

IRON ORE¹

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

Domestic Production and Use: In 2021, mines in Michigan and Minnesota shipped 98% of the domestic usable iron ore products, which were consumed in the steel industry in the United States, with an estimated value of \$4.3 billion, a 23% increase from \$3.5 billion in 2020. 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 four iron metallic plants—one direct-reduced iron (DRI) plant in Louisiana and three hot-briquetted iron (HBI) plants in Indiana, Ohio, and Texas—operated during the year to supply steelmaking raw materials. The United States was estimated to have produced 1.8% and consumed 1.4% of the world's iron ore output.

Salient Statistics—United States:²

	2017	2018	2019	2020	2021^e
Production:					
Iron ore	47,900	49,500	46,900	38,100	46,000
Iron metallics	3,250	3,560	3,660	3,500	3,800
Shipments	46,900	50,400	47,000	38,000	44,000
Imports for consumption	3,720	3,790	3,980	3,240	3,900
Exports	10,600	12,700	11,400	10,400	13,000
Consumption:					
Reported	34,400	36,600	34,800	NA	NA
Apparent ³	40,100	41,400	39,100	31,100	36,000
Price, average value reported by mines, dollars per ton	78.54	93.00	92.94	91.27	94.00
Stocks, mine, dock, and consuming plant, yearend	3,930	3,100	3,470	3,290	4,000
Employment, mine, concentrating and pelletizing plant, number	4,630	4,860	4,960	4,300	4,200
Net import reliance ⁴ as a percentage of apparent consumption	E	E	E	E	E

Recycling: None. See Iron and Steel Scrap.

Import Sources (2017–20): Brazil, 55%; Canada, 22%; Sweden, 8%; Russia, 4%; and other, 11%.

Tariff:	Item	Number	Normal Trade Relations 12–31–21
	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: Significant increases in production, shipments, and trade in 2021 were due to recovery from the effects of the global COVID-19 pandemic, which lowered steel production and consumption globally in 2020. Domestic iron ore production was estimated to be 46 million tons in 2021, a 21% increase from 38.1 million tons in 2020. Total raw steel production was estimated to have increased to 87 million tons in 2021 from 72.7 million tons in 2020. The share of steel produced by basic oxygen furnaces, the process that uses iron ore, continued to decline from 37.3% in 2015 to an estimated 28% in 2021 owing to increased use of electric arc furnaces because of their energy efficiency, reduced environmental impacts, and the ready supply of scrap.

Overall, global prices trended upward to an average unit value of \$178.27 per ton in the first 9 months of 2021, a 64% increase from the 2020 annual average of \$108.92 per ton and a 90% increase from the 2019 annual average of \$93.85 per ton. Based on reported prices for iron ore fines (62% iron content) imported into China (cost, insurance, and freight into Tianjin Port), the highest monthly average price during the first 9 months of 2021 was \$214.43 per ton in June compared with the high of \$155.43 per ton in December 2020. The lowest monthly average price during the same period in 2021 was \$124.52 per ton in September compared with the low of \$84.73 per ton in April 2020. The prices trended upward owing to a reduced supply of higher grade iron ore products and demand for higher grade ore to reduce greenhouse gas emissions in steel production.

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One company commenced production at a HBI plant in Ohio in late 2020, making it the fourth iron metallurgy facility operating in the United States. From 2009 to 2013, no iron metallurgy plants operated domestically. In December 2020, one iron ore mining company acquired all the domestic iron and steel operations from another company, consolidating all domestic iron ore mines, blast furnaces, and basic oxygen furnace steelmaking mills under the control of two companies. Globally, estimated iron ore production in 2021 increased by 4% from that of 2020. Global finished steel consumption was forecast by the World Steel Association⁵ to increase by 4.5% in 2021 and increase by 2.2% in 2022.

World Mine Production and Reserves: Reserves for Australia, Peru, and Turkey were revised based on Government and public sources.

	Mine production				Reserves ⁶	
	Usable ore		Iron content		(million metric tons)	
	2020	2021 ^e	2020	2021 ^e	Crude ore	Iron content
United States	38,100	46,000	24,100	29,000	3,000	1,000
Australia	912,000	900,000	565,000	560,000	⁷ 51,000	⁷ 25,000
Brazil	388,000	380,000	247,000	240,000	34,000	15,000
Canada	60,100	68,000	36,100	41,000	6,000	2,300
Chile	15,600	19,000	9,890	12,000	NA	NA
China	360,000	360,000	225,000	220,000	20,000	6,900
India	204,000	240,000	127,000	150,000	5,500	3,400
Iran	49,500	50,000	32,500	33,000	2,700	1,500
Kazakhstan	62,900	64,000	12,700	13,000	2,500	900
Mexico	14,900	17,000	9,380	11,000	NA	NA
Peru	13,300	16,000	8,890	11,000	2,600	1,500
Russia	100,000	100,000	69,500	71,000	25,000	14,000
South Africa	55,600	61,000	35,400	39,000	1,000	670
Sweden	35,800	40,000	25,400	28,000	1,300	600
Turkey	15,400	16,000	8,570	8,900	130	38
Ukraine	78,800	81,000	49,300	51,000	⁸ 6,500	⁸ 2,300
Other countries	69,500	90,000	40,000	58,000	18,000	9,500
World total (rounded)	2,470,000	2,600,000	1,520,000	1,600,000	180,000	85,000

World Resources:⁶ 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 that allow hematite to be recovered from tailings basins and pelletized.

^eEstimated. E Net exporter. NA Not available.

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 metallurgy, which include DRI, HBI, and iron nuggets.

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

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

⁵World Steel Association, 2021, Short range outlook October 2021: Brussels, Belgium, World Steel Association press release, October 14, 8 p.

⁶See Appendix C for resource and reserve definitions and information concerning data sources.

⁷For Australia, Joint Ore Reserves Committee-compliant or equivalent reserves were 24 billion tons of crude ore and 11 billion tons of contained iron.

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