

## IRON ORE<sup>1</sup>

(Data in million metric tons gross weight unless otherwise noted)

**Domestic Production and Use:** In 2015, mines in Michigan and Minnesota shipped 98% of the usable iron ore products in the United States—the remaining 2% was produced for nonsteel end uses—with an estimated value of \$3.8 billion. Twelve iron ore mines (nine open pits and three reclamation operations) and three iron metallic plants, including direct-reduced iron (DRI) and iron nugget producers, operated during the year to supply steelmaking raw materials. Each open pit mine site included a concentration plant and pelletizing plant. A stand-alone pelletizing plant in Indiana used iron ore fines from reclamation plants in Minnesota. The United States was estimated to have produced and consumed 2.5% of the world's iron ore output.

<b>Salient Statistics<sup>2</sup>—United States:</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015<sup>e</sup></b>
Production					
Iron ore	54.7	54.0	52.0	55.9	42.5
Iron metallics	0.4	0.4	0.5	1.9	2.5
Shipments	55.6	52.9	52.7	55.9	44.9
Imports for consumption	5.3	5.2	3.2	5.1	4.2
Exports	11.1	11.2	11.0	12.1	8.1
Consumption:					
Reported (ore and total agglomerate)	46.3	48.8	51.7	48.9	37.9
Apparent <sup>3</sup>	49.1	48.1	45.0	45.9	39.4
Value, U.S. dollars per metric ton	99.45	98.16	96.88	92.78	84.00
Stocks, mine, dock, and consuming plant, yearend, excluding byproduct ore	3.26	3.11	2.29	5.34	4.50
Employment, mine, concentrating and pelletizing plant, number	5,270	5,420	5,644	6,273	4,850
Net import reliance <sup>4</sup> as a percentage of apparent consumption (iron in ore)	E	E	E	E	E

**Recycling:** None. (See Iron and Steel Scrap.)

**Import Sources (2011–14):** Canada, 56%; Brazil, 35%; Sweden, 3%; Argentina, 2%; and other, 4%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations 12–31–15</b>	
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 decreased in 2015 owing to an approximate 30% increase in steel imports in 2014 that persisted through 2015. This increase in low-cost steel imports led to reduced demand for domestic steel, reducing iron ore consumption from domestic iron ore mines. Major declines in seaborne iron ore prices in the current and preceding years coincided with the rising rate of low-cost steel imports in the United States. During the year, six iron ore mines in the United States had either been idled, reduced production, or closed permanently. As of November, three operations remained idled indefinitely and an open pit mine and its associated iron nugget facility were to be idled through the first half of 2017. A DRI facility in Louisiana increased its production rate early in 2015 after equipment failures in 2014. Construction resumed on a 7-million-ton-per-year iron ore operation in Minnesota; production was scheduled to begin in the second half of 2016. Construction continued on a 2-million-ton-per-year hot-briquetted iron facility in Texas; production was scheduled to begin in the first quarter of 2016. One iron ore operation was scheduled to be idled at the end of 2016. One company planned to use the current idling of an iron ore facility to reconfigure equipment to produce an alternate flux pellet to meet contract requirements.

The industry continued efforts to reduce costs and improve efficiencies, including working with labor unions to reduce

## IRON ORE

labor costs. Some producers decreased operational costs because utility companies reduced electricity rates for mines in Minnesota, where the State reduced royalty payments for some mines on a temporary basis. In addition, a new trade agreement with countries in Asia and import duties implemented for 11 countries on steel products in 2015 were considered by industry leaders to be beneficial to the domestic iron ore companies. In October, one company announced that it would shift production of steel products from its subsidiary in Canada to facilities in the United States as part of a restructuring effort, increasing potential domestic iron ore consumption.

Price reductions for seaborne iron ore continued in 2015 as steel production in China decreased and projects to increase iron ore production capacity continued, primarily in Australia and Brazil. Net production, by gross weight, in Australia and Brazil increased by 112 million tons in 2013, by 116 million tons in 2014, and by an estimated 67 million tons in 2015. As a result of decreased prices, production in China, by gross weight on a grade-adjusted basis, decreased by 112 million tons in 2013, by 117 million tons in 2014, and was estimated to decrease by 45 million tons in 2015. Global steel demand was forecast to decrease by 1.7% in 2015, after an increase of 0.7% in 2014.

The monthly mean price of iron ore fines at 62% iron content at Tianjin Port, cost and freight, fell from the 5-year high of \$187.18 in February 2011 to \$56.43 in September 2015, the most recent date for which prices were available. As a result of lower prices, an estimated 200 million tons of iron ore capacity was idled between 2014 and 2015, most notably in Australia, Brazil, Canada, China, Sweden, the United States, and western Africa. Additional capacity was expected to be brought online during the next 5 years, with the largest capacity increases among the top four miners to reach 40 million tons in 2016 and 60 million tons in 2017.

**World Mine Production and Reserves:** Reserves for Australia, Brazil, and Iran were revised based on company, Government, and public reports.

	<b>Mine production</b>		<b>Reserves</b>	
	<b>2014</b>	<b>2015<sup>e</sup></b>	<b>Crude ore</b>	<b>Iron content</b>
United States	56	43	11,500	3,500
Australia	774	824	54,000	24,000
Brazil	411	428	23,000	12,000
Canada	44	39	6,300	2,300
China <sup>5</sup>	309	264	23,000	7,200
India	129	129	8,100	5,200
Iran	33	33	2,700	1,500
Kazakhstan	25	25	2,500	900
Russia	102	112	25,000	14,000
South Africa	81	80	1,000	650
Sweden	37	37	3,500	2,200
Ukraine	68	68	<sup>6</sup> 6,500	<sup>6</sup> 2,300
Other countries	<u>153</u>	<u>125</u>	<u>18,000</u>	<u>9,500</u>
World total (rounded)	2,220	2,210	190,000	85,000

**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. At some blast furnace operations, ferrous scrap may constitute as much as 7% of the blast furnace feedstock. DRI, iron nuggets, and scrap are extensively used for steelmaking in electric arc furnaces and in iron and steel foundries, but scrap availability can be limited. Technological advancements have been made, which allow hematite to be recovered from tailings basins and pelletized.

<sup>e</sup>Estimated. E Net exporter.

<sup>1</sup>Data is for iron ore used as a raw material in steelmaking unless otherwise noted. See also Iron and Steel and Iron and Steel Scrap.

<sup>2</sup>Salient statistics are for all forms of iron ore used in steelmaking, except iron metallica, which include direct-reduced iron, hot-briquetted iron, and iron nuggets. Iron metallica production is listed separately and based on nondomestic iron ore consumption.

<sup>3</sup>Defined as production + imports – exports + adjustments for industry stock changes.

<sup>4</sup>Defined as imports – exports + adjustments for industry stock changes.

<sup>5</sup>Production data are for crude ore, rather than usable ore, and are adjusted to reflect average global grade.

<sup>6</sup>See [Appendix C](#) for resource/reserve definitions and information concerning data sources.

<sup>7</sup>For Ukraine, reserves consist of the A+B categories of the former Soviet Union's reserves classification system.