



# 2019 Minerals Yearbook

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## MANGANESE [ADVANCE RELEASE]

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# MANGANESE

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In 2019, U.S. manganese apparent consumption was estimated to be 778,000 metric tons (t) on a manganese content basis, a 3% decrease from apparent consumption in 2018 (table 1). Exports of all types of manganese (gross weight) decreased by 19% to 23,800 t compared with 29,600 t in 2018 (table 5). Total manganese imports (gross weight) decreased by 11% to 1,160,000 t in 2019 compared with 1,310,000 t in 2018 (table 6).

In 2019, average U.S. spot-market prices for high- and medium-carbon ferromanganese decreased by 11% and 3%, respectively, from those in 2018. The average domestic spot-market price for manganese metal decreased by 16% from that in 2018. The average U.S. spot-market price for silicomanganese decreased by 4% from that in 2018 (table 1).

World production of manganese ore in 2019, on both a gross weight and manganese content basis, increased slightly compared with that in 2018 (tables 1, 7). South Africa (26%), China (16%), and Australia (13%) were the leading producers of manganese ore on a gross weight basis. South Africa (30%), Australia (16%), and Gabon (13%) were the leading producers of manganese ore on a manganese content basis. Combined world production of ferromanganese and silicomanganese, excluding U.S. production, increased by 11% to 22.5 million metric tons (Mt) on a gross weight basis compared with 20.2 Mt (revised) in 2018 (table 8). China was the leading producer of manganese ferroalloys, accounting for 65% of world production.

Manganese is essential to iron and steel production because of its sulfur-fixing, deoxidizing, and alloying properties. Steelmaking, including its ironmaking component, accounted for most of the domestic manganese consumption. Globally, steel production accounted for more than 90% of manganese consumption, nonferrous alloys and batteries each accounted for about 2%, and multiple smaller applications accounted for the remaining demand (Roskill Information Services Ltd., 2018). Among a variety of other uses, manganese is also a key component of certain widely used aluminum alloys and is used in oxide form in dry cell batteries.

## Legislation and Government Programs

**Stockpile.**—The Annual Materials Plan (AMP) for fiscal year 2019 that the Defense Logistics Agency Strategic Materials (DLA Strategic Materials), U.S. Department of Defense, issued on October 3, 2018, covered the period from October 1, 2018, through September 30, 2019. Under this AMP, the maximum disposal authority for manganese materials was 292,000 t for metallurgical-grade manganese ore and 45,400 t for high-carbon ferromanganese (Defense Logistics Agency Strategic Materials, 2018). The maximum disposal authority under an AMP is the maximum quantity of material that may be disposed of in a given fiscal year as authorized by Congress (table 2).

In calendar year 2019, the DLA Strategic Materials disposed of (sold) 32,000 t of high-carbon ferromanganese and

purchased 432 t of electrolytic manganese metal. The amount of electrolytic manganese metal, metallurgical-grade manganese ore, and high-carbon ferromanganese in the National Defense Stockpile at the calendar yearend was 432 t, 292,000 t, and 189,000 t, respectively (gross weight) (table 2).

## Production

**Ore and Concentrate.**—The only mine production of manganese in the United States in 2019 consisted of small amounts of manganese material (clays or schists) having a manganese content of less than 5%. This material was produced in South Carolina for use in coloring brick.

**Chemicals and Ferroalloys.**—Production statistics for these materials were withheld to avoid disclosing company proprietary data. Domestic producers of manganese ferroalloys and synthetic dioxide are listed in table 3.

## Consumption and Stocks

In 2019, U.S. manganese apparent consumption was estimated to be 778,000 t on a manganese content basis (table 1). Reported domestic consumption of manganese ore was estimated to be 370,000 t (gross weight), and corresponding yearend stocks were estimated to be 190,000 t (table 1). Reported consumption (gross weight) of ferromanganese decreased by 3%, and consumption of silicomanganese increased by 3% compared with consumption in 2018 (tables 1, 4). Reported manganese metal consumption in 2019 was 21,800 t (table 4).

Reported consumption statistics were derived from U.S. Geological Survey (USGS) voluntary surveys of U.S. operations. Data on domestic consumption of manganese ore, excluding that consumed by the steel industry, are collected by means of the “Manganese Ore and Products” survey. In 2019, eight firms were canvassed that processed ore or had processed ore in the past by such methods as grinding and roasting, or used ore in the manufacture of dry cell batteries and manganese chemicals, ferroalloys, and metals. Of those eight companies, all used manganese ore in their processes in 2019. The collective consumption of these firms was considered to constitute all the manganese ore consumption in the United States, excluding that consumed directly by the steel industry. Full-year responses or a basis upon which to estimate these data were obtained for all these firms for 2019 (table 1).

A second survey covered a broad range of metal-consuming companies, such as aluminum, nonferrous-alloy, and steel producers. More than 180 manganese consumers were canvassed on an annual basis in this survey. Reported consumption and stocks data for ferromanganese, silicomanganese, and manganese metal in tables 1 and 4 include estimates to account for nonrespondents.

Relatively small quantities of manganese were used for alloying with nonferrous metals, chiefly in the aluminum industry as manganese-aluminum briquets that typically contained between 75% and 85% manganese. Manganese played an important alloying role in aluminum applications to increase corrosion resistance. The leading use of aluminum-manganese alloys was in the manufacture of beverage cans. Other uses included, but were not limited to, aircraft components, automobiles, and building products (Roskill Information Services Ltd., 2020).

Comparatively small amounts of manganese were used domestically in animal feed, brick, frits, glass and tile colorants, dry cell batteries, soft ferrites, fertilizers, manganese chemicals (including water treatment), and welding fluxes. These were among the many nonmetallurgical applications of manganese (Roskill Information Services Ltd., 2020). The source of manganese for these applications was mainly manganese ore.

## Prices

**Manganese Ore.**—The only spot-market prices reported for manganese ore were for deliveries to China. In 2019, the average spot-market price for metallurgical-grade ore containing 44% manganese, based on weekly averages of China's cost, insurance, and freight (c.i.f.) transaction prices as reported by CRU Group, was \$5.63 per metric ton unit, a 21% decrease from \$7.16 per metric ton unit in 2018. Reporting the average c.i.f. price in China for metallurgical-grade ore containing 46% manganese was discontinued by CRU at the end of 2016. [A metric ton unit is 1 t of ore containing 1% or 10 kilograms of manganese. The price of 1 t of ore (gross weight) is obtained by multiplying the metric-ton-unit price by the percentage manganese content of the ore; for example, multiplying by 46 when the manganese content is 46%.] The ore market consisted of a number of submarkets because of differences in ore-quality requirements by end use—ferroalloy production, blast furnace ironmaking, and manufacture of manganese chemicals.

**Manganese Ferroalloys and Metal.**—Prices for manganese ferroalloys tended to vary in response to changes in demand by the steel and ferrous foundry industries, whereas prices for manganese metal predominantly followed changes in demand by the aluminum industry. Manganese ferroalloy prices also were influenced by changes in the product mix of the world's suppliers because various manganese ferroalloys are largely interchangeable with each other.

Annual average import prices for manganese ferroalloys are reported by S&P Global Platts Metals Week. These prices are based on free-market spot prices per unit of measurement, duty-paid in a U.S. warehouse. Annual average import prices were \$1,311.14 per gross ton for high-carbon ferromanganese, 109.70 cents per pound for medium-carbon ferromanganese, and 62.36 cents per pound for silicomanganese (table 1). These prices were 11%, 3%, and 4% less for high-carbon ferromanganese, medium-carbon ferromanganese, and silicomanganese, respectively, compared with those in 2018. The annual average North American transaction price for manganese metal as reported by CRU Group was 115.72 cents per pound, which was 16% less than that in 2018.

## Foreign Trade

Excluding the negligible amount of manganiferous materials extracted in South Carolina to color bricks and in the absence of recycling specifically for manganese, U.S. net import reliance, as a percentage of apparent consumption, was 100% for manganese, the same as it had been for the previous 31 years. The ensuing comparisons of foreign trade data were made based on gross weight.

In 2019, U.S. exports (gross weight) of all manganese products, except for manganese metal, decreased from those in 2018. Exports of ferromanganese (all grades) decreased by 53% to 4,950 t; manganese dioxide, by 23% to 5,940 t; manganese ore, by 65% to 1,010 t; and silicomanganese, by 63% to 1,610 t (table 5). Exports of manganese metal, including waste and scrap, was 10,300 t, more than double the 4,140 t exported in 2018. Canada was the leading destination for most manganese product exports in 2019, accounting for 97% of ferromanganese exports, 57% of manganese dioxide exports, 45% of manganese ore exports, and 98% of silicomanganese exports. Manganese metal was exported predominantly to Malaysia (85%).

In 2019, U.S. imports (gross weight) of manganese products that decreased compared with that in 2018 included ferromanganese (all grades) (by 22%), potassium permanganate (by 15%), silicomanganese (by 15%), manganese waste and scrap (by 11%), manganese dioxide (by 7%), and manganese ore (all grades) (a slight decrease). Imports of wrought and unwrought manganese products increased by 105% and 49%, respectively (table 6).

## World Industry Structure

World manganese ore production was 56.4 Mt (gross weight) and 19.6 Mt (manganese content) in 2019, slightly more than that in 2018 (table 7). On a manganese content basis, the leading producing countries of manganese ore were South Africa (30%), Australia (16%), Gabon (13%), Brazil (9%), Ghana (8%), and China (7%), together accounting for 83% of world production.

Excluding the United States, total world manganese ferroalloy production was 22.5 Mt (gross weight) in 2019, 11% more than the revised amount in 2018 (table 8). On a gross weight basis, the leading producer of manganese ferroalloys was China (65%), followed by India (10%) and Ukraine (4%).

The International Manganese Institute (IMnI) estimated that world apparent consumption of manganese ferroalloys (gross weight) increased by 6% to 22.9 Mt in 2019 compared with 21.7 Mt in 2018. Of the 22.9 Mt consumed in 2019, 17.3 Mt was silicomanganese, 4.0 Mt was high-carbon ferromanganese, and 1.5 Mt was refined (medium- and low-carbon) ferromanganese. The IMnI's estimate for world manganese ferroalloys production in 2019 was 23.2 Mt, slightly more than its estimate for ferroalloys apparent consumption (22.9 Mt). The IMnI estimated world manganese ore apparent consumption in 2019 to be 19.1 Mt (manganese content), which was 7% more than the estimate of 17.9 Mt in 2018 (Aloys d'Harambure, Executive Director, International Manganese Institute, unpub. data, 2020).

## World Review

**Australia.**—Australia was the world's second-leading producer of manganese ore. Ore production (gross weight) in Australia decreased by 8% in 2019 from that in 2018 (table 7). South32 Ltd., the leading producer of manganese ore in Australia, produced 6% less manganese ore in 2019 than in 2018 (South32 Ltd., 2018a–c, 2019a–d, 2020). The annual wet season, which typically ends in April or May, extended into June 2019, and the associated heavy rainfall had a negative effect on total ore production in 2019 (South32 Ltd., 2019b; Commonwealth of Australia, undated).

**China.**—In 2019, China's total ferromanganese production was 2.06 Mt, a 7% increase from that in 2018 (table 8). This was in response to the 8% increase in the country's crude steel production in 2019 to 996 Mt from 920 Mt in 2018. China is the world's leading producer of crude steel (World Steel Association, 2020, p. 9).

By the end of 2019, prices for manganese metal flake were the lowest they had been in more than 2 years. The declining prices were attributed to decreased demand from the stainless-steel industry and lower profit margins. As a result, some producers stopped operations in December to perform equipment maintenance with plans to reopen in January 2020 (Argus Metals International, 2019a–c).

**Gabon.**—Eramet SA was the leading producer of manganese ore in Gabon, accounting for 88% of the country's total manganese ore produced (gross weight) in 2019. The company produced 4.8 Mt of manganese ore in 2019, a 10% increase from that in 2018 (Eramet SA, 2020, p. 25).

**South Africa.**—South Africa was the world's leading producer of manganese ore on both a manganese content and gross weight basis (table 7). Most manganese ore produced in South Africa (90%) was exported. China was the leading destination, accounting for 71% of the ore exported (Roskill Information Services Ltd., 2020).

Assmang Proprietary Ltd. was one of the leading manganese ore producers in South Africa. Operating the Gloria and N'chwaning mines, the company produced 3.7 Mt gross weight (1.6 Mt manganese content) of manganese ore in 2019. Samancor Manganese joint venture (South32, 60%, and Anglo American plc, 40%), another leading manganese ore producer in South Africa, operated the Mamatwan and Wessels mines. In 2019, the company produced 3.5 Mt gross weight (1.5 Mt manganese content) of manganese ore (Roskill Information Services Ltd., 2020).

## Outlook

Domestic and global consumption of manganese are expected to closely follow the trends in steel production. Details of the outlook for the steel industry are discussed in the "Outlook" section of the Iron and Steel chapter of the 2019 USGS Minerals Yearbook, volume I, Metals and Minerals. Although rates of growth for some nonmetallurgical components of manganese consumption, especially batteries, may be higher than for steel production, this should have only a minor effect on overall manganese demand.

U.S. crude steel production in 2019 was 87.8 Mt, a slight increase compared with 86.6 Mt produced in 2018. Global crude steel production in 2019 was 1.87 billion metric tons (Gt), a 3% increase compared with 1.81 Gt in 2018 (World Steel Association, 2020, p. 9).

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TABLE 1  
SALIENT MANGANESE STATISTICS<sup>1</sup>

(Thousand metric tons, gross weight, unless otherwise specified)

	2015	2016	2017	2018	2019	
United States:						
Manganese ore (20% or more manganese):						
Production	--	--	--	--	--	
Exports	1	1	1	3	1	
Imports for consumption	441	281	297	440	434	
Consumption <sup>2,3</sup>	451	410	378	370	370	
Stocks, December 31, consumers <sup>2,3</sup>	187	207	148	185	190	
Ferromanganese:						
Production	W	W	W	W	W	
Exports	5	7	9	10	5	
Imports for consumption	292	229	331	427	332	
Consumption <sup>3</sup>	344	342	345	348	336	
Stocks, December 31, consumers and producers <sup>3</sup>	21	21	17	27	28	
Silicomanganese:						
Production	W	W	W	W	W	
Exports	1	2	8	4	2	
Imports for consumption	301	264	351	412	351	
Consumption <sup>3,4</sup>	138	139	141	139	143	
Stocks, December 31, consumers and producers <sup>3</sup>	21	10	11 <sup>r</sup>	21	28	
Consumption, apparent, manganese content <sup>3,5</sup>	697	540	714	801 <sup>r</sup>	778	
Price, average:						
Ferromanganese, high-carbon <sup>6</sup>	dollars per gross ton	915.36	888.83	1,488.74	1,471.36	1,311.14
Ferromanganese, medium-carbon <sup>6</sup>	cents per pound	93.49	80.80	110.46	113.31	109.70
Manganese metal <sup>7</sup>	do.	114.86	97.31	112.17	137.27	115.72
Manganese ore <sup>8</sup>	dollars per metric ton unit	3.08	4.34	5.97	7.16	5.63
Silicomanganese <sup>6</sup>	cents per pound	49.60	43.37	65.59	64.96	62.36
World, production of manganese ore		44,500 <sup>r</sup>	41,900 <sup>r</sup>	55,200 <sup>r</sup>	55,100 <sup>r</sup>	56,400

<sup>r</sup>Revised. do. Ditto. W Withheld to avoid disclosing company proprietary data. -- Zero.

<sup>1</sup>Table includes data available through November 4, 2020. Data are rounded to no more than three significant digits, except prices.

<sup>2</sup>Exclusive of iron and steel plants.

<sup>3</sup>Includes U.S. Geological Survey estimates.

<sup>4</sup>Internal evaluation indicates that silicomanganese consumption is considerably understated.

<sup>5</sup>Based on estimates of average content for all significant components.

<sup>6</sup>Source: S&P Global Platts Metals Week based on monthly averages.

<sup>7</sup>Source: CRU Group North American transaction prices based on monthly averages.

<sup>8</sup>Source: CRU Group, cost, insurance, and freight, China, 44% manganese metallurgical ore.

TABLE 2  
U.S. GOVERNMENT NATIONAL DEFENSE STOCKPILE MANGANESE STATISTICS IN 2019<sup>1,2</sup>

(Metric tons, gross weight)

Material	Inventory, yearend		Annual Materials Plan <sup>3</sup>	Sales		Inventory changes <sup>4</sup>	
	Fiscal year <sup>3</sup>	Calendar year		Fiscal year <sup>3</sup>	Calendar year	Fiscal year <sup>3</sup>	Calendar year
Electrolytic metal	432	432	--	--	--	432	432
Metallurgical ore	292,000	292,000	292,000	--	--	--	--
High-carbon ferromanganese	193,000	189,000	45,400	7,030	32,000	-10,100	-10,300
Total	486,000	481,000	337,000	7,030	32,000	-9,690	-9,860

-- Zero.

<sup>1</sup>Table includes data available through November 4, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes stockpile- and nonstockpile-grade materials.

<sup>3</sup>Twelve-month period ending September 30, 2019.

<sup>4</sup>From previous year.

Source: Defense Logistics Agency Strategic Materials.

TABLE 3  
DOMESTIC PRODUCERS OF PRINCIPAL MANGANESE PRODUCTS IN 2019

Company	Plant location	Products <sup>1</sup>			Type of process
		FeMn	SiMn	MnO <sub>2</sub>	
Borman Specialty Materials	Henderson, NV			X	Electrolytic.
Energizer Holdings, Inc., Energizer Battery Inc.	Marietta, OH			X	Do.
Eramet Marietta, Inc.	do.	X	X		Electric furnace.
Felman Production, LLC	Letart, WV		X		Do.
Prince Erachem Inc.	Baltimore, MD			X	Chemical.
Do.	New Johnsonville, TN			X	Electrolytic.

Do., do. Ditto.

<sup>1</sup>FeMn, ferromanganese; SiMn, silicomanganese; MnO<sub>2</sub>, synthetic manganese dioxide.

TABLE 4  
U.S. CONSUMPTION, BY END USE, AND INDUSTRY STOCKS OF MANGANESE FERROALLOYS AND METAL IN 2019<sup>1,2</sup>

(Metric tons, gross weight)

End use	Ferromanganese		Silicomanganese	Manganese metal
	High carbon	Medium and low carbon		
Steel:				
Carbon	(3)	(3)	95,000	(3)
High-strength, low-alloy	(3)	(3)	(3)	(3)
Stainless and heat-resisting	7,150	2,660	15,500	1,060
Full alloy	(3)	(3)	16,300	44
Unspecified <sup>4</sup>	182,000	138,000	12,800	12,800
Total	189,000	140,000	139,000	13,900
Cast irons	6,430	(5)	W	(5)
Superalloys	--	(5)	--	104
Alloys (excluding alloy steels)	(5)	(5)	--	(5) <sup>6</sup>
Miscellaneous and unspecified	354	512	W	7,760
Grand total	195,000	141,000	143,000 <sup>7</sup>	21,800
Total manganese content <sup>8</sup>	156,000	118,000	94,100	21,800
Stocks, December 31, 2019, consumers and producers	10,900	17,500	28,200	1,500 <sup>9</sup>

W Withheld to avoid disclosing company proprietary data. -- Zero.

<sup>1</sup>Table includes data available through November 4, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes U.S. Geological Survey (USGS) estimates.

<sup>3</sup>Included with "Steel: Unspecified," to avoid disclosing company proprietary data.

<sup>4</sup>Includes electrical and tool steel.

<sup>5</sup>Included with "Miscellaneous and unspecified," to avoid disclosing company proprietary data.

<sup>6</sup>Primarily aluminum alloys.

<sup>7</sup>USGS evaluation indicates that silicomanganese consumption is considerably understated.

<sup>8</sup>Estimated based on the following typical percentages of manganese content: high-carbon ferromanganese (80%); medium- and low ferromanganese (84%); silicomanganese (66%); and manganese metal (100%).

<sup>9</sup>Consumer stocks only.

TABLE 5  
U.S. EXPORTS OF MANGANESE ORE, FERROALLOYS, METAL AND MANGANESE DIOXIDE, BY COUNTRY OR LOCALITY<sup>1,2</sup>

Country or locality	2018		2019	
	Gross weight (metric tons)	Value (thousands)	Gross weight (metric tons)	Value (thousands)
<b>Ore and concentrates with 20% or more manganese:</b>				
Bahamas, The	--	--	6	\$6
Belgium	38	\$152	20	71
Canada	363	361	453	425
India	--	--	19	33
Mexico	2,330	1,940	23	26
Netherlands	177	812	322	723
Russia	7	7	--	--
Singapore	--	--	86	132
Taiwan	(3)	6	--	--
United Kingdom	--	--	81	63
<b>Total</b>	<b>2,920</b>	<b>3,270</b>	<b>1,010</b>	<b>1,480</b>
<b>Ferromanganese, all grades:</b>				
Brazil	--	--	2	6
Canada	10,200	14,000	4,820	6,830
Chile	--	--	9	17
China	10	23	44	99
Guatemala	--	--	8	16
Taiwan	21	40	6	11
United Arab Emirates	--	--	3	5
United Kingdom	25	71	55	128
Venezuela	--	--	4	8
Vietnam	--	--	2	3
Other [9 countries and (or) localities]	179 <sup>r</sup>	317 <sup>r</sup>	1	3
<b>Total</b>	<b>10,400</b>	<b>14,500</b>	<b>4,950</b>	<b>7,130</b>
<b>Silicomanganese:</b>				
Canada	4,200	6,040	1,580	1,800
Costa Rica	2	3	--	--
Ecuador	125	162	--	--
Mexico	8	16	28	58
<b>Total</b>	<b>4,340</b>	<b>6,220</b>	<b>1,610</b>	<b>1,860</b>
<b>Metal, including alloys and waste and scrap:</b>				
Canada	32	84	106	366
Dominican Republic	--	--	21	15
France	9	36	15	5
India	314	286	210	103
Japan	83	303	85	319
Malaysia	3,150	1,680	8,810	4,490
Mexico	167	1,340	43	426
Norway	10	472	25	494
Pakistan	143	44	900	263
Turkey	--	--	52	28
Other [20 countries and (or) localities]	240 <sup>r</sup>	417 <sup>r</sup>	49	237
<b>Total</b>	<b>4,140</b>	<b>4,660</b>	<b>10,300</b>	<b>6,750</b>
<b>Manganese dioxide:</b>				
Canada	5,160	4,500	3,380	2,970
El Salvador	74	89	114	143
Estonia	238	1,250	88	507
Germany	353	780	63	247
Israel	445	541	234	283
Italy	86	347	48	211
Mexico	329	427	296	372
Netherlands	197	906	249	846
Thailand	3	6	100	73
United Kingdom	552	902	1,040	1,790
Other [27 countries and (or) localities]	306 <sup>r</sup>	1,010 <sup>r</sup>	319	1,160
<b>Total</b>	<b>7,740</b>	<b>10,700</b>	<b>5,940</b>	<b>8,600</b>

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through August 12, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Presentation of data is based on the 2019 annual quantities (gross weight) of the leading countries.

<sup>3</sup>Less than ½ unit.



TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF MANGANESE ORE, FERROALLOYS, METAL, AND SELECTED CHEMICALS,  
BY COUNTRY OR LOCALITY<sup>1,2</sup>

Country or locality	2018			2019		
	Quantity		Value, customs (thousands)	Quantity		Value, customs (thousands)
	Gross weight (metric tons)	Mn content (metric tons)		Gross weight (metric tons)	Mn content (metric tons)	
<b>Ore and concentrates with 20% or more manganese:</b>						
All grades:						
Australia	13,500	6,430	\$5,220	--	--	--
Brazil	8,860	3,890	2,540	19,900	9,070	\$4,640
China	2	2	4	7	3	4
Côte d'Ivoire	27	12	11	--	--	--
Gabon	276,000	141,000	85,300	312,000	187,000	98,700
Mexico	29,800	15,300	7,480	43,900	21,400	8,680
Morocco	116	66	153	321	165	178
South Africa	111,000	38,200	21,400	57,600	22,600	13,500
Turkey	417	288	203	4	3	2
Total	440,000	205,000	122,000	434,000	241,000	126,000
More than 20% but less than 47% manganese:						
Brazil	6,570	2,630	1,620	16,200	7,190	3,330
China	--	--	--	7	3	4
Côte d'Ivoire	27	12	11	--	--	--
Gabon	9,610	4,130	1,910	--	--	--
Mexico	15,500	5,450	3,560	27,300	10,400	5,780
South Africa	108,000	36,500	20,000	55,200	21,400	12,500
Turkey	57	26	28	--	--	--
Total	139,000	48,800	27,100	98,700	39,000	21,600
47% or more manganese:						
Australia	13,500	6,430	5,220	--	--	--
Brazil	2,290	1,260	919	3,700	1,880	1,310
China	2	2	4	--	--	--
Gabon	266,000	137,000	83,400	312,000	187,000	98,700
Mexico	14,200	9,840	3,930	16,600	11,000	2,900
Morocco	116	66	153	321	165	178
South Africa	3,430	1,670	1,460	2,360	1,140	1,020
Turkey	361	263	175	4	3	2
Total	300,000	156,000	95,300	335,000	202,000	104,000
Ferromanganese:						
All grades:						
Australia	76,000	57,000	93,900	78,600	60,000	86,800
France	5,130	4,050	7,140	3,960	3,020	4,350
Korea, Republic of	49,900	41,000	87,200	35,400	29,100	58,700
Malaysia	65,200	49,500	83,000	59,500	45,100	53,400
Mexico	10,300	8,200	16,300	6,760	5,280	11,400
Norway	66,500	53,800	108,000	49,000	39,700	80,100
Russia	28,100	21,400	27,500	24,500	18,700	22,100
South Africa	81,300	63,200	118,000	52,900	41,300	75,200
Spain	20,300	15,400	25,400	10,200	8,250	16,900
Ukraine	6,580	5,020	6,540	4,030	3,060	3,560
Other [10 countries and (or) localities]	18,100 <sup>†</sup>	13,900 <sup>†</sup>	28,700 <sup>†</sup>	7,170	5,710	10,300
Total	427,000	333,000	602,000	332,000	259,000	423,000
1% or less carbon:						
China	5,550	5,190	12,200	927	871	1,810
France	19	15	59	--	--	--
Germany	264	233	657	470	441	1,190
Japan	340	267	568	1,350	1,060	2,260
Korea, Republic of	11,100	10,200	25,700	12,900	11,300	24,900
Mexico	3,420	2,770	5,180	2,270	1,790	4,040
Norway	44,200	35,800	74,800	36,200	29,300	60,900
South Africa	374	325	623	800	667	1,290
Spain	1,580	1,260	2,600	9,890	7,980	16,300

See footnotes at end of table.

TABLE 6—Continued  
U.S. IMPORTS FOR CONSUMPTION OF MANGANESE ORE, FERROALLOYS, METAL, AND SELECTED CHEMICALS,  
BY COUNTRY OR LOCALITY<sup>1,2</sup>

Country or locality	2018			2019		
	Quantity		Value, customs (thousands)	Quantity		Value, customs (thousands)
	Gross weight (metric tons)	Mn content (metric tons)		Gross weight (metric tons)	Mn content (metric tons)	
<b>Ferromanganese:—Continued</b>						
<b>1% or less carbon:—Continued</b>						
Vietnam	280	252	\$629	1	1	\$3
Total	67,100	56,300	123,000	64,800	53,400	113,000
<b>More than 1% but not more than 2% carbon:</b>						
China	145	119	319 <sup>r</sup>	21	16	28
France	2,900	2,360	4,600	--	--	--
India	--	--	--	393	324	643
Korea, Republic of	33,000	26,400	53,200	17,900	14,300	28,800
Malaysia	--	--	--	21	16	31
Mexico	6,760	5,330	10,900	4,480	3,480	7,300
Norway	19,200	15,600	29,600	12,100	9,830	18,200
South Africa	34,400	27,600	56,300	24,500	19,600	42,300
Spain	--	--	--	300	242	488
Total	96,300	77,400	155,000	59,700	47,800	97,800
More than 2% but not more than 4% carbon, France	6	5	14	--	--	--
<b>More than 4% carbon:</b>						
Australia	76,000	57,000	93,900	78,600	60,000	86,800
Brazil	2,890	1,980	3,620	2,500	1,840	2,680
France	2,200	1,680	2,470	3,960	3,020	4,350
India	5,120	3,210	6,110	1,240	942	1,350
Korea, Republic of	5,840	4,440	8,290	4,600	3,510	5,010
Malaysia	65,200	49,500	83,000	59,500	45,100	53,400
Norway	3,090	2,390	3,870	776	602	945
Russia	28,100	21,400	27,500	24,500	18,700	22,100
South Africa	46,600	35,200	60,900	27,600	21,000	31,600
Ukraine	6,580	5,020	6,540	4,030	3,060	3,560
Other [6 countries and (or) localities]	22,400 <sup>r</sup>	17,000 <sup>r</sup>	27,600 <sup>r</sup>	331	259	425
Total	264,000	199,000	324,000	208,000	158,000	212,000
<b>Silicomanganese:</b>						
Australia	87,600	56,800	110,000	67,300	44,600	83,300
Brazil	3,780	2,510	3,980	631	413	639
Georgia	116,000	84,900	143,000	85,900	63,600	108,000
India	1,870	1,100	2,720	267	157	388
Malaysia	29,300	19,000	34,300	31,300	20,400	33,000
Mexico	23,900	15,800	27,200	30,700	20,000	32,400
Norway	20,300	13,100	29,000	43,500	27,600	52,500
Saudi Arabia	8,980	5,940	10,100	4,550	2,870	4,470
South Africa	78,300	50,900	86,200	79,300	51,500	86,100
Spain	29,500	19,100	36,800	7,010	4,500	8,400
Other [6 countries and (or) localities]	12,200 <sup>r</sup>	8,120 <sup>r</sup>	15,300 <sup>r</sup>	494	342	448
Total	412,000	277,000	499,000	351,000	236,000	409,000
<b>Metal:</b>						
<b>Unwrought:<sup>3</sup></b>						
Belgium	--	XX	--	36	XX	87
China	16,300	XX	32,800	27,900	XX	55,000
Gabon	6	XX	15	50	XX	122
Germany	1,590	XX	3,620	2,040	XX	4,810
Hong Kong	102	XX	263	229	XX	452
Japan	52	XX	2,960	2	XX	2,310
Mexico	246	XX	831	269	XX	999
South Africa	6,120	XX	15,500	5,750	XX	15,000
Spain	3	XX	4	143	XX	245
Switzerland	--	XX	--	20	XX	40
Other [5 countries and (or) localities]	31 <sup>r</sup>	XX	83 <sup>r</sup>	(4)	XX	12
Total	24,500	XX	56,000	36,400	XX	79,100

See footnotes at end of table.

TABLE 6—Continued  
 U.S. IMPORTS FOR CONSUMPTION OF MANGANESE ORE, FERROALLOYS, METAL, AND SELECTED CHEMICALS,  
 BY COUNTRY OR LOCALITY<sup>1,2</sup>

Country or locality	2018			2019		
	Quantity		Value, customs (thousands)	Quantity		Value, customs (thousands)
	Gross weight (metric tons)	Mn content (metric tons)		Gross weight (metric tons)	Mn content (metric tons)	
<b>Metal:—Continued</b>						
<b>Other manganese, wrought:</b>						
Austria	--	XX	--	(4)	XX	\$6
Canada	5	XX	\$22	--	XX	--
China	1	XX	17	(4)	XX	27
Germany	309	XX	3,580	346	XX	4,220
Japan	(4)	XX	170	(4)	XX	68
Korea, Republic of	--	XX	--	(4)	XX	51
Malaysia	(4)	XX	3	--	XX	--
Mexico	159	XX	530	636	XX	1,740
Sweden	9	XX	86	9	XX	130
United Kingdom	--	XX	--	(4)	XX	2
Other [3 countries and (or) localities]	(4) <sup>r</sup>	XX	17 <sup>r</sup>	--	XX	--
Total	484	XX	4,420	992	XX	6,250
Waste and scrap, Canada	408	XX	128	364	XX	119
<b>Manganese dioxide:</b>						
Belgium	59	XX	158	55	XX	263
Brazil	32	XX	54	104	XX	155
China	72	XX	166	44	XX	114
Germany	48	XX	82	33	XX	174
Greece	--	XX	--	470	XX	1,170
India	23	XX	43	505	XX	872
Japan	4,990	XX	11,200	3,360	XX	7,460
Morocco	19	XX	87	337	XX	579
Slovakia	--	XX	--	13	XX	22
Spain	60	XX	102	56	XX	96
Other [4 countries and (or) localities]	37 <sup>r</sup>	XX	65 <sup>r</sup>	8	XX	13
Total	5,340	XX	11,900	4,990	XX	10,900
<b>Potassium permanganate:</b>						
Australia	1	XX	25	--	XX	--
Canada	--	XX	--	(4)	XX	3
China	19	XX	42	--	XX	--
India	1,430	XX	3,750	1,230	XX	3,040
Japan	1	XX	15	1	XX	23
Malaysia	--	XX	--	6	XX	13
Total	1,460	XX	3,830	1,240	XX	3,080

<sup>r</sup>Revised. XX Not applicable. -- Zero.

<sup>1</sup>Table includes data available through October 19, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Presentation of data is based on the 2019 annual quantities (gross weight) of the leading countries.

<sup>3</sup>Imports of unwrought metal include flake, powder, and other.

<sup>4</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 7  
MANGANESE ORE: WORLD PRODUCTION, BY COUNTRY OR LOCALITY<sup>1,2</sup>

(Thousand metric tons)

Country or locality <sup>3</sup>	2015	2016	2017	2018	2019
<b>Australia:</b> <sup>4,5</sup>					
Gross weight	7,400	5,164	6,473	8,193	7,545
Mn content, 37% to 53% manganese (Mn)	3,247	2,325	2,821	3,475	3,177
<b>Brazil:</b> <sup>6</sup>					
Gross weight	2,868	2,811 <sup>r</sup>	3,273	2,902 <sup>r,5</sup>	4,119 <sup>5</sup>
Mn content, 33% to 51% Mn	1,243	1,199 <sup>r</sup>	1,344	1,242 <sup>r,5</sup>	1,741 <sup>5</sup>
<b>Bulgaria:</b> <sup>5</sup>					
Gross weight	191	67	33	-- <sup>r</sup>	--
Mn content, 25% to 35% Mn	53	19	9	-- <sup>r</sup>	--
<b>Burkina Faso:</b> <sup>6</sup>					
Burkina Faso, gross weight	50	--	--	--	--
Mn content, 46% Mn	23	--	--	--	--
<b>Burma:</b> <sup>5</sup>					
Gross weight	70 <sup>r</sup>	293	346	518	1,075
Mn content, 39% to 40% Mn	28	117	138	207	430
<b>China:</b> <sup>5,7</sup>					
Gross weight	10,566 <sup>r</sup>	10,848 <sup>r</sup>	15,618 <sup>r</sup>	8,242 <sup>r</sup>	8,880
Mn content, 15% to 20% Mn	1,691 <sup>r</sup>	1,627 <sup>r</sup>	2,343 <sup>r</sup>	1,236 <sup>r</sup>	1,332
<b>Congo (Kinshasa), gross weight</b> <sup>6</sup>	--	--	--	15	11
<b>Côte d'Ivoire:</b> <sup>5</sup>					
Gross weight	296	105 <sup>r</sup>	470	864	1,175
Mn content, 42% to 45% Mn	133	47	212	354 <sup>r</sup>	482
<b>Egypt:</b> <sup>5</sup>					
Gross weight	34	19 <sup>r</sup>	36	40	36
Mn content, 30% to 40% Mn	11	6 <sup>r</sup>	12	13	12
<b>Gabon:</b> <sup>5</sup>					
Gross weight	4,112	3,379	4,717	5,071 <sup>r</sup>	5,387
Mn content, 45% to 53% Mn	1,929	1,622 <sup>r</sup>	2,193	2,336 <sup>r</sup>	2,509
<b>Georgia, concentrate:</b>					
Gross weight	334 <sup>e</sup>	340 <sup>e</sup>	460 <sup>e</sup>	580 <sup>e</sup>	400
Mn content, 28% to 29% Mn	97 <sup>e</sup>	130 <sup>e</sup>	180 <sup>e</sup>	200 <sup>e</sup>	116
<b>Ghana:</b> <sup>6</sup>					
Gross weight	1,478	1,967	3,004 <sup>r</sup>	4,552 <sup>r,5</sup>	5,671 <sup>5</sup>
Mn content, 27% to 34% Mn	416	553	810	1,364 <sup>5</sup>	1,554 <sup>5</sup>
<b>Hungary:</b> <sup>6</sup>					
Gross weight	57	18	--	--	--
Mn content, 25% to 35% Mn	15 <sup>e</sup>	5 <sup>e</sup>	--	--	--
<b>India:</b> <sup>5</sup>					
Gross weight	2,300	2,100	2,100	4,661 <sup>r</sup>	2,615
Mn content, 10% to 58% Mn	810	745	734	1,453 <sup>r</sup>	801
<b>Indonesia:</b> <sup>5</sup>					
Gross weight	45	90	56	-- <sup>r</sup>	--
Mn content, 28% to 44% Mn	20	39	24	-- <sup>r</sup>	--
<b>Iran:</b> <sup>c</sup>					
Gross weight	87	79	96	112	110
Mn content, 30% to 43% Mn	35	32	39	45	45
<b>Kazakhstan, concentrate:</b>					
Gross weight <sup>6</sup>	616	510	464	434 <sup>r</sup>	430 <sup>e</sup>
Mn content, 35% to 36% Mn <sup>c</sup>	222	183	167	143 <sup>r</sup>	140
<b>Malaysia:</b>					
Gross weight <sup>6</sup>	502	701	1,226	1,000	1,000 <sup>e</sup>
Mn content, 32% to 45% Mn <sup>c</sup>	196	273	478	390	390
<b>Mexico:</b>					
Gross weight <sup>e</sup>	600	600	590	560 <sup>r</sup>	520
Mn content, 34% to 38% Mn <sup>6,8</sup>	217	206	212	209 <sup>r</sup>	202

See footnotes at end of table.

TABLE 7—Continued  
MANGANESE ORE: WORLD PRODUCTION, BY COUNTRY OR LOCALITY<sup>1,2</sup>

(Thousand metric tons)

Country or locality <sup>3</sup>	2015	2016	2017	2018	2019
<b>Morocco:</b>					
Gross weight <sup>6</sup>	72	68	99	80 <sup>r</sup>	80 <sup>e</sup>
Mn content, 47% to 53% Mn <sup>e,9</sup>	38	36	59	42 <sup>r</sup>	42
<b>Namibia:</b>					
Gross weight <sup>e</sup>	110	48	80	66	92
Mn content, 40% to 45% Mn <sup>6</sup>	38	17	28	23	32
<b>Nigeria:</b>					
Gross weight <sup>6</sup>	4	70	37 <sup>r</sup>	160	160 <sup>e</sup>
Mn content, 25% to 37% Mn <sup>e</sup>	1	25	13	57	57
<b>Oman:</b>					
Gross weight	16	15	14	36	36 <sup>e</sup>
Mn content, 21% to 27% Mn <sup>e</sup>	4	4	3	9	9
<b>Romania, concentrate:<sup>6</sup></b>					
Gross weight	39	5	14	10	17 <sup>e</sup>
Mn content, 20% to 30% Mn	9	1	3	1 <sup>r</sup>	2 <sup>e</sup>
<b>Russia, concentrate:</b>					
Gross weight	9	--	1	57 <sup>r</sup>	57 <sup>e</sup>
Mn content, 20% to 30% Mn	2	--	(10)	14 <sup>r</sup>	14 <sup>e</sup>
<b>South Africa, metallurgical:</b>					
Gross weight, all forms <sup>11</sup>	11,033	10,806	14,144	14,918	14,900 <sup>e</sup>
Mn content, 30% to 48% Mn <sup>e</sup>	4,300	4,200	5,500	5,800	5,800
<b>Sudan:<sup>6</sup></b>					
Gross weight	31	34	42 <sup>e</sup>	41 <sup>e</sup>	40 <sup>e</sup>
Mn content, 29% to 33% Mn	9	10	12 <sup>e</sup>	12 <sup>e</sup>	10 <sup>e</sup>
<b>Thailand:</b>					
Gross weight <sup>6</sup>	9	9	8	4	5
Mn content, 44% to 50% Mn	4	4	4	2	2
<b>Turkey:</b>					
Gross weight	143	150 <sup>e</sup>	40 <sup>5</sup>	41 <sup>5</sup>	45 <sup>5</sup>
Mn content, 30% to 40% Mn <sup>6</sup>	51 <sup>e</sup>	54 <sup>e</sup>	14 <sup>5</sup>	14 <sup>5</sup>	16 <sup>5</sup>
<b>Ukraine:</b>					
Gross weight <sup>6</sup>	1,203	1,250	1,425	1,521	1,500 <sup>e</sup>
Mn content, 30% to 35% Mn <sup>e</sup>	409	425	484	517	500
<b>Vietnam:<sup>5</sup></b>					
Gross weight	110	187	283	318 <sup>r</sup>	368
Mn content, 43% Mn	47	80	122	137 <sup>r</sup>	158
<b>Zambia:</b>					
Gross weight	130 <sup>e</sup>	120 <sup>e</sup>	98 <sup>6</sup>	88 <sup>6</sup>	88 <sup>e</sup>
Mn content, 27% to 35% Mn <sup>e</sup>	45	40	37	29	29
<b>Total:</b>					
Gross weight	44,500 <sup>r</sup>	41,900 <sup>r</sup>	55,200 <sup>r</sup>	55,100 <sup>r</sup>	56,400
Mn content	15,300 <sup>r</sup>	14,000 <sup>r</sup>	18,000 <sup>r</sup>	19,300 <sup>r</sup>	19,600

<sup>e</sup>Estimated. <sup>r</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through October 6, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Data pertain to concentrates or comparable shipping product, except that in a few instances the best data available appear to be for crude ore, possibly after some upgrading.

<sup>3</sup>In addition to the countries and (or) localities listed, Cuba, Greece, Pakistan, Panama, and Peru may have produced manganese ore and (or) manganiferous ore, but available information was inadequate to make reliable estimates of output.

<sup>4</sup>Metallurgical ore.

<sup>5</sup>Reported by the International Manganese Institute.

<sup>6</sup>Reported by the country or producer(s).

<sup>7</sup>Includes manganiferous ore.

<sup>8</sup>Mostly oxide nodules; may include smaller quantities of direct-shipping carbonate and oxide ores for metallurgical and battery operations and

<sup>9</sup>Mn content estimated at 84% of manganese dioxide (MnO<sub>2</sub>).

<sup>10</sup>Less than ½ unit.

<sup>11</sup>Calculated metal content includes allowance for assumed moisture content. Includes ore and sinter.

TABLE 8  
FERROMANGANESE AND SILICOMANGANESE: WORLD PRODUCTION, BY COUNTRY OR LOCALITY<sup>1</sup>

(Metric tons, gross weight)

Country or locality <sup>2</sup>	2015	2016	2017	2018	2019
Argentina, silicomanganese <sup>3</sup>	8,000	10,000	--	--	--
Australia: <sup>3</sup>					
Ferromanganese	150,000	116,900	125,100	148,300	114,000
Silicomanganese	130,700	83,700	120,200	112,900	95,000
Total	280,700	200,600	245,300	261,200	209,000
Bahrain, silicomanganese <sup>3</sup>	6,000	5,000	--	--	--
Brazil: <sup>3</sup>					
Ferromanganese	84,160	83,780	123,470	117,800	102,000
Silicomanganese	141,540	166,680	202,520	228,690	216,000
Total	225,700	250,460	325,990	346,490	318,000
China:					
Ferromanganese: <sup>c</sup>					
Blast furnace	446,000	340,000	220,000	270,000	290,000
Electric furnace	2,120,000	1,610,000	1,560,000	1,660,000	1,770,000
Silicomanganese <sup>4</sup>	5,870,000	7,267,000	6,610,000	9,450,000	12,600,000
Total	8,436,000	9,217,000	8,390,000	11,380,000	14,660,000
Egypt, ferromanganese <sup>3</sup>	12,000	12,000	12,000	13,000	12,000
France: <sup>3</sup>					
Ferromanganese	126,229 <sup>r</sup>	119,008 <sup>r</sup>	95,442 <sup>r</sup>	125,383 <sup>r</sup>	115,000
Silicomanganese	65,124 <sup>r</sup>	58,223 <sup>r</sup>	58,443 <sup>r</sup>	56,652 <sup>r</sup>	68,000
Total	191,353 <sup>r</sup>	177,231 <sup>r</sup>	153,885 <sup>r</sup>	182,035 <sup>r</sup>	183,000
Gabon, silicomanganese <sup>3</sup>	14,500	14,900	21,300	42,900	43,000
Georgia, silicomanganese <sup>4</sup>	217,300	244,228	289,800	335,000 <sup>r</sup>	284,200
India: <sup>3</sup>					
Ferromanganese	646,000	621,000	753,000 <sup>r</sup>	811,000 <sup>r</sup>	598,000
Silicomanganese	1,832,000	1,768,000	2,038,000	2,133,000 <sup>r</sup>	1,588,000
Total	2,478,000	2,389,000	2,791,000 <sup>r</sup>	2,944,000 <sup>r</sup>	2,186,000
Indonesia, silicomanganese <sup>3</sup>	30,000	40,000	40,000	4,000 <sup>r</sup>	4,000
Japan:					
Ferromanganese <sup>4</sup>	465,952	473,740	456,460	456,518 <sup>r</sup>	462,740
Silicomanganese <sup>3</sup>	22,700	22,700	24,500	21,100	31,000
Total	488,652	496,440	480,960	477,618 <sup>r</sup>	493,740
Kazakhstan, silicomanganese <sup>4</sup>	164,189	135,885	123,977	137,710 <sup>r</sup>	123,464
Korea, Republic of: <sup>3</sup>					
Ferromanganese	500,000	425,000	360,000	374,000 <sup>r</sup>	366,000
Silicomanganese	175,000	135,000	117,000	164,000 <sup>r</sup>	162,000
Total	675,000	560,000	477,000	538,000 <sup>r</sup>	528,000
Malaysia: <sup>3</sup>					
Ferromanganese	--	58,801	264,555	312,420	266,000
Silicomanganese	--	20,975	230,535	283,414	312,000
Total	--	79,776	495,090	595,834	578,000
Mexico: <sup>3</sup>					
Ferromanganese	67,920	84,530	90,013	95,468	73,000
Silicomanganese	139,361	134,251	148,130	152,000	154,000
Total	207,281	218,781	238,143	247,468	227,000
Norway: <sup>3</sup>					
Ferromanganese	309,200	329,100	400,800	327,600	337,000
Silicomanganese	309,900	306,100	284,500	330,000	287,000
Total	619,100	635,200	685,300	657,600	624,000
Russia: <sup>4</sup>					
Ferromanganese	155,700	124,200	253,000	281,000	273,000
Silicomanganese	188,895	203,216	44,917	43,334	51,774
Total	344,595	327,416	297,917	324,334	324,774

See footnotes at end of table.



TABLE 8—Continued  
 FERROMANGANESE AND SILICOMANGANESE: WORLD PRODUCTION, BY COUNTRY OR LOCALITY<sup>1</sup>

(Metric tons, gross weight)

Country or locality <sup>2</sup>	2015	2016	2017	2018	2019
<b>Saudi Arabia:</b> <sup>3</sup>					
Ferromanganese	7,000	10,000	10,000	23,000	39,000
Silicomanganese	63,000	55,000	65,000	85,400	103,000
Total	70,000	65,000	75,000	108,400	142,000
<b>Slovakia:</b> <sup>4</sup>					
Ferromanganese	25,376	35,589	42,115	32,364 <sup>r</sup>	46,513
Silicomanganese	27,036	35,719	40,265	37,225 <sup>r</sup>	26,187
Total	52,412	71,308	82,380	69,589 <sup>r</sup>	72,700
<b>South Africa:</b> <sup>3</sup>					
Ferromanganese	512,000	335,000	257,100	235,600	232,000
Silicomanganese	210,200	144,000	160,400	164,200	172,000
Total	722,200	479,000	417,500	399,800	404,000
<b>Spain:</b> <sup>3</sup>					
Ferromanganese	126,200	120,100	132,100	86,200	55,500
Silicomanganese	134,400	123,100	138,700	156,100	98,400
Total	260,600	243,200	270,800	242,300	153,900
<b>Ukraine:</b> <sup>4</sup>					
Ferromanganese	87,740	104,470	114,500	79,480 <sup>r</sup>	151,090
Silicomanganese	698,400	814,970	810,670	859,640 <sup>r</sup>	804,680
Total	786,140	919,440	925,170	939,120 <sup>r</sup>	955,770
<b>United States, ferromanganese</b> <sup>5</sup>	W	W	W	W	W
<b>Venezuela, silicomanganese</b> <sup>3</sup>	35,000	42,000	18,670	--	--
<b>Grand total</b>	16,300,000	16,800,000	16,900,000	20,200,000 <sup>r</sup>	22,500,000
<b>Of which:</b>					
Ferromanganese	5,840,000	5,000,000	5,270,000	5,450,000 <sup>r</sup>	5,300,000
Silicomanganese	10,500,000	11,800,000	11,600,000	14,800,000 <sup>r</sup>	17,200,000

<sup>r</sup>Estimated. <sup>1</sup>Revised. W Withheld to avoid disclosing company proprietary data: not included in "Grand total." -- Zero.

<sup>1</sup>Table includes data available through January 25, 2021. All data are reported unless otherwise noted. Grand totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>In addition to the countries and (or) localities listed, Iran may have produced ferromanganese, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Reported by the International Manganese Institute.

<sup>4</sup>Reported by the country or producer(s).

<sup>5</sup>U.S. output of ferromanganese includes silicomanganese.