

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 2001. Manganese ore was consumed mainly by about 15 firms with plants principally in the Eastern United States and the 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. 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 one smelter. Leading identifiable end uses of manganese were in products for construction, machinery, and transportation, which were estimated to be 28%, 13%, and 12%, 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 to be about \$360 million.

Salient Statistics—United States: ¹	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u> ^e
Production, mine ²	—	—	—	—	—
Imports for consumption:					
Manganese ore	355	332	460	430	420
Ferromanganese	304	339	312	312	225
Silicomanganese ³	306	346	301	378	290
Exports:					
Manganese ore	84	8	4	10	8
Ferromanganese	12	14	12	8	6
Shipments from Government stockpile excesses: ⁴					
Manganese ore	115	97	76	63	58
Ferromanganese	31	37	35	33	29
Consumption, reported: ⁵					
Manganese ore ⁶	510	499	479	486	380
Ferromanganese	337	290	281	300	280
Consumption, apparent, manganese ⁷	643	776	719	774	700
Price, average value, 46% to 48% Mn metallurgical ore, dollars per mtu cont. Mn, c.i.f. U.S. ports	2.44	2.40	2.26	2.39	2.47
Stocks, producer and consumer, yearend:					
Manganese ore ⁶	241	163	172	226	210
Ferromanganese	21	26	40	31	28
Net import reliance ⁸ 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 (1997-2000): Manganese ore: Gabon, 66%; Mexico, 10%; Australia, 9%; South Africa, 7%; and other, 8%. Ferromanganese: South Africa, 44%; France, 23%; Mexico, 9%; Australia, 7%; and other, 17%.

Manganese contained in all manganese imports: South Africa, 29%; Gabon, 19%; Australia, 13%; Mexico, 9%; and other, 30%.

Tariff: Item	Number	Normal Trade Relations 12/31/01
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	8111.00.4500	14% ad val.

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

Government Stockpile: In addition to the data tabulated, the stockpile contained in uncommitted inventory 331,000 tons of nonstockpile-grade metallurgical ore, all of which was authorized for disposal.

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Stockpile Status—9-30-01⁹

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2001	Disposals FY 2001
Battery:					
Natural ore	103	0.2	103	27	1
Synthetic dioxide	3	—	3	3	—
Chemical ore	134	4	134	36	—
Metallurgical ore	516	96	516	227	1
Ferromanganese:					
High-carbon	772	58	582	68	45
Electrolytic metal	4	0.2	4	4	2

Events, Trends, and Issues: Through August, steel production, the principal determinant of manganese demand, was at about the same record level globally as in 2000, but was down significantly in the United States. Thus, while manganese ore price increased moderately to the highest level since 1996, prices in the U.S. market for ferromanganese trended downward. Competition with imports was an issue for several manganese materials; this contributed to the termination of domestic production of manganese metal in the first part of the year. Manganese is an essential nutritional 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):

	Mine production		Reserves ¹⁰	Reserve base ¹⁰
	2000	2001 ^e		
United States	—	—	—	—
Australia	787	820	32,000	82,000
Brazil	^e 920	880	18,000	51,000
China	^e 800	830	40,000	100,000
Gabon	^e 800	900	20,000	160,000
India	^e 590	600	34,000	50,000
Mexico	156	150	4,000	9,000
South Africa	^e 1,580	1,450	370,000	4,000,000
Ukraine	^e 930	920	140,000	520,000
Other countries	^e 710	710	Small	Small
World total (rounded)	^e 7,280	7,260	670,000	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 former Soviet Union (FSU) 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 FSU. Some of the data for reserves and reserve base have been revised from those previously published.

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 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. 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.

⁶Exclusive of that consumed at iron and steel plants.

⁷Thousand 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.