

IRON ORE¹

(Data in thousand metric tons, usable ore, unless otherwise noted)

Domestic Production and Use: In 2018, mines in Michigan and Minnesota shipped 98% of the usable iron ore products in the United States with an estimated value of \$4.1 billion. The remaining 2% of domestic iron ore was produced for nonsteel end uses. Seven open-pit iron ore mines (each with associated concentration and pelletizing plants), and three iron metallic plants—one direct-reduced iron (DRI) plant and two hot-briquetted iron (HBI) plants—operated during the year to supply steelmaking raw materials. The United States was estimated to have produced 2.0% and consumed 1.6% of the world's iron ore output.

Salient Statistics—United States:²	2014	2015	2016	2017	2018^e
Production:					
Iron ore	56,100	46,100	41,800	47,900	49,000
Iron metallics	1,950	1,450	2,070	3,250	3,400
Shipments	55,000	43,500	46,600	46,900	49,000
Imports for consumption	5,140	4,550	3,010	3,700	3,400
Exports	12,400	8,030	8,770	10,600	13,000
Consumption:					
Reported	44,400	38,500	34,500	34,400	35,000
Apparent ³	46,700	39,300	39,200	39,500	38,000
Value, U.S. dollars per metric ton	84.43	81.19	73.11	80.15	82.00
Stocks, mine, dock, and consuming plant, yearend, excluding byproduct ore	4,460	7,860	4,660	6,120	7,600
Employment, mine, concentrating and pelletizing plant, number	6,270	4,800	4,710	4,630	4,800
Net import reliance ⁴ as a percentage of apparent consumption (iron content of ore)	E	E	E	E	E

Recycling: None. See Iron and Steel Scrap.

Import Sources (2014–17): Canada, 46%; Brazil, 38%; Sweden, 6%, Chile, 3%, and other, 7%.

Tariff: Item	Number	Normal Trade Relations 12–31–18
Iron ores and concentrates:		
Concentrates	2601.11.0030	Free.
Coarse ores	2601.11.0060	Free.
Other ores	2601.11.0090	Free.
Pellets	2601.12.0030	Free.
Briquettes	2601.12.0060	Free.
Sinter	2601.12.0090	Free.
Roasted iron pyrites	2601.20.0000	Free.

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

Government Stockpile: None.

Events, Trends, and Issues: U.S. iron ore production was estimated to have increased in 2018 owing to increased steel-mill-capacity utilization and higher steel demand. Raw steel production increased to 86.6 million tons in 2018 from 81.6 million tons in 2017. The share of steel produced by basic oxygen furnaces, the process that uses iron ore, continued to decline from 37.4% in 2014 to 33% in 2018 owing to increased use of electric arc furnaces because of their energy efficiency and reduced environmental impacts, the ready supply of scrap, and stable scrap prices.

Global spot prices in 2018 remained relatively steady throughout the year. Based on reported prices for iron ore fines (62% iron content) imported into China (cost and freight into Tianjin port), the highest monthly average price of the year was \$76.34 in January compared with the high of \$89.44 in 2017. The lowest monthly average price in 2018 was \$64.56 in July, compared with the lowest price of \$57.48 in 2017. Overall, global prices trended down slightly, but because China was working to increase efficiency and decrease pollution in steel production, prices for higher grade iron ore products increased.

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In July, a company, which was working to restart development of an iron ore project it had purchased following bankruptcy proceedings of the original owner, acquired the mineral leases from the State of Minnesota. The company secured financing and off-take agreements for the project, prerequisites for obtaining the leases, and could proceed with construction. Another company shut down four mines in Minnesota and a pelletizing plant in Indiana as it filed for bankruptcy and auctioned off all assets in October 2018. A third company began construction of a 1.6-million-ton-per-year hot-briquetted-iron plant in Toledo, OH, which was planned for completion by mid-2020.

Globally, iron ore production in 2018 was expected to increase slightly from that of 2017, primarily owing to increased production in Australia and the completion of a mine in Brazil. Global raw steel production was forecast by industry experts to increase by 3.9% in 2018 and by 1.4% in 2019, spurred by investments in industrialized nations and economic improvement in emerging economies. Increased pressure on steel producers around the world to increase efficiency, reduce energy consumption, and meet environmental benchmarks continued the slow decline in use of low-grade iron ore and spurred investment in the production of iron metallica and high-grade iron ore products, such as pellets.

World Mine Production and Reserves: Reserves for Brazil, China, India, and Sweden were revised based on Government and industry sources.

	Mine production				Reserves ^{5, 6}	
	Usable ore		Iron content		Crude ore	Iron content
	2017	2018 ^e	2017	2018 ^e		
United States	47,900	49,000	30,300	32,000	2,900	760
Australia	883,000	900,000	547,000	560,000	⁷ 50,000	⁷ 24,000
Brazil	425,000	490,000	269,000	310,000	32,000	17,000
Canada	49,000	49,000	29,400	29,000	6,000	2,300
China	360,000	340,000	223,000	210,000	20,000	6,900
India	202,000	200,000	125,000	130,000	5,400	3,200
Iran	40,100	40,000	26,300	26,000	2,700	1,500
Kazakhstan	39,100	40,000	10,900	12,000	2,500	900
Russia	95,000	95,000	61,200	61,000	25,000	14,000
South Africa	81,100	81,000	52,600	52,000	1,200	770
Sweden	27,200	27,000	16,900	17,000	1,300	600
Ukraine	60,500	60,000	37,800	38,000	⁸ 6,500	⁸ 2,300
Other countries	119,000	120,000	72,200	72,000	18,000	9,500
World total (rounded)	2,430,000	2,500,000	1,500,000	1,500,000	170,000	84,000

World Resources: U.S. resources are estimated to be 110 billion tons of iron 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 prior to commercial use. World resources are estimated to be greater than 800 billion tons of crude ore containing more than 230 billion tons of iron.

Substitutes: The only source of primary iron is iron ore, used directly as direct-shipping ore or converted to briquettes, concentrates, DRI, iron nuggets, pellets, or sinter. DRI, iron nuggets, and scrap are extensively used for steelmaking in electric arc furnaces and in iron and steel foundries. Technological advancements have been made, which allow hematite to be recovered from tailings basins and pelletized.

^eEstimated. E Net exporter.

¹Data are for iron ore used as a raw material in steelmaking unless otherwise noted. See also Iron and Steel and Iron and Steel Scrap.

²Except where noted, salient statistics are for all forms of iron ore used in steelmaking, and do not include iron metallica, which include DRI, hot-briquetted iron, and iron nuggets.

³Defined as production + imports – exports + adjustments for industry stock changes.

⁴Defined as imports – exports + adjustments for industry stock changes.

⁵See Appendix C for resource and reserve definitions and information concerning data sources.

⁶Million metric tons.

⁷For Australia, Joint Ore Reserves Committee-compliant reserves were about 24 billion tons for crude ore and 10 billion tons for iron content.

⁸For Ukraine, reserves consist of the A+B categories of the Soviet reserves classification system.