

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 2005. Manganese ore was consumed mainly by eight firms with plants principally in the East and Midwest. 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, plant fertilizers and animal feed, and as a brick colorant. Manganese ferroalloys were produced at two smelters, although one operated nominally for 4 months. Construction, machinery, and transportation end uses accounted for about 29%, 12%, and 12%, respectively, of 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 \$414 million.

Salient Statistics—United States: ¹	2001	2002	2003	2004	2005^e
Production, mine ²	—	—	—	—	—
Imports for consumption:					
Manganese ore	358	427	347	451	522
Ferromanganese	251	275	238	429	253
Silicomanganese ³	269	247	267	422	347
Exports:					
Manganese ore	9	15	18	123	12
Ferromanganese	9	9	11	9	13
Shipments from Government stockpile excesses: ⁴					
Manganese ore	37	56	74	392	256
Ferromanganese	2	38	38	49	17
Consumption, reported: ⁵					
Manganese ore ⁶	425	360	398	441	395
Ferromanganese	266	253	248	315	310
Consumption, apparent, manganese ⁷	692	696	643	1,029	760
Price, average value, 46% to 48% Mn metallurgical ore, dollars per mtu contained Mn, c.i.f. U.S. ports	2.44	2.30	2.41	2.89	4.71
Stocks, producer and consumer, yearend:					
Manganese ore ⁶	138	151	156	159	189
Ferromanganese	25	21	20	16	15
Net import reliance ⁸ as a percentage of apparent consumption	100	100	100	100	100

Recycling: Manganese was recycled incidentally as a minor constituent of ferrous and nonferrous scrap; however, scrap recovery specifically for manganese was negligible. Manganese is recovered along with iron from steel slag.

Import Sources (2001-04): Manganese ore: Gabon, 72%; South Africa, 15%; Australia, 9%; Brazil, 2%; and other, 2%. Ferromanganese: South Africa, 49%; France, 11%; China, 7%; Brazil, 6%; and other, 27%. Manganese contained in all manganese imports: South Africa, 35%; Gabon, 23%; Australia, 11%; China, 4%, and other, 27%.

Tariff: Item	Number	Normal Trade Relations 12-31-05
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 159,000 metric tons of nonstockpile-grade metallurgical ore, all of which was authorized for disposal.

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Material	Stockpile Status—9-30-05 ⁹			Disposal plan FY 2005	Disposals FY 2005
	Uncommitted inventory	Committed inventory	Authorized for disposal		
Manganese ore:					
Battery grade	—	18	—	27	23
Chemical grade	31	31	31	36	37
Metallurgical grade	144	—	144	454	453
Ferromanganese, high-carbon	625	38	612	91	50
Electrolytic metal	—	—	—	2	—
Synthetic dioxide	—	3	—	3	3

Events, Trends, and Issues: In 2004, manganese apparent consumption was 60% higher than that of 2003 and at the highest level since 1979. Apparent consumption in 2005 was estimated to be about 26% lower than that of 2004 and was more representative of the levels during the decade preceding 2004. The annual growth rate for manganese ferroalloy consumption usually falls in the range of 1% to 2%, in line with long-term trends in steel production, but through the first 9 months of 2005, domestic steel production was 6% lower than that for the same period in 2004. Manganese alloy spot-market prices decreased as a result of this drop in domestic steel production and stocks buildup. By the end of October 2005, U.S. weekly average spot prices for high-carbon ferromanganese were about two-thirds of those reached during the first half of 2004; medium-carbon ferromanganese and silicomanganese prices were about 50% lower. Domestic manganese ore prices followed the percentage increase in the international price for metallurgical-grade ore set between Japan and major suppliers in early 2005.

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

	Mine production		Reserves ¹⁰	Reserve base ¹⁰
	<u>2004</u>	<u>2005^e</u>		
United States	—	—	—	—
Australia	1,300	1,340	68,000	130,000
Brazil	^e 1,300	1,300	23,000	51,000
China	^e 900	900	40,000	100,000
Gabon	^e 1,100	1,300	20,000	160,000
India	^e 630	640	93,000	¹¹ 160,000
Mexico	136	136	4,000	9,000
South Africa	1,905	2,200	32,000	¹¹ 4,000,000
Ukraine	810	720	140,000	520,000
Other countries	<u>1,270</u>	<u>1,250</u>	<u>Small</u>	<u>Small</u>
World total (rounded)	^e 9,350	9,790	430,000	5,200,000

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.

^eEstimated. — Zero.

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

²Excludes insignificant quantities of low-grade manganese ore.

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

⁴Net quantity, defined as stockpile shipments – receipts.

⁵Manganese consumption should not be estimated as the sum of manganese ore and ferromanganese consumption because so doing would count manganese in ore used to produce ferromanganese twice.

⁶Exclusive of ore consumed at iron and steel plants.

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

⁸Defined as imports – exports + adjustments for Government and industry stock changes.

⁹See Appendix B for definitions.

¹⁰See Appendix C for definitions.

¹¹Includes inferred resources.