

## MANGANESE

(Data in thousand metric tons, gross weight unless otherwise specified)

**Domestic Production and Use:** Manganese ore containing 35% or more manganese was not produced domestically in 2004. Manganese ore was consumed mainly by about eight firms with plants principally in the Eastern United States and the Midwestern United States. Most ore consumption was related to steel production, directly in pig iron manufacture and indirectly through upgrading ore to ferroalloys. Additional quantities of ore were used for such nonmetallurgical purposes as production of dry cell batteries, as an ingredient in plant fertilizers and animal feed, and as a colorant for brick. Manganese ferroalloys were produced at two smelters, although one closed in January. Leading identifiable end uses of manganese were in products for construction, machinery, and transportation, which were estimated to be 33%, 11%, and 13%, respectively, of total manganese demand. Most of the rest went to a variety of other iron and steel applications. The value of domestic consumption, estimated from foreign trade data, was about \$1.29 billion.

<b>Salient Statistics—United States:</b> <sup>1</sup>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004<sup>e</sup></b>
Production, mine <sup>2</sup>	—	—	—	—	—
Imports for consumption:					
Manganese ore	447	358	427	347	450
Ferromanganese	312	251	275	238	342
Silicomanganese <sup>3</sup>	378	269	247	267	360
Exports:					
Manganese ore	10	9	15	18	97
Ferromanganese	8	9	9	11	7
Shipments from Government stockpile excesses: <sup>4</sup>					
Manganese ore	63	37	56	74	231
Ferromanganese	33	2	38	38	215
Consumption, reported: <sup>5</sup>					
Manganese ore <sup>6</sup>	486	425	360	398	420
Ferromanganese	300	266	253	248	270
Consumption, apparent, manganese <sup>7</sup>	768	692	696	618	925
Price, average value, 46% to 48% Mn metallurgical ore, dollars per mtu cont. Mn, c.i.f. U.S. ports	2.39	2.44	2.30	2.41	2.79
Stocks, producer and consumer, yearend:					
Manganese ore <sup>6</sup>	226	138	151	156	158
Ferromanganese	31	25	21	20	22
Net import reliance <sup>8</sup> as a percentage of apparent consumption	100	100	100	100	100

**Recycling:** Scrap recovery specifically for manganese was negligible, but a significant amount was recycled through processing operations as a minor component of ferrous and nonferrous scrap and steel slag.

**Import Sources (2000-03):** Manganese ore: Gabon, 73%; South Africa, 13%; Australia, 8%; Brazil, 3%; and other, 3%. Ferromanganese: South Africa, 51%; France, 16%; Brazil, 7%; Australia, 6%; and other, 20%. Manganese contained in all manganese imports: South Africa, 36%; Gabon, 21%; Australia, 12%; France, 7%; and other, 24%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations</b>
		<b>12-31-04</b>
Ore and concentrate	2602.00.0040/60	Free.
Manganese dioxide	2820.10.0000	4.7% ad val.
High-carbon ferromanganese	7202.11.5000	1.5% ad val.
Silicomanganese	7202.30.0000	3.9% ad val.
Metal, unwrought	8111.00.4700/4900	14% ad val.

**Depletion Allowance:** 23% (Domestic), 15% (Foreign).

**Government Stockpile:** In addition to the quantities shown below, the stockpile contained 258,000 metric tons of nonstockpile-grade metallurgical ore, all of which was authorized for disposal.

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Material	Stockpile Status—9-30-04 <sup>9</sup>			Disposal plan FY 2004	Disposals FY 2004
	Uncommitted inventory	Committed inventory	Authorized for disposal		
Battery:					
Natural ore	22	5	22	27	27
Synthetic dioxide	3	—	3	3	—
Chemical ore	68	4	68	36	41
Metallurgical ore	368	101	625	227	244
Ferromanganese, high-carbon	680	—	680	45	51
Electrolytic metal	—	—	—	2	0.5

**Events, Trends, and Issues:** While the annual growth rate for manganese ferroalloy demand usually falls in the range of 1% to 2% and is tied to steel production, apparent consumption in 2004 was estimated to be about 50% higher than that of 2003, and reached the highest level since 1981. Through the first 9 months of 2004, domestic steel production was 8% higher than that for the same period in 2003. Rising crude steel production in response to economic growth in North America coupled with supply deficits contributed to the unprecedented increase in manganese alloy spot-market prices in late 2003 through September 2004. Prices for high- and medium-carbon ferromanganese and silicomanganese in the United States reached their highest levels in history during the first half of 2004. As a result of the record ferromanganese prices, some steel companies began to place manganese surcharges on their products. Domestic manganese ore prices followed the increase in the international benchmark price for metallurgical-grade ore set between Japan and major suppliers in early 2004.

**World Mine Production, Reserves, and Reserve Base (metal content):** Data for reserves and reserve base have been revised upward from those previously published for India based on information reported by the Government of India; reserves are based on estimates of proven and probable reserves.

	Mine production		Reserves <sup>10</sup>	Reserve base <sup>10</sup>
	2003	2004 <sup>e</sup>		
United States	—	—	—	—
Australia	1,200	3,300	32,000	82,000
Brazil	<sup>e</sup> 990	1,000	23,000	51,000
China	<sup>e</sup> 800	800	40,000	100,000
Gabon	<sup>e</sup> 870	1,300	20,000	160,000
India	<sup>e</sup> 620	600	93,000	<sup>11</sup> 160,000
Mexico	110	120	4,000	9,000
South Africa	1,600	1,800	32,000	<sup>11</sup> 4,000,000
Ukraine	880	880	140,000	520,000
Other countries	<u>1,100</u>	<u>1,300</u>	<u>Small</u>	<u>Small</u>
World total (rounded)	<sup>e</sup> 8,200	11,000	380,000	5,100,000

**World Resources:** Land-based resources are large but irregularly distributed; those of the United States are very low grade and have potentially high extraction costs. South Africa accounts for about 80% of the world's identified resources, and Ukraine accounts for about 10%.

**Substitutes:** Manganese has no satisfactory substitute in its major applications.

<sup>e</sup>Estimated. — Zero.

<sup>1</sup>Manganese content typically ranges from 35% to 54% for manganese ore and from 74% to 95% for ferromanganese.

<sup>2</sup>Excludes insignificant quantities of low-grade manganiferous ore.

<sup>3</sup>Imports more nearly represent amount consumed than does reported consumption; internal evaluation indicates that reported consumption of silicomanganese is considerably understated.

<sup>4</sup>Net quantity.

<sup>5</sup>Total manganese consumption cannot be approximated from consumption of manganese ore and ferromanganese because the ore is used to produce manganese ferroalloys and metal.

<sup>6</sup>Exclusive of ore consumed at iron and steel plants.

<sup>7</sup>Thousand metric tons, manganese content; based on estimates of average content for all significant components except imports, for which content is reported.

<sup>8</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

<sup>9</sup>See [Appendix B](#) for definitions.

<sup>10</sup>See [Appendix C](#) for definitions.

<sup>11</sup>Includes inferred resources.