

## 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 2008. 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 29%, 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 \$3 billion.

<b>Salient Statistics—United States:</b> <sup>1</sup>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008<sup>e</sup></b>
Production, mine <sup>2</sup>	—	—	—	—	—
Imports for consumption:					
Manganese ore	451	656	572	602	564
Ferromanganese	429	255	358	315	481
Silicomanganese <sup>3</sup>	422	327	400	414	369
Exports:					
Manganese ore	123	13	2	29	42
Ferromanganese	9	14	22	29	25
Shipments from Government stockpile excesses: <sup>4</sup>					
Manganese ore	172	34	73	101	147
Ferromanganese	37	36	56	68	115
Consumption, reported: <sup>5</sup>					
Manganese ore <sup>6</sup>	441	368	365	300	298
Ferromanganese	315	286	297	272	292
Consumption, apparent, manganese <sup>7</sup>	1,030	773	1,050	1,030	1,000
Price, average, 46% to 48% Mn metallurgical ore, dollars per metric ton unit, contained Mn:					
Cost, insurance, and freight (c.i.f.), U.S. ports <sup>e</sup>	2.89	4.39	3.51	3.48	12.97
CNF <sup>8</sup> China, Ryan's Notes	NA	3.21	2.33	6.05	<sup>9</sup> 15.92
Stocks, producer and consumer, yearend:					
Manganese ore <sup>6</sup>	159	337	159	100	100
Ferromanganese	16	30	31	20	25
Net import reliance <sup>10</sup> 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 (2004-07):** Manganese ore: Gabon, 61%; South Africa, 18%; Australia, 8%; China, 3%; and other, 10%. Ferromanganese: South Africa, 53%; China, 18%; Republic of Korea, 6%; Mexico, 6%, and other, 17%. Manganese contained in all manganese imports: South Africa, 34%; Gabon, 21%; China, 9%; Australia, 7%; and other, 29%.

<b>Tariff:</b>	<b>Item</b>	<b>Number</b>	<b>Normal Trade Relations</b>
			<b><u>12-31-08</u></b>
	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 no longer differentiated between stockpile and nonstockpile grades.

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Material	Stockpile Status—9-30-08 <sup>11</sup>		Disposal plan FY 2008	Disposals FY 2008
	Uncommitted inventory	Authorized for disposal		
<b>Manganese ore:</b>				
Battery grade	—	—	18	16
Chemical grade	—	—	—	—
Metallurgical grade	3	3	227	—
Ferromanganese, high-carbon	436	436	91	37
Synthetic dioxide	—	—	3	1

**Events, Trends, and Issues:** Apparent consumption in 2008 was slightly lower than that of 2007 owing to moderate demand by the domestic steel industry, as reflected in lower manganese imports (content basis) and a reduction in producer and consumer stock releases. Through September 2008, domestic steel production was 4% higher than that of the same period in 2007. By the end of October 2008, the U.S. weekly average spot price for high-carbon ferromanganese was double that at the start of the year, and medium-carbon ferromanganese and silicomanganese weekly average spot prices were more than 30% higher over the same period. The annual average domestic manganese ore contract price followed the 314% to 413% increase in the international price for metallurgical-grade ore set between Japanese consumers and major suppliers in February 2008. The average weekly spot market price for 48% manganese ore, CNF China, had increased by 35% to \$15.92 per metric ton unit through October 2008, owing to increased global demand for manganese ore, particularly in China and India. However, U.S. spot market prices for manganese ferroalloys and Chinese spot market prices for 48% manganese ore declined in October because of decreasing demand caused by global financial problems that began during the third quarter of 2008.

**World Mine Production, Reserves, and Reserve Base (metal content):** Reserve and reserve base estimates have been revised from those previously published for Gabon (reserves, upward; reserve base, downward), Mexico (reserve base, downward), and South Africa (reserves, downward), as reported by the major manganese producers in Gabon, Mexico, and South Africa. Reserves are based on estimates of demonstrated resources.

	Mine production		Reserves <sup>12</sup>	Reserve base <sup>12</sup>
	2007	2008 <sup>e</sup>		
United States	—	—	—	—
Australia	2,540	2,200	68,000	160,000
Brazil	933	1,300	35,000	57,000
China	<sup>e</sup> 2,000	2,800	40,000	100,000
Gabon	1,490	1,600	52,000	<sup>13</sup> 90,000
India	<sup>e</sup> 900	940	56,000	<sup>13</sup> 150,000
Mexico	125	130	4,000	8,000
South Africa	2,600	3,000	95,000	<sup>13</sup> 4,000,000
Ukraine	<sup>e</sup> 580	480	140,000	520,000
Other countries	<u>1,420</u>	<u>1,400</u>	<u>Small</u>	<u>Small</u>
World total (rounded)	<sup>e</sup> 12,600	14,000	500,000	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 10%.

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

<sup>e</sup>Estimated. — Zero.

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

<sup>2</sup>Excludes insignificant quantities of low-grade manganiferous ore.

<sup>3</sup>Imports more nearly represent amount consumed than does reported consumption.

<sup>4</sup>Net quantity, defined as stockpile shipments – receipts.

<sup>5</sup>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.

<sup>6</sup>Exclusive of ore consumed at iron and steel plants.

<sup>7</sup>Thousand metric tons, manganese content; based on estimated average content for all components except imports, for which content is reported.

<sup>8</sup>Cost and freight (CNF) represents the costs paid by a seller to ship manganese ore by sea to a Chinese port; excludes insurance.

<sup>9</sup>Average weekly price through October 2008.

<sup>10</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

<sup>11</sup>[See Appendix B for definitions.](#)

<sup>12</sup>[See Appendix C for definitions.](#)

<sup>13</sup>Includes inferred resources.