

## 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 three other States in 2001 was estimated at \$1.5 billion. Thirteen iron ore production complexes with 13 mines, 10 concentration plants, and 10 pelletizing plants were in operation during the year. The mines included 12 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 7%.

| <b>Salient Statistics—United States:</b>   | <b>1997</b> | <b>1998</b> | <b>1999</b> | <b>2000</b> | <b>2001<sup>e</sup></b> |
|--|-------------|-------------|-------------|-------------|-------------------------|
| Production, usable   | 63.0        | 62.9        | 57.7        | 63.1        | 60.0                    |
| Shipments  | 62.8        | 63.2        | 60.7        | 61.0        | 60.0                    |
| Imports for consumption  | 18.6        | 16.9        | 14.3        | 15.7        | 12.0                    |
| Exports  | 6.3         | 6.0         | 6.1         | 6.1         | 6.0                     |
| Consumption:   |             |             |             |             |                         |
| Reported (ore and total agglomerate) <sup>3</sup>                                      | 79.5        | 78.2        | 75.1        | 76.5        | 65.0                    |
| Apparent   | 73.0        | 71.1        | 70.1        | 70.2        | 70.8                    |
| Price, <sup>4</sup> U.S. dollars per metric ton  | 29.60       | 31.14       | 25.52       | 25.6        | 25.0                    |
| Stocks, mine, dock, and consuming plant, yearend, excluding byproduct ore              | 27.9        | 30.6        | 26.4        | 28.8        | 24.0                    |
| Employment, mine, concentrating and pelletizing plant, quarterly average, number       | 7,450       | 7,290       | 6,800       | 6,814       | 6,000                   |
| Net import reliance <sup>5</sup> as a percentage of apparent consumption (iron in ore) | 14          | 12          | 18          | 10          | 15                      |

**Recycling:** None.

**Import Sources (1997-2000):** Canada, 51%; Brazil, 35%; Venezuela, 6%; Australia, 5%; and other, 3%.

| <b>Tariff: Item</b> | <b>Number</b> | <b>Normal Trade Relations<br/>12/31/01</b> |
|---------------------|---------------|--|
| 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, as an example, steelmaking accounts for about 98% of iron ore consumption. Annual world production of iron ore is usually about a billion tons, with most of it concentrated in a few countries. In 2001 for example, iron ore was produced in about 50 countries, but the 7 largest of these countries produced more than 80% of the world total, and no other country had as much as a 5% share. Globally, the consolidation begun in 2000 continued. The result was that the three largest iron ore producers had about 70% of the export market.

A large portion of world iron ore production, about 450 million tons per year, is exported because most iron ore is not consumed in the country in which it is produced. Australia and Brazil, for example, rank 1st and 2d, respectively, in world production (Fe content) but 6th and 15th, respectively, in pig iron production (China produces more ore than any other nation, but its ore is low grade). The vast majority of exports are seaborne.

Iron ore consumption data are available for the United States, but not for the rest of the world. Because almost all iron ore is consumed in blast furnaces, the product of the blast furnace, pig iron, is used as the indicator of iron ore consumption. Consumption is also concentrated in a few countries. Pig iron was produced in more than 50 countries. As with iron ore production, pig iron production occurs in many countries, but most production is concentrated in a few. World pig iron production is generally about 550 million metric tons. The top five pig iron producing countries account for almost 60% of world production. No other country has as much as 5%.

## IRON ORE

Iron ore production in the United States declined nearly 5% to about 60 million tons in 2001. Consumption of iron ore and pig iron production also fell. At the beginning of the year, there were seven iron ore producers in Minnesota and two producers in Michigan whose combined output accounted for 99% of U.S. iron ore production. One of them closed permanently and was sold, 100% of a second and 70% of a third were put up for sale, and 45% of a fourth and 12.5% of a fifth were sold. All of the portions of mines that were sold and for sale were owned by steel companies. All the equity was purchased by the largest North American iron ore company. Six of the eight mines that did not close experienced shutdowns during the year. One-half of these eight cut production and another one-half laid off employees. A small iron ore producer in Missouri closed as did an iron ore research laboratory on the Mesabi Iron Range in northern Minnesota.

Congress approved an appropriations bill that included money to begin building a new lock at the Soo Locks, Sault Ste. Marie, MI, that provides the only access from Lake Superior to the lower Great Lakes. Three of the four locks are too small to handle the 1,000-foot-long ore boats that are the most efficient. The new lock will replace the two oldest locks and will be the same size as the Poe Lock, 1,200 feet long and 110 feet wide.

The U.S. Department of Commerce was asked by Members of Congress to conduct an investigation to determine whether imports of semifinished steel and iron ore constituted a threat to the national security of the United States. Hearings were held and the Secretary of Commerce made a recommendation to the President.

### World Mine Production, Reserves, and Reserve Base:<sup>6</sup>

|                              | Mine production |                   | Crude ore Reserve |         | Iron content Reserve |         |
|------------------------------|-----------------|-------------------|-------------------|---------|----------------------|---------|
|                              | 2000            | 2001 <sup>e</sup> | Reserves          | base    | Reserves             | base    |
| United States                | 63              | 60                | 6,900             | 15,000  | 2,100                | 4,600   |
| Australia                    | 168             | 160               | 18,000            | 40,000  | 11,000               | 25,000  |
| Brazil                       | 195             | 200               | 7,600             | 19,000  | 4,800                | 12,000  |
| Canada                       | 35              | 35                | 1,700             | 3,900   | 1,100                | 2,500   |
| China                        | 224             | 220               | 25,000            | 50,000  | 7,800                | 15,000  |
| India                        | 75              | 72                | 2,800             | 6,200   | 1,800                | 3,900   |
| Kazakhstan                   | 16              | 15                | 8,300             | 19,000  | 4,500                | 10,000  |
| Mauritania                   | 12              | 10                | 700               | 1,500   | 400                  | 1,000   |
| Russia                       | 87              | 88                | 25,000            | 56,000  | 14,000               | 31,000  |
| South Africa                 | 34              | 35                | 1,000             | 2,300   | 650                  | 1,500   |
| Sweden                       | 21              | 20                | 3,500             | 7,800   | 2,200                | 5,000   |
| Ukraine                      | 56              | 55                | 22,000            | 50,000  | 12,000               | 28,000  |
| Other countries              | 77              | 75                | 17,000            | 38,000  | 10,000               | 23,000  |
| World total (may be rounded) | 1,060           | 1,000             | 140,000           | 310,000 | 72,000               | 160,000 |

**World Resources:** 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.

**Substitutes:** 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>See Appendix C for definitions.