—Continued
RAW STEEL: WORLD PRODUCTION, BY COUNTRY[1, 2, 3]

[5]Reported figure.
[6]Data for year ending June 30 of that stated.
[7]Excludes castings.
[8]Figures reported by the State Statistical Bureau that Chinese Government considers as official statistical data.