

IRON ORE¹(Data in million metric tons of usable ore,² unless noted)

Domestic Production and Use: In 2004, almost all of the usable ore, having an estimated value of \$1.6 billion, was shipped from mines in Michigan and Minnesota. Ten iron ore production complexes with 10 mines, 8 concentration plants, and 8 pelletizing plants were in operation during the year. The mines included 10 open pits and no underground operations. Virtually all ore was concentrated before shipment. Eight mines operated by three companies accounted for 99% of production. The United States produced 4% of the world's iron ore output and consumed about 5%.

Salient Statistics—United States:	2000	2001	2002	2003	2004^e
Production, usable	63.1	46.2	51.6	46.4	54.0
Shipments	61.0	50.6	51.5	44.5	53.2
Imports for consumption	15.7	10.7	12.5	12.6	11.6
Exports	6.1	5.6	6.8	6.8	8.8
Consumption:					
Reported (ore and total agglomerate) ³	76.5	67.3	59.1	60.6	56.0
Apparent	70.2	62.0	57.9	53.1	58.8
Price, ⁴ U.S. dollars per metric ton	25.57	23.87	26.04	26.86	31.00
Stocks, mine, dock, and consuming plant, yearend, excluding byproduct ore	28.8	18.0	18.3	17.5	15.5
Employment, mine, concentrating and pelletizing plant, quarterly average, number	6,814	5,017	4,742	4,674	4,800
Net import reliance ⁵ as a percentage of apparent consumption (iron in ore)	10	26	10	13	8

Recycling: None (see Iron and Steel Scrap section).

Import Sources (2000-03): Canada, 49%; Brazil, 41%; Australia, 4%; Chile, 3%; and other, 3%.

Tariff: Item	Number	Normal Trade Relations 12-31-04
Concentrates	2601.11.0030	Free.
Coarse ores	2601.11.0060	Free.
Fine ores	2601.11.0090	Free.
Pellets	2601.12.0030	Free.
Briquettes	2601.12.0060	Free.
Sinter	2601.12.0090	Free.

Depletion Allowance: 15% (Domestic), 14% (Foreign).

Government Stockpile: None.

Events, Trends, and Issues: The tremendous increase in iron ore consumption in China during the past decade had little effect on U.S. iron ore production until 2004. In December 2003, a major Chinese steel company purchased a minority interest in a bankrupt iron ore producer in northeastern Minnesota. Pellet production continued throughout 2004 with China accepting trade for their portion of the production from the majority partner's Canadian affiliate. Discussions were underway to increase production levels from the joint-venture operation to meet burgeoning global demand.

A major U.S. steel producer in late 2002 decided to terminate negotiations for the sale of its lone iron ore mine and pelletizing operation and instead negotiated the acquisition of the iron ore assets of a bankrupt steel corporation in mid-2003. This purchase, combined with a new labor agreement with the mine and pelletizing plant's major operating union in 2003, indicated a decision by the company to remain involved in upstream activities and to control more of their feedstock sources. In 2004, this decision was confirmed when production was increased at both of the company's mining and pelletizing operations.

Research and development testing on a value-added iron product was completed in Minnesota in 2004. The Mesabi Nugget project determined that iron ore pellets produced in Minnesota could be converted to iron nuggets of 96% to 98% iron content using noncoking coals with low emissions. This product, which was superior to direct-reduced iron and chemically similar to pig iron, could then be used in steelmaking furnaces in integrated steelworks and minimills. Construction of the first commercial 500,000-ton-per-year-capacity plant was planned for spring 2005 in Minnesota.

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China has become the dominant source of iron ore demand growth. About 98% of iron ore is used to produce pig iron, which is, therefore, the best indicator of iron ore consumption worldwide. In 1992, China produced 76 million tons of pig iron, surpassing Japan as the leading producing country in the world. In 2003, China produced more than 200 million tons of pig iron, almost 2½ times the production of the second leading producer, Japan, at 82 million tons. China's pig iron production grew at an average rate of more than 9% per year from 1992 through 2003.

China's astonishing growth affected the large global iron ore producers long before it had an impact on U.S. production. In 2004, the three leading iron-ore-producing companies, located in Brazil and Australia, continued to invest large sums of money to increase production to satisfy Chinese demand. One estimate of output from all iron ore projects planned to start before 2009 indicates a production increase equal to more than one-third of the world's 2004 estimated production.

The future of the global iron ore industry will depend primarily on how long China can continue its extraordinary growth. China is the world's leading producer of iron ore on a gross tonnage basis, but is only a distant third when considered on the basis of iron content. Growth in Chinese iron ore consumption is expected to continue, although not at the extraordinary rate seen between 2000 and 2004. Continued strong growth in Chinese iron ore imports to maintain steel production growth and offset decreased low-grade domestic ore production will be needed to meet China's expected growth in steel consumption. This, along with Brazil's development of downstream steel-producing facilities and India's increased consumption of domestic ores, is expected to increase global demand for iron ore.

World Mine Production, Reserves, and Reserve Base:⁶ The iron ore reserves and reserve base estimates for Brazil have been revised based on new information from that country.

	Mine production		Crude ore		Iron content	
	2003	2004 ^e	Reserves	Reserve base	Reserves	Reserve base
United States	46	54	6,900	15,000	2,100	4,600
Australia	187	220	18,000	40,000	11,000	25,000
Brazil	212	220	21,000	62,000	14,000	41,000
Canada	31	31	1,700	3,900	1,100	2,500
China	261	280	21,000	46,000	7,000	15,000
India	106	110	6,600	9,800	4,200	6,200
Iran	16	16	1,800	2,500	1,000	1,500
Kazakhstan	17	17	8,300	19,000	3,300	7,400
Mauritania	10	10	700	1,500	400	1,000
Mexico	11	12	700	1,500	400	900
Russia	92	95	25,000	56,000	14,000	31,000
South Africa	38	40	1,000	2,300	650	1,500
Sweden	22	22	3,500	7,800	2,200	5,000
Ukraine	62	66	30,000	68,000	9,000	20,000
Venezuela	18	18	4,000	6,000	2,400	3,600
Other countries	34	40	10,000	30,000	6,200	17,000
World total (rounded)	1,160	1,250	160,000	370,000	80,000	180,000

World Resources: World resources are estimated to exceed 800 billion tons of crude ore containing more than 230 billion tons of iron. U.S. resources are estimated to be about 110 billion tons of ore containing about 27 billion tons of iron. U.S. resources are mainly low-grade taconite-type ores from the Lake Superior district that require beneficiation and agglomeration for commercial use.

Substitutes: Iron ore, used directly or converted to pellets, briquettes, or concentrates, is the only source of primary iron. In some operations, ferrous scrap constitutes as much as 7% of the blast furnace feedstock. Scrap is extensively used in steelmaking and in iron and steel foundries, but a greater than 200% increase in scrap prices during the past year has made steel production using iron ore more profitable in comparison with steel production using scrap.

^eEstimated.

¹See also Iron and Steel and Iron and Steel Scrap.

²Agglomerates, concentrates, direct-shipping ore, and byproduct ore for consumption.

³Includes weight of lime, flue dust, and other additives used in producing sinter for blast furnaces.

⁴Calculated from value of ore at mines.

⁵Defined as imports – exports + adjustments for Government and industry stock changes.

⁶See Appendix C for definitions.