

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 1998. Manganese ore was consumed mainly by about 15 firms with plants principally in the Eastern and Midwestern United States. The majority of ore consumption was related to steel production, directly in pig iron manufacture and indirectly through upgrading ore to ferroalloys and metal. Ore was used otherwise for such nonmetallurgical purposes as producing dry cell batteries, as an ingredient in plant fertilizers and animal feed, and as a colorant for brick. Leading identifiable end uses of manganese were in products for construction, machinery, and transportation, which were estimated to be 23%, 14%, and 11%, respectively, of total manganese demand. Most of the rest went to a variety of other iron and steel applications. Value of domestic consumption was estimated from foreign trade data as about \$470 million.

Salient Statistics—United States: ¹	1994	1995	1996	1997	1998^e
Production, mine ²	—	—	—	—	—
Imports for consumption:					
Manganese ore	331	394	478	357	310
Ferromanganese	336	310	374	304	360
Silicomanganese ³	273	305	323	306	395
Exports:					
Manganese ore	15	15	32	84	90
Ferromanganese	11	11	10	12	13
Shipments from Government stockpile excesses: ⁴					
Manganese ore	134	115	128	115	95
Ferromanganese	9	18	(2)	31	25
Consumption, reported: ⁵					
Manganese ore ⁶	449	486	478	510	515
Ferromanganese	347	348	326	337	355
Consumption, apparent, manganese ⁷	694	676	776	628	755
Price, average value, 46% to 48% Mn metallurgical ore, dollars per mtu cont. Mn, c.i.f. U.S. ports	2.40	2.40	2.55	2.44	2.40
Stocks, producer and consumer, yearend:					
Manganese ore ⁶	269	309	319	275	235
Ferromanganese	36	33	27	21	15
Net import reliance ⁸ as a percent 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 (1994-97): Manganese ore: Gabon, 58%; Australia, 15%; Mexico, 14%; Brazil, 6%; and other, 7%. Ferromanganese: South Africa, 37%; France, 26%; Brazil, 10%; Australia, 9%; and other, 18%. Manganese contained in all manganese imports: South Africa, 27%; Gabon, 17%; Australia, 14%; France, 11%; and other, 31%.

Tariff: Item	Number	Normal Trade Relations (NTR) 12/31/98	Non-NTR⁹ 12/31/98
Ore and concentrate	2602.00.0040/60	Free	2.2¢/kg of contained Mn.
Manganese dioxide	2820.10.0000	4.7% ad val.	25% ad val.
High-carbon ferromanganese	7202.11.5000	1.5% ad val.	10.5% ad val.
Silicomanganese	7202.30.0000	3.9% ad val.	23% ad val.
Metal, unwrought	8111.00.4500	14% ad val.	20% ad val.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Government Stockpile: In addition to the data tabulated, the stockpile contained additional uncommitted inventories of nonstockpile-grade materials, as follows, in tons: natural battery ore, 16,800; chemical ore, 81; and metallurgical ore, 296,000. Disposals in FY 1998 also included 132,000 tons of nonstockpile-grade metallurgical ore.

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Stockpile Status—9-30-98¹⁰

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1998	Disposals FY 1998
Battery: Natural ore	99	1	116	18	8
Synthetic dioxide	3	—	3	3	—
Chemical ore	146	—	146	36	2
Metallurgical ore	685	141	981	227	90
Ferromanganese:				45	
High-carbon	908	15	856	XX	30
Medium-carbon	—	—	—	XX	13
Electrolytic metal	7	—	7	2	2

Events, Trends, and Issues: Domestic manganese demand was bolstered by increased raw steel production through at least the first one-half of the year. Ore price fell slightly to the level of 3 years earlier. Through September, U.S. prices increased moderately for high-carbon and medium-carbon ferromanganese but deteriorated for silicomanganese. In South Africa, the two Japanese-South African joint ventures for production of refined ferromanganese came on-stream. Manganese is an essential element for people, animals, and plants, but it can be harmful in excessive amounts. Thus, manganese can be an industrial poison, but generally is not a hazard.

World Mine Production, Reserves, and Reserve Base (metal content):¹¹

	Mine production		Reserves ¹²	Reserve base ¹²
	1997	1998 ^e		
United States	—	—	—	—
Australia	1,024	770	28,000	75,000
Brazil	^e 780	740	21,000	56,000
China	^e 1,400	1,400	40,000	100,000
Gabon	^e 878	890	45,000	150,000
India	^e 680	680	24,000	36,000
Mexico	^e 193	195	4,000	9,000
South Africa	^e 1,320	1,350	370,000	4,000,000
Ukraine	^e 1,030	920	135,000	520,000
Other countries	^e 377	410	Small	Small
World total (rounded)	^e 7,680	7,400	680,000	5,000,000

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 and the Commonwealth of Independent States (CIS) account for more than 80% of the world's identified resources; South Africa accounts for more than 80% of the total exclusive of China and the CIS.

Substitutes: There is no satisfactory substitute for manganese in its major applications.

^eEstimated. XX Not applicable.

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

²Excludes insignificant quantities of low-grade manganiferous ore.

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

⁴Net quantity including effect of stockpile upgrading program. Data in parentheses denote increases in inventory.

⁵Total manganese consumption cannot be approximated from consumption of manganese ore and ferromanganese because of the use of ore in making manganese ferroalloys and metal.

⁶For 1996-98, exclusive of that 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.

¹⁰See Appendix C for definitions.

¹¹Thousand metric tons, manganese content.

¹²See Appendix D for definitions.