

IRON ORE¹(Data in million metric tons of usable ore² unless noted)

Domestic Production and Use: In 2008, mines in Michigan and Minnesota shipped 98% of the usable ore produced in the United States, with an estimated value of greater than \$3.0 billion. Twelve iron ore mines (11 open pits and 1 dredging operation), 8 concentration plants, and 8 pelletizing plants operated during the year. Almost all ore was concentrated before shipment. Eight of the mines operated by three companies accounted for virtually all of the production. The United States produced and consumed about 3% of the world's iron ore output.

Salient Statistics—United States:	2004	2005	2006	2007	2008^e
Production, usable	54.7	54.3	52.7	52.5	54
Shipments	54.9	53.2	52.7	50.9	56
Imports for consumption	11.8	13.0	11.5	9.4	9
Exports	8.4	11.8	8.3	9.3	11
Consumption:					
Reported (ore and total agglomerate) ³	64.5	60.1	58.2	54.8	55
Apparent ^e	57.9	56.6	57.1	51.3	52
Price, ⁴ U.S. dollars per metric ton	37.92	44.50	53.88	59.64	66.00
Stocks, mine, dock, and consuming plant, yearend, excluding byproduct ore ^{e, 5}	17.6	16.5	15.3	16.6	16.6
Employment, mine, concentrating and pelletizing plant, quarterly average, number	4,410	4,450	4,470	4,450	4,450
Net import reliance ^b as a percentage of apparent consumption (iron in ore)	6	4	8	E	E

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

Import Sources (2004-07): Canada, 55%; Brazil, 37%; Chile, 2%; Trinidad and Tobago, 2%; and other, 4%.

Tariff: Item	Number	Normal Trade Relations 12-31-08
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: Following an almost 20% increase in worldwide price for lump and fines in 2006 and almost 10% in 2007, the 2008 iron ore price showed an even steeper increase of greater than 65% for lump and fines and almost 87% for pellets from the Americas. For the first time, Australian producers were successful in obtaining a price margin for shorter transport distances into the Asian market with an almost 80% increase in price for fines and an increase of greater than 96% for lump ores.

Major iron-ore-mining companies continue to reinvest profits in mine development, but increases in capacity may outstrip expected consumption in 2009, as growth dominated by China slows. In 2007, it was estimated that China increased production of mostly lower grade ores by about 20% from that of the previous year—significantly lower than the 40% increase seen between 2005 and 2006. Estimates of Chinese imports of higher grade ores in 2007, mostly from Australia and Brazil, showed an increase of about 18% compared with those of 2006.

International iron ore trade and production of iron ore and pig iron—key indicators of iron ore consumption—clearly show that iron ore consumption in China is the major factor upon which the expansion of the international iron ore industry depends. China continued to be active in pursuing overseas joint ventures, increasing iron ore imports, and expanding domestic production of low-grade ores—all of which indicate continued growth of iron ore consumption.

Throughout 2008, BHP Billiton continued its effort to merge with Rio Tinto plc. This is one of the most significant merger attempts over the past several years in the world iron and steel industry and would represent a major consolidation within the iron ore industry.⁷

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Owing to increased prices and interest by Chinese importers, a previously operated iron ore mine reopened in Utah. The opening or reopening of several lower grade iron ore deposits has been investigated by small capitalization miners in Alaska, Arizona, Missouri, Nevada, and New Mexico.

Construction activities for a direct-reduced iron nugget plant—the Mesabi Nugget project—progressed during 2008. A plant to produce these 96%-to-98% iron-content nuggets in Minnesota was expected to be completed in the third quarter of 2009, with the reopening of an iron ore mine planned for 2010.

Increased operating costs have been offset by operational improvements in the U.S. iron ore industry. Fuel costs at the beginning of 2008 were substantially higher than originally projected. Other production costs, such as transportation, also increased, and the availability of capital equipment and skilled labor has remained a major challenge, although the worldwide mining boom appeared to come to an abrupt halt in the latter part of 2008 as capital markets tightened.

World Mine Production, Reserves, and Reserve Base: The mine production estimates for China are based on crude ore, rather than usable ore, which is reported for the other countries. The iron ore reserve base estimate for Brazil has been revised based on new information from that country.

	Mine production		Crude ore		Iron content	
	2007	2008 ^e	Reserves ⁸	Reserve base ⁸	Reserves ⁸	Reserve base ⁸
United States	52	54	6,900	15,000	2,100	4,600
Australia	299	330	16,000	45,000	10,000	28,000
Brazil	355	390	16,000	33,000	8,900	17,000
Canada	33	35	1,700	3,900	1,100	2,500
China	707	770	21,000	46,000	7,000	15,000
India	180	200	6,600	9,800	4,200	6,200
Iran	32	32	1,800	2,500	1,000	1,500
Kazakhstan	24	26	8,300	19,000	3,300	7,400
Mauritania	12	12	700	1,500	400	1,000
Mexico	12	12	700	1,500	400	900
Russia	105	110	25,000	56,000	14,000	31,000
South Africa	42	42	1,000	2,300	650	1,500
Sweden	25	27	3,500	7,800	2,200	5,000
Ukraine	78	80	30,000	68,000	9,000	20,000
Venezuela	23	20	4,000	6,000	2,400	3,600
Other countries	47	50	11,000	30,000	6,200	17,000
World total (rounded)	2,000	2,200	150,000	350,000	73,000	160,000

World Resources: United States resources are estimated to be about 110 billion tons of ore containing 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 prior to commercial use. World resources are estimated to exceed 800 billion tons of crude ore containing more than 230 billion tons of iron.

Substitutes: Iron ore, used directly, as lump ore, or converted to briquettes, concentrates, pellets, or sinter, is the only source of primary iron. In some operations, ferrous scrap may constitute as much as 7% of the blast furnace feedstock. Scrap is extensively used in steelmaking in electric arc furnaces and in iron and steel foundries, but scrap availability can be an issue in any given year. In general, large price increases for lump and fine iron ores and iron ore pellets during 2008 were offset by price increases in the alternative—scrap. The margin between iron ore and scrap import prices decreased between 2004 and 2006, but remained level for 2007 and 2008; therefore, the relative attractiveness of scrap compared to iron ore has changed little since 2006.

^eEstimated. E Net exporter.

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 in sinter and pellets for blast furnaces.

⁴Estimated from reported value of ore at mines.

⁵Information regarding consumer stocks at receiving docks and plants has not been available since 2003 (these stock changes were estimated).

⁶Defined as imports – exports + adjustments for Government and industry stock changes.

⁷Jorgenson, J.D., 2008, Iron ore in February 2008: U.S. Geological Survey Mineral Industry Surveys, August, 5 p.

⁸See Appendix C for definitions.