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 2006. 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 3 months. Construction, machinery, and transportation end uses accounted for about 24%, 9%, and 9%, 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 $513 million.

Salient Statistics—United States:[1]	2002	2003	2004	2005	2006[e]
Production, mine[2]	—	—	—	—	—
Imports for consumption:					
Manganese ore	427	347	451	656	442
Ferromanganese	275	238	429	255	339
Silicomanganese[3]	247	267	422	327	369
Exports:					
Manganese ore	15	18	123	13	2
Ferromanganese	9	11	9	14	30
Shipments from Government stockpile excesses:[4]					
Manganese ore	56	74	392	213	57
Ferromanganese	38	38	49	49	96
Consumption, reported:[5]					
Manganese ore[6]	360	398	441	368	340
Ferromanganese	253	248	315	267	290
Consumption, apparent, manganese[7]	696	643	1,030	766	870
Price, average value, 46% to 48% Mn metallurgical ore, dollars per mtu contained Mn, c.i.f. U.S. ports	2.30	2.41	2.89	4.39	3.61
Stocks, producer and consumer, yearend:					
Manganese ore[6]	151	156	159	337	300
Ferromanganese	21	20	16	30	30
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 (2002-05): Manganese ore: Gabon, 72%; South Africa, 14%; Australia, 8%; Brazil, 2%; and other, 4%. Ferromanganese: South Africa, 51%; China, 10%; Brazil, 7%; France, 7%; and other, 25%. Manganese contained in all manganese imports: South Africa, 34%; Gabon, 24%; Australia, 9%; China, 5%; and other, 28%.

Tariff: Item	Number	Normal Trade Relations 12-31-06
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 151,000 metric tons of nonstockpile-grade metallurgical ore, all of which was authorized for disposal.

Prepared by **Lisa A. Corathers [(703) 648-4973, lcorathers@usgs.gov, fax: (703) 648-7757]**

MANGANESE

Material	Stockpile Status—9-30-06[9] Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2006	Disposals FY 2006
Manganese ore:					
Battery grade	—	18	—	27	—
Chemical grade	—	20	—	36	31
Metallurgical grade	151	224	151	454	—
Ferromanganese, high-carbon	549	6	549	91	75
Electrolytic metal	—	—	—	2	—
Synthetic dioxide	—	3	—	3	3

Events, Trends, and Issues: One domestic manganese ferroalloy plant, shut down since November 2005, was sold in January 2006 to a Delaware corporation owned by a large Ukrainian company. After refurbishment, the newly acquired plant started silicomanganese production in late October. Apparent consumption in 2006 was estimated to be about 14% higher than that of 2005, owing to increased demand by the domestic steel industry. 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; however, through the first 8 months of 2006, domestic steel production was 10% higher than that for the same period in 2005. Manganese alloy spot-market prices rose as a result of this increase in domestic steel production coupled with high energy costs. By the end of October 2006, U.S. weekly average spot prices for medium-carbon ferromanganese, high-carbon ferromanganese, and silicomanganese were about 30%, 25%, and 7% higher, respectively, than those at the beginning of the year. Domestic manganese ore prices followed the percentage decrease in the international price for metallurgical-grade ore set between Japan and major suppliers in late 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 2005	Mine production 2006[e]	Reserves[10]	Reserve base[10]
United States	—	—	—	—
Australia	1,450	1,500	73,000	160,000
Brazil	1,590	1,600	25,000	51,000
China	[e]1,100	1,200	40,000	100,000
Gabon	[e]1,290	1,550	20,000	160,000
India	[e]640	650	93,000	[11]160,000
Mexico	180	133	4,000	9,000
South Africa	2,100	2,200	32,000	[11]4,000,000
Ukraine	[e]770	770	140,000	520,000
Other countries	1,390	1,390	Small	Small
World total (rounded)	[e]10,500	11,000	440,000	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 20%.

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

[e]Estimated. — Zero.

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

[2]Excludes insignificant quantities of low-grade manganiferous ore.

[3]Imports more nearly represent amount consumed than does reported consumption.

[4]Net quantity, defined as stockpile shipments – receipts.

[5]Manganese 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.

[6]Exclusive of ore consumed at iron and steel plants.

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

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

[9]See Appendix B for definitions.

[10]See Appendix C for definitions.

[11]Includes inferred resources.