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

# (Data in million metric tons of usable ore,<sup>2</sup> unless noted)

**Domestic Production and Use:** The value of usable ore shipped from mines in Minnesota, Michigan, and six other States in 2000 was estimated at \$1.7 billion. Twelve iron ore production complexes with 12 mines, 10 concentration plants, and 10 pelletizing plants were in operation during the year. The mines included 11 open pits and 1 underground operation. Virtually all ore was concentrated before shipment. Nine mines operated by five companies accounted for 99% of production. The United States produced 6% of the world's iron ore and consumed about 8%.

Salient Statistics—United States:	1996	1997	1998	1999	2000 <sup>e</sup>
Production, usable	62.1	63.0	62.9	57.8	61.0
Shipments	62.2	62.8	63.2	60.7	61.0
Imports for consumption	18.4	18.6	16.9	14.3	18.0
Exports	6.3	6.3	6.0	6.1	6.2
Consumption: Reported (ore and total					
agglomerate) <sup>3</sup>	79.6	79.5	78.2	75.1	76.0
Apparent	72.0	73.0	71.1	70.1	75.2
Price, <sup>4</sup> U.S. dollars per metric ton	28.07	29.60	31.14	25.52	26.00
Stocks, mine, dock, and consuming					
plant, yearend, excluding byproduct ore	25.7	27.9	30.6	26.4	24.0
Employment, mine, concentrating and					
pelletizing plant, quarterly average, number	7,580	7,450	7,290	6,820	6,600
Net import reliance <sup>5</sup> as a percent of					
apparent consumption (iron in ore)	14	14	13	18	19

### Recycling: None.

Import Sources (1996-99): Canada, 52%; Brazil, 32%; Venezuela, 8%; Australia, 4%; and other, 4%.

<u>Tariff</u> : Item	Number	Normal Trade Relations 12/31/00		
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:** Worldwide, nearly all iron ore is used in steelmaking; in the United States, steelmaking accounts for about 98% of iron ore consumption. Iron ore production and consumption are concentrated in a few countries. In 2000, iron ore was produced in about 50 countries; the 7 largest of these producing countries accounted for 77% of the world total and no other country had as much as a 5% share.

The majority of U.S. iron ore trade involves Canada. Since 1990, about 52% of U.S. imports originated in Canada, and 99% of U.S. exports were shipped there. The reasons for this are ownership and proximity. Canadian steel mills have partial ownership in three of the nine iron ore operations that produce 99% of U.S. ore. One U.S. steelmaker and one merchant iron ore company own part of one of the three Canadian iron ore producers. The proximity of the producers and consumers of iron ore in the two countries, in particular in the Great Lakes region, means lower shipping costs.

From 1995 through 1999, the United States ranked sixth in iron ore production with 6% of the world total and third in pig iron production with 9% of the world total. Although world pig iron production levels have changed little over the past 5 years, production by area during that period has changed considerably.

Domestic iron ore production and consumption levels exceeded those of 1999. Pig iron and steel production also rose. Steel demand in the United States was significantly higher than in 1999, but much of that demand was satisfied by steel imports. Net imports of steel mill products were about 30 million metric tons, a 16% increase over that of 1999.

# **IRON ORE**

Internationally, the major event in the iron ore industry was the acquisition of North Ltd. by Rio Tinto. By this acquisition, Rio Tinto moved from third to second place among the world's leading iron ore producers. Cia. Vale do Rio Doce of Brazil, which continued to be the world's largest producer, made an acquisition of its own, purchasing the majority ownership of S/A Mineração da Trindade (SAMITRI). SAMITRI mines in the Brazilian State of Minas Gerais. Rio Tinto now owns a majority position in Robe River Iron Associates in Western Australia and in the Iron Ore Company of Canada in Canada, which between them have a production capacity of 45 million metric tons per year. Rio also gained the majority ownership of the West Angelas deposit in Western Australia. Production at the deposit is expected to begin in 2002 at a rate of 7 million tons per year, rising to 20 million tons per year several years afterward.<sup>6</sup>

Domestically, the major event was the announcement by LTV Steel Company, Inc., a subsidiary of The LTV Corporation, of its intention to close permanently the operations of LTV Steel Mining Company. Despite investments of millions of dollars spent on the operation to increase productivity, declining ore quality and obsolete pelletizing furnaces made the operation the least productive taconite producer on the Mesabi Range.<sup>7</sup>

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## World Mine Production, Reserves, and Reserve Base:<sup>8</sup>

			Crude	Crude ore		Iron content	
	Mine production		Reserve		Reserve		
	1999	<u>2000°</u>	Reserves	base	Reserves	base	
United States	58	61	10,000	23,000	3,000	7,000	
Australia	155	158	18,000	40,000	11,000	25,000	
Brazil	190	190	7,600	17,000	4,800	11,000	
Canada	34	34	1,700	3,900	1,100	2,500	
China	209	215	25,000	50,000	7,800	15,000	
India	68	68	2,800	6,200	1,800	3,900	
Kazakhstan	9	10	8,300	19,000	4,500	10,000	
Mauritania	12	12	700	1,500	400	1,000	
Russia	81	80	20,000	45,000	11,000	25,000	
South Africa	30	30	1,000	2,300	650	1,500	
Sweden	19	19	3,500	7,800	2,200	5,000	
Ukraine	48	50	22,000	50,000	12,000	28,000	
Other countries	82	80	17,000	38,000	10,000	23,000	
World total (may be rounded)	994	1,010	140,000	300,000	71,000	160,000	

<u>World Resources</u>: World resources are estimated to exceed 800 billion tons of crude ore containing more than 230 billion tons of iron. U.S. resources are estimated to be about 110 billion tons of 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 for commercial use.

<u>Substitutes</u>: Iron ore is the only source of primary iron. In some operations, ferrous scrap constitutes as much as 7% of the blast furnace burden. Scrap is extensively used in steelmaking and in iron and steel foundries.

<sup>e</sup>Estimated.

<sup>1</sup>See also Iron and Steel and Iron and Steel Scrap.

<sup>2</sup>Agglomerates, concentrates, direct-shipping ore, and byproduct ore for consumption.

<sup>3</sup>Includes weight of lime, flue dust, and other additives used in producing sinter for blast furnaces. Consumption data are not entirely comparable to those of 1987 and earlier years owing to changes in data collection.

<sup>4</sup>Calculated from value of ore at mines.

<sup>5</sup>Defined as imports - exports + adjustments for Government and industry stock changes.

<sup>6</sup>Kirk, W.S., 2000, Rio Tinto acquires North: Skillings Mining Review, v. 89, no. 30, October 23, p. 4-7.

<sup>7</sup>Kirk, W.S., 2000, Iron ore in March 2000: U.S. Geological Survey Mineral Industry Surveys, June, 7 p.

<sup>8</sup>See Appendix C for definitions.