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 2007. 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, in plant fertilizers and animal feed, and as a brick colorant. Manganese ferroalloys were produced at two smelters, although one operated sporadically throughout the year. Construction, machinery, and transportation end uses accounted for about 24%, 10%, and 10%, 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 $730 million.

Salient Statistics—United States:[1]	2003	2004	2005	2006	2007[e]
Production, mine[2]	—	—	—	—	—
Imports for consumption:					
Manganese ore	347	451	656	572	610
Ferromanganese	238	429	255	358	322
Silicomanganese[3]	267	422	327	400	390
Exports:					
Manganese ore	18	123	13	2	2
Ferromanganese	11	9	14	22	33
Shipments from Government stockpile excesses:[4]					
Manganese ore	28	172	34	73	5
Ferromanganese	28	37	36	56	66
Consumption, reported:[5]					
Manganese ore[6]	398	441	368	365	300
Ferromanganese	248	315	267	296	280
Consumption, apparent, manganese[7]	643	1,030	773	1,050	910
Price, average value, 46% to 48% Mn metallurgical ore, dollars per metric ton unit contained Mn, c.i.f. U.S. ports	2.41	2.89	4.39	3.51	3.32
Stocks, producer and consumer, yearend:					
Manganese ore[6]	156	159	337	159	115
Ferromanganese	20	16	30	31	31
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 (2003-06): Manganese ore: Gabon, 65%; South Africa, 19%; Australia, 7%; Ghana, 2%; and other, 7%. Ferromanganese: South Africa, 51%; China, 14%; Mexico, 6%; Republic of Korea, 5%; and other, 24%. Manganese contained in all manganese imports: South Africa, 35%; Gabon, 22%; Australia, 8%; China, 7%; and other, 28%.

Tariff: Item	Number	Normal Trade Relations 12-31-07
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: 22% (Domestic), 14% (Foreign).

Government Stockpile: The uncommitted inventory of metallurgical ore was classed as nonstockpile-grade. Disposals reported in fiscal year 2007 may not be reflected in committed inventory levels owing to end of fiscal year transactions.

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

MANGANESE

Material	Stockpile Status—9-30-07[9] Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2007	Disposals FY 2007
Manganese ore:					
Battery grade	16	2	16	27	2
Chemical grade	0.456	—	0.456	36	—
Metallurgical grade	328	34	328	454	359
Ferromanganese, high-carbon	477	8	477	91	77
Electrolytic metal	—	—	—	—	—
Synthetic dioxide	3	—	—	3	1

Events, Trends, and Issues: Apparent consumption in 2007 was about 13% lower than that of 2006 owing to constant demand by the domestic steel industry, and reduction of producer and consumer stocks. During the first 8 months of 2007, domestic steel production was 1.4% less than that for the same period in 2006. Despite this, manganese alloy spot-market prices rose because of concerns that temporary production cuts by manganese alloy producers in Brazil, France, and the United States might lead to supply shortages, increased demand by the global steel industry, and higher manganese ore spot prices and ocean transportation costs. By the end of October 2007, U.S. weekly average spot prices for medium- and high-carbon ferromanganese and silicomanganese were all about double those at the start of the year. The annual average domestic manganese ore contract price followed the 10% decrease in the international price for metallurgical-grade ore set between Japanese consumers and major suppliers in January 2007, although the average weekly spot market price had tripled to $8.65 per metric ton unit during the first 10 months of 2007 owing to increased global demand for manganese ore, particularly in China and India.

World Mine Production, Reserves, and Reserve Base (metal content): Reserve estimates have been revised from those previously published for Australia (downward), Brazil (upward), India (downward), and South Africa (upward) based on information reported by the Governments of Australia, Brazil, and India and the major manganese producers of South Africa. Reserves are based on estimates of demonstrated resources.

	Mine production 2006	Mine production 2007[e]	Reserves[10]	Reserve base[10]
United States	—	—	—	—
Australia	2,190	2,200	62,000	160,000
Brazil	1,370	1,000	35,000	57,000
China	[e]1,600	1,600	40,000	100,000
Gabon	[e]1,350	1,550	20,000	160,000
India	[e]811	650	56,000	[11]150,000
Mexico	133	130	4,000	9,000
South Africa	2,300	2,300	100,000	[11]4,000,000
Ukraine	[e]820	820	140,000	520,000
Other countries	1,360	1,360	Small	Small
World total (rounded)	[e]11,900	11,600	460,000	5,200,000

World Resources: Land-based manganese 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 manganese 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; updated from previous estimates.

[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.