

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

Domestic Production and Use: In 2010, mines in Michigan and Minnesota shipped 99% of the usable ore produced in the United States, with an estimated value of \$4.5 billion.* Thirteen iron ore mines (11 open pits, 1 reclamation operation, and 1 dredging operation), 9 concentration plants, and 9 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 was estimated to have produced and consumed 2% of the world's iron ore output.

Salient Statistics—United States:	2006	2007	2008	2009	2010^e
Production, usable	52.7	52.5	53.6	26.7	49
Shipments	52.7	50.9	53.6	27.6	50
Imports for consumption	11.5	9.4	9.2	3.9	7
Exports	8.3	9.3	11.1	3.9	11
Consumption:					
Reported (ore and total agglomerate) ³	58.2	54.7	51.9	31.0	50
Apparent ^e	57.1	52.1	49.7	25.7	47
Price, ⁴ U.S. dollars per metric ton	53.88	59.64	70.43	92.80	90.00
Stocks, mine, dock, and consuming plant, yearend, excluding byproduct ore ^{e, 5}	15.3	15.8	17.7	18.7	17
Employment, mine, concentrating and pelletizing plant, quarterly average, number	4,470	4,450	4,770	3,530	4,700
Net import reliance ⁶ as a percentage of apparent consumption (iron in ore)	8	E	E	E	E

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

Import Sources (2006–09): Canada, 61%; Brazil, 31%; Chile, 3%; Trinidad and Tobago, 1%; and other, 4%.

Tariff: Item	Number	Normal Trade Relations 12-31-10
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 70% increase in the worldwide price for iron ore fines into the European market and an almost 80% increase for fines from Australia into the Asian market in 2008, the global economic downturn resulted in a significant world price decrease in 2009. The price of fines into the European market decreased by almost 30% and the price of fines into the Asian market from Australia decreased by about one-third. Prices for lump ore, which had almost doubled in 2008, dropped back to where they had been in 2007. Pellet prices, which had risen almost 90% in 2008, were cut almost in half in the 2009 round of negotiations. April 2010 marked the end of the 40-year global benchmarking system for the sale of iron ore under an annual contract. Iron ore producers felt that they had been losing out when some customers reneged on contract tonnages when spot price fell below the contract price. The major producers reached agreements with several customers to move to shorter term or quarterly contracts.⁷ U.S. prices in 2009 lagged world prices and actually increased corresponding to the increase seen in world prices in 2008.

Major iron-ore-mining companies continue to reinvest profits in mine development, but increases in production capacity may outstrip expected consumption within the next few years, as growth dominated by China slows. In 2009, it was estimated that China increased production (of mostly lower grade ores) by 7% from that of the previous year—significantly lower than the 17% increase seen between 2007 and 2008 and the greater-than-40% increase seen between 2005 and 2006. Estimates of Chinese imports of higher grade ores in 2009, mostly from Australia, Brazil, and India, showed an increase of more than 40% compared with those of 2008.

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In 2009, China imported almost two-thirds of the world's total iron ore exports and produced about 60% of the world's pig iron. Since international iron ore trade and production of iron ore and pig iron are key indicators of iron ore consumption, this demonstrates that iron ore consumption in China is the primary factor upon which the expansion of the international iron ore industry depends.

The Mesabi Nugget project—a direct-reduced iron nugget plant—was completed in Minnesota in the fourth quarter of 2009 and began production in 2010. The \$270 million plant produces 96%-to-98% iron-content nuggets. Plans are being made to reopen an iron ore pit adjacent to the nugget plant. A \$1.6-billion project to produce steel slab was also underway on the Mesabi Range in Minnesota. A taconite pellet plant is planned for operation in the latter part of 2012, as well as a direct-reduced iron plant and steelmaking facilities at the same site for 2015.

World Mine Production and Reserves: The mine production estimate for China is based on crude ore, rather than usable ore, which is reported for the other countries. The iron ore reserves estimates for Australia, Brazil, Canada, China, and Mauritania have been revised based on new information from those countries.

	Mine production		Reserves ⁸	
	2009	2010 ^e	Crude ore	Iron content
United States	27	49	6,900	2,100
Australia	394	420	24,000	15,000
Brazil	300	370	29,000	16,000
Canada	32	35	6,300	2,300
China	880	900	23,000	7,200
India	245	260	7,000	4,500
Iran	33	33	2,500	1,400
Kazakhstan	22	22	8,300	3,300
Mauritania	10	11	1,100	700
Mexico	12	12	700	400
Russia	92	100	25,000	14,000
South Africa	55	55	1,000	650
Sweden	18	25	3,500	2,200
Ukraine	66	72	30,000	9,000
Venezuela	15	16	4,000	2,400
Other countries	43	50	11,000	6,200
World total (rounded)	2,240	2,400	180,000	87,000

World Resources: U.S. resources are estimated to be about 27 billion tons of iron contained within 110 billion tons of ore. 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 230 billion tons of iron contained within greater than 800 billion tons of crude ore.

Substitutes: The only source of primary iron is iron ore, used directly, as lump ore, or converted to briquettes, concentrates, pellets, or sinter. At some blast furnace 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 through mid- 2009 were commensurate with price increases in the alternative—scrap. The ratio of scrap to iron ore import prices has greatly increased since the end of 2009, causing the relative attractiveness of scrap compared to iron ore to decrease to levels of 2008. The ratio of scrap to iron ore price still remains markedly below levels seen between 2003 and 2007.

^eEstimated. E Net exporter. *Correction posted on January 3, 2012.

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 (stock changes for 2006–10 were estimated).

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

⁷Jorgenson, J.D., 2010, Iron ore in April 2010: U.S. Geological Survey Mineral Industry Surveys, August, 7 p.

⁸See Appendix C for resource/reserve definitions and information concerning data sources.