



# 2020 Minerals Yearbook

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## MANGANESE [ADVANCE RELEASE]

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# MANGANESE

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In 2020, U.S. manganese apparent consumption was estimated to be 620,000 metric tons (t) on a manganese-content basis, a 17% decrease from consumption in 2019 (table 1). Exports of all types of manganese (gross weight) decreased by 12% to 21,000 t compared with 23,800 t in 2019 (table 5). Total manganese imports (gross weight) decreased by 23% to 895,000 t in 2020 compared with 1,160,000 t in 2019 (table 6).

In 2020, average U.S. spot-market prices for high- and medium-carbon ferromanganese decreased by 13% and 17%, respectively, from those in 2019. The average domestic spot-market price for manganese metal decreased by 14% from that in 2019. The average U.S. spot-market price for silicomanganese decreased by 16% from that in 2019 (table 1).

World production of manganese ore decreased in 2020, on both a gross-weight and manganese-content basis, by 7% and 8%, respectively, compared with the revised amounts in 2019 (tables 1, 7). South Africa (29%), China (19%), Australia (14%), and Gabon (13%) were the leading producers of manganese ore on a gross-weight basis. Combined world production of ferromanganese and silicomanganese, excluding U.S. production, decreased by 5% to 21.5 million metric tons (Mt) on a gross-weight basis compared with the 22.8 Mt (revised) in 2019 (table 8). China was the leading producer of manganese ferroalloys, accounting for 68% 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 greater than 90% of the domestic manganese consumption (table 4). 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 2020 that the Defense Logistics Agency Strategic Materials (DLA Strategic Materials), U.S. Department of Defense, issued on October 4, 2019, covered the period from October 1, 2019, through September 30, 2020. Under this AMP, the maximum acquisition authority for manganese materials was 5,000 t of electrolytic manganese metal, and the maximum disposal authority for manganese materials was 292,000 t of manganese ore and 45,000 of high-carbon ferromanganese (Defense Logistics Agency Strategic Materials, 2019a, b).

At yearend 2020, the DLA Strategic Materials disposed of (sold) 33,600 t of high-carbon ferromanganese. 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 135,000 t, respectively (gross weight) (table 2).

## Production

**Ore and Concentrate.**—The only mine production of manganese in the United States 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 manganese dioxide are listed in table 3.

## Consumption and Stocks

In 2020, U.S. manganese apparent consumption was estimated to be 620,000 t on a manganese-content basis (table 1). Reported domestic consumption of manganese ore was estimated to be 378,000 t (gross weight), and corresponding yearend stocks were estimated to be 143,000 t (table 1). Reported consumption (gross weight) of ferromanganese decreased by 3%, and consumption of silicomanganese increased to 229,000 t compared with 143,000 t in 2019 (tables 1, 4). Increased silicomanganese consumption was attributed to increases in consumer reporting rather than solely from increased year-on-year consumption. Reported manganese metal consumption in 2020 was 19,700 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, were collected by means of the “Manganese Ore and Products” survey. In 2020, six companies at seven locations 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 or manganese chemicals, ferroalloys, or metals. Of those six companies, all used manganese ore in their processes in 2020. 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 companies for 2020 (table 3).

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 are reported in tables 1 and 4 and include estimates to account for nonrespondents.

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., 2020).

Relatively small quantities of manganese were used for alloying with nonferrous metals, chiefly in the aluminum industry as manganese-aluminum briquets that typically contain between 75% and 85% manganese. Manganese plays 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 (Roskill Information Services Ltd., 2020). Other uses included but were not limited to aircraft components, automobiles, and building products.

Comparatively small amounts of manganese were used domestically in animal feed, glass and tile colorants, dry cell batteries, ferrites, fertilizers, manganese chemicals (including water treatment), and welding rods (Roskill Information Services Ltd., 2020). These were among the many nonmetallurgical applications of manganese.

## Prices

**Manganese Ore.**—The only spot-market prices reported for manganese ore were for deliveries to China. In 2020, 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 \$4.59 per metric ton unit, a 19% decrease from \$5.63 per metric ton unit in 2019. 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 were 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 \$1,145.92 per gross ton for high-carbon ferromanganese, 90.93 cents per pound for medium-carbon ferromanganese, and 52.40 cents per pound for silicomanganese (table 1). These prices were 13%, 17%, and 16% less for high-carbon ferromanganese, medium-carbon ferromanganese, and silicomanganese, respectively, compared with those in 2019. The annual average North American transaction price for manganese metal, as reported by CRU Group, was 99.49 cents per pound, which was 14% less than that in 2019.

## Foreign Trade

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

In 2020, U.S. exports (gross weight) of all manganese products decreased by 12% to 21,000 t from 23,800 t in 2019. Exports of ferromanganese (all grades) decreased by 3% to 4,770 t; manganese metal, including waste and scrap, decreased by 39% to 6,280 t; and manganese ore and concentrates with 20% or more manganese decreased by 5% to 957 t. Exports of manganese dioxide and silicomanganese increased by 16% to 6,860 t and by 33% to 2,140 t, respectively. Canada was the leading destination for most manganese products exported in 2020, accounting for 97% of ferromanganese exports, 64% of manganese dioxide exports, and 96% of silicomanganese exports. Manganese metal was exported predominantly to Malaysia (81%), and manganese ore exports were exported predominantly to Belgium (34%) and Canada (31%) (table 5).

In 2020, U.S. imports (gross weight) of manganese products decreased by 23% to 895,000 t from 1,161,000 t in 2019. Imports of ferromanganese (all grades) decreased by 33% to 223,000 t; manganese ore and concentrates (all grades) decreased by 15% to 367,000 t; silicomanganese decreased by 23% to 269,000 t; unwrought manganese products decreased by 22% to 28,500 t; wrought manganese products decreased by 11% to 887 t; and potassium permanganate decreased by 41% to 728 t. Imports of manganese waste and scrap and manganese dioxide increased by 53% to 557 t and by 9% to 5,450 t, respectively (table 6).

## World Industry Structure

World manganese ore production was 56.1 Mt (gross weight) and 18.9 Mt (manganese content) in 2020, 7% and 8% more, respectively, than the revised amounts in 2019 (table 7). On a manganese-content basis, the leading producers of manganese ore were South Africa (34%), Australia (18%), Gabon (18%), and China (7%), together accounting for 77% of world production. On a gross-weight basis, the leading producers were South Africa (29%), China (19%), Australia (14%), and Gabon (13%).

Excluding the United States, total world manganese ferroalloy production was 21.5 Mt (gross weight) in 2020, 5% less than the revised amount in 2019 (table 8). On a gross-weight basis, the leading producers of manganese ferroalloys were China (68%) and India (11%).

The International Manganese Institute (IMnI) estimated that world apparent consumption of manganese ferroalloys (gross weight) decreased by 5% to 22.0 Mt in 2020 compared with 23.2 Mt in 2019. Of the 22.0 Mt consumed in 2020, 17.2 Mt was silicomanganese, 3.6 Mt was high-carbon ferromanganese, and 1.2 Mt was refined (medium- and low-carbon) ferromanganese. The IMnI's estimate for world manganese ferroalloys production in 2020 was 21.9 Mt, about the same as its estimate for ferroalloys apparent consumption (22.0 Mt). The IMnI

estimated world manganese ore apparent consumption in 2020 to be about 17.0 Mt (manganese content), which was 12% less than the estimate of 19.5 Mt in 2019 (International Manganese Institute, 2021).

## World Review

**Australia.**—Australia was the world's second-leading producer of manganese ore on a manganese-content basis. Ore production (manganese content) in Australia increased by 5% in 2020 from that in 2019 (table 7). Groote Eylandt Mining Co. Operation (GEMCO), a joint venture between South32 Ltd. (60%) and Anglo American plc (40%), was the leading producer of manganese ore in the world (South32 Ltd., undated a). GEMCO produced 7% more manganese ore in 2020 compared with that in 2019 (South32 Ltd., 2020a–d, 2021).

In January, South32 finalized the sale of the Tasmanian Electro Metallurgical Co. (TEMCO) smelter to GFG Alliance. TEMCO had been previously run by Samancor Manganese joint venture between South32 (60%) and Anglo American (40%). The smelter had a production capacity of 150,000 metric tons per year (t/yr) of high-carbon ferromanganese and 120,000 t/yr of silicomanganese (GFG Alliance, 2021; Roskill Information Services Ltd., 2021).

**China.**—China led the world in ferromanganese and silicomanganese production, accounting for 68% of global production in 2020. China's ferromanganese production was estimated to be 1.75 Mt, and its silicomanganese production was estimated to be 12.9 Mt, a 15% decrease and slight increase, respectively, from that in 2019 (table 8).

In response to reduced manganese ore availability following the global coronavirus disease 2019 (COVID-19) pandemic lockdowns in South Africa, Inner Mongolia Erdos Group Co., Ltd. increased silicomanganese production to 359,000 t, about 8% more than that in 2019 (Argus Media group—Argus Metals International, 2021a).

As part of China's 14th 5-year plan (covering 2021–25) to control energy consumption, no new ferroalloys projects would be approved in the Inner Mongolia Province unless a replacement for the capacity and energy consumption could be found so that energy consumption would not increase with the construction of new facilities. Inner Mongolia was one of the leading regions for ferroalloys production in China with a silicomanganese production capacity of about 6 million metric tons per year (Mt/yr) (Argus Media group—Argus Metals International, 2021b).

**Gabon.**—Gabon was the world's third-leading producer of manganese ore on a manganese-content basis. Ore production (manganese content) in Gabon increased by 20% in 2020 from that in 2019 (table 7). Eramet Group, the leading producer of manganese ore in Gabon, accounted for about 79% of the country's total manganese ore production (gross weight) in 2020. From its Moanda Mine, Eramet produced 5.8 Mt of manganese ore in 2020, a 22% increase from that in 2019 (Eramet Group, 2021, p. 13).

**South Africa.**—South Africa was the world's leading producer of manganese ore on both a manganese-content and gross-weight basis. Ore production (manganese content) in South Africa was estimated to have decreased slightly in 2020

from that in 2019 (table 7). Most of the manganese ore produced in South Africa (90%) was exported (Roskill Information Services Ltd., 2020).

Manganese ore was produced from the Mamatwan and Wessels Mines, which were part of the Hotazel Manganese Mines consortium (South32 holding a 44.4% interest, and the remaining interest held by Anglo American and Broad-Based Black Economic Empowerment entities) (South32 Ltd., undated b). In 2020, the mines produced about 10% less manganese ore compared with that in 2019 (South32 Ltd., 2020a–d, 2021).

Assmang Proprietary Ltd., a joint venture owned by African Rainbow Minerals Ltd. (50%) and Assore Ltd. (50%), was also a leading manganese ore producer. It operated the Gloria and N'chwaning Mines, which had a combined capacity of 3.9 Mt/yr (gross weight) (Roskill Information Services Ltd., 2020).

## Outlook

Consumption of manganese is primarily by the steel industry. Global crude steel production in 2020 was 1.88 billion metric tons (Gt), compared with 1.87 Gt in 2019 (World Steel Association, 2021a, p. 9). China, the world's leading producer of raw steel, produced 1.06 Gt in 2020, a 7% increase from the 995 Mt produced in 2019. U.S. crude steel production in 2020 was 72.7 Mt, a 17% decrease compared with 87.8 Mt produced in 2019. World apparent consumption of finished steel products was 1.77 Gt, essentially unchanged from that in 2019 (World Steel Association, 2021a, p. 16). China, the leading world consumer of steel products, increased steel consumption by 9% to 995 Mt in 2020 from 912 Mt in 2019. The World Steel Association's short-range forecast indicated that global steel consumption is expected to be 1.87 Gt in 2021 and 1.92 Gt in 2022 (World Steel Association, 2021b). Further details of the outlook for the steel industry are discussed in the "Outlook" section of the Iron and Steel chapter of the 2020 USGS Minerals Yearbook, volume I, Metals and Minerals.

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

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

	2016	2017	2018	2019	2020	
United States:						
Manganese ore (20% or more Mn):						
Production	--	--	--	--	--	
Exports	1	1	3	1	1	
Imports for consumption	281	297	440	434	367	
Consumption <sup>2,3</sup>	410	378	369 <sup>r</sup>	442 <sup>r</sup>	378	
Stocks, December 31, consumers <sup>2,3</sup>	207	148	191 <sup>r</sup>	175 <sup>r</sup>	143	
Ferromanganese:						
Production	W	W	W	W	W	
Exports	7	9	10	5	5	
Imports for consumption	229	331	427	332	223	
Consumption <sup>3</sup>	342	345	348	336	325	
Stocks, December 31, consumers and producers <sup>3</sup>	21	17	27	44 <sup>r</sup>	35	
Silicomanganese:						
Production	W	W	W	W	W	
Exports	2	8	4	2	2	
Imports for consumption	264	351	412	351	269	
Consumption <sup>3</sup>	139 <sup>4</sup>	141 <sup>4</sup>	139 <sup>4</sup>	143 <sup>4</sup>	229	
Stocks, December 31, consumers and producers <sup>3</sup>	10	11	21	39 <sup>r</sup>	31	
Consumption, apparent, manganese content <sup>3,5</sup>	540	715 <sup>r</sup>	796 <sup>r</sup>	748 <sup>r</sup>	620	
Price, average:						
Ferromanganese, high carbon <sup>6</sup>	dollars per gross ton	888.83	1,488.74	1,471.36	1,311.14	1,145.92
Ferromanganese, medium carbon <sup>6</sup>	cents per pound	80.80	110.46	113.31	109.70	90.93
Manganese metal <sup>7</sup>	do.	97.31	112.17	137.27	115.72	99.49
Manganese ore <sup>8</sup>	dollars per metric ton unit	4.34	5.97	7.16	5.63	4.59
Silicomanganese <sup>6</sup>	cents per pound	43.37	65.59	64.96	62.36	52.40
World, production of manganese ore <sup>9</sup>		46,200 <sup>r</sup>	59,200 <sup>r</sup>	56,000 <sup>r</sup>	60,100 <sup>r</sup>	56,100

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

<sup>1</sup>Table includes data available through August 12, 2021. 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>U.S. Geological Survey evaluation indicates that silicomanganese consumption is considerably understated.

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

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

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

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

<sup>9</sup>May include estimated data.

TABLE 2  
U.S. GOVERNMENT NATIONAL DEFENSE STOCKPILE MANGANESE STATISTICS IN 2020<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	Potential acquisitions	Potential disposals	Fiscal year <sup>3</sup>	Calendar year	Fiscal year <sup>3</sup>	Calendar year
Electrolytic metal	432	432	5,000	--	--	--	--	--
Metallurgical ore	292,000	292,000	--	292,000	--	--	--	--
High-carbon ferromanganese	163,000	135,000	--	45,400	32,000	33,600	-30,500	-53,900
Total	455,000	428,000	5,000	337,000	32,000	33,600	-30,500	-53,900

-- Zero.

<sup>1</sup>Table includes data available through August 12, 2021. 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, 2020.

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

Source: Defense Logistics Agency, DLA Strategic Materials.

TABLE 3  
DOMESTIC PRODUCERS OF PRINCIPAL MANGANESE PRODUCTS IN 2020

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 International Corp.	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 2020<sup>1,2</sup>

(Metric tons, gross weight)

End use	Ferromanganese		Silicomanganese	Manganese metal
	High carbon	Medium and low carbon		
Steel:				
Carbon	(3)	(3)	181,000	(3)
High-strength, low-alloy	(3)	(3)	(3)	(3)
Stainless and heat-resisting	7,100	2,660	15,500	958
Full alloy	(3)	(3)	15,900	45
Unspecified <sup>4</sup>	185,000	123,000	14,000	11,300
Total	192,000	126,000	226,000	12,300
Cast irons	6,390	(5)	199	(5)
Superalloys	(5)	(5)	--	78
Alloys (excluding alloy steels)	(5)	(5)	--	(5) <sup>6</sup>
Miscellaneous and unspecified	356	513	W	7,320
Grand total	198,000	126,000	229,000	19,700
Total manganese content <sup>7</sup>	159,000	106,000	151,000	19,700
Stocks, December 31, 2020, consumers and producers	11,800	23,200	31,100	1,280 <sup>8</sup>

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

<sup>1</sup>Table includes data available through August 12, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes U.S. Geological Survey 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>Estimated based on the following typical percentages of manganese content: high-carbon ferromanganese (80%), medium- and low-carbon ferromanganese (84%), silicomanganese (66%), and manganese metal (100%).

<sup>8</sup>Consumer stocks only.



TABLE 5

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

Country or locality	2019		2020	
	Gross weight (metric tons)	Value (thousands)	Gross weight (metric tons)	Value (thousands)
<b>Ore and concentrates with 20% or more manganese:<sup>2</sup></b>				
Belgium	20	\$71	325	\$507
Canada	453	425	298	292
India	19	33	40	34
Ireland	--	--	16	32
Japan	--	--	40	71
Korea, Republic of	--	--	17	16
Mexico	23	26	73	58
Netherlands	322	723	64	241
United Arab Emirates	--	--	40	41
United Kingdom	81	63	40	25
Other [3 countries and (or) localities]	92	138	6	28
<b>Total</b>	<b>1,010</b>	<b>1,480</b>	<b>957</b>	<b>1,340</b>
<b>Ferromanganese, all grades:<sup>2</sup></b>				
Bangladesh	--	--	18	35
Canada	4,800 <sup>r</sup>	6,830	4,630	5,460
China	44	99	--	--
Costa Rica	--	--	3	12
Dominican Republic	--	--	10	25
India	--	--	59	78
Israel	--	--	40	75
Mexico	--	--	2	4
South Africa	--	--	8	14
United Kingdom	55	128	--	--
Other [8 countries and (or) localities]	35 <sup>r</sup>	69 <sup>r</sup>	--	--
<b>Total</b>	<b>4,940<sup>r</sup></b>	<b>7,120<sup>r</sup></b>	<b>4,770</b>	<b>5,710</b>
<b>Silicomanganese:</b>				
Canada	1,580	1,800	2,060	2,470
Mexico	28	58	78	146
Turkey	--	--	1	3
<b>Total</b>	<b>1,610</b>	<b>1,860</b>	<b>2,140</b>	<b>2,620</b>
<b>Metal, including waste and scrap:<sup>2</sup></b>				
Australia	8	8	50	84
Brazil	(3)	14	17	881
Canada	106	366	51	205
France	15	5	18	7
Germany	1	14	76	127
India	210	103	594	226
Japan	85	319	113	312
Malaysia	8,810	4,490	5,060	2,260
South Africa	--	--	39	197
Turkey	52	28	191	71
Other [20 countries and (or) localities]	1,030 <sup>r</sup>	1,400 <sup>r</sup>	68	794
<b>Total</b>	<b>10,300</b>	<b>6,750</b>	<b>6,280</b>	<b>5,160</b>
<b>Manganese dioxide:<sup>2</sup></b>				
Brazil	26	121	66	256
Canada	3,380	2,960 <sup>r</sup>	4,410	3,500
El Salvador	114	143	117	145
Germany	63	247	58	214
Israel	234	283	234	286
Italy	48	211	516	1,250
Mexico	296	372	428	529
Netherlands	249	846	212	517
Poland	47	215	96	355
United Kingdom	1,040	1,790	505	654
Other [24 countries and (or) localities]	434 <sup>r</sup>	1,410 <sup>r</sup>	220	809
<b>Total</b>	<b>5,940</b>	<b>8,600</b>	<b>6,860</b>	<b>8,510</b>

See footnotes at end of table.

TABLE 5—Continued

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

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<sup>†</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through July 20, 2021. 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 2020 annual quantities (gross weight) of the leading countries and (or) localities.

<sup>3</sup>Less than ½ unit.

Source: U.S. Census Bureau.

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

Country or locality	2019			2020		
	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: <sup>2</sup>						
Belgium	--	--	--	18	9	\$21
Brazil	19,900	9,070	\$4,640	553	273	328
China	7	3	4	--	--	--
France	--	--	--	17	8	21
Gabon	319,000 <sup>r</sup>	190,000 <sup>r</sup>	100,000 <sup>r</sup>	217,000	123,000	56,900
Mexico	43,900	21,400	8,680	70,500	30,000	14,100
Morocco	321	165	178	1,200	762	511
South Africa	51,000 <sup>r</sup>	19,700 <sup>r</sup>	12,200 <sup>r</sup>	77,900	31,500	12,300
Spain	--	--	--	20	9	7
Ukraine	--	--	--	31	15	2,510
Other [1 country and (or) locality]	4	3	2	--	--	--
<b>Total</b>	<b>434,000</b>	<b>241,000</b>	<b>126,000</b>	<b>367,000</b>	<b>186,000</b>	<b>86,700</b>
<b>More than 20% but less than 47% manganese:</b>						
Brazil	16,200	7,190	3,330	--	--	--
China	7	3	4	--	--	--
Gabon	6,600 <sup>r</sup>	2,840 <sup>r</sup>	1,350 <sup>r</sup>	--	--	--
Mexico	27,300	10,400	5,770 <sup>r</sup>	50,500	15,900	9,300
South Africa	48,600 <sup>r</sup>	18,600 <sup>r</sup>	11,100 <sup>r</sup>	76,700	30,900	11,800
Spain	--	--	--	20	9	7
<b>Total</b>	<b>98,600<sup>r</sup></b>	<b>39,000</b>	<b>21,600</b>	<b>127,000</b>	<b>46,700</b>	<b>21,100</b>
<b>47% or more manganese:</b>						
Belgium	--	--	--	18	9	21
Brazil	3,700	1,880	1,310	553	273	328
France	--	--	--	17	8	21
Gabon	312,000	187,000	98,700	217,000	123,000	56,900
Mexico	16,600	11,000	2,900	20,000	14,100	4,820
Morocco	321	165	178	1,200	762	511
South Africa	2,360	1,140	1,020	1,200	582	499
Turkey	4	3	2	--	--	--
Ukraine	--	--	--	31	15	2,510
<b>Total</b>	<b>335,000</b>	<b>202,000</b>	<b>104,000</b>	<b>240,000</b>	<b>139,000</b>	<b>65,600</b>
<b>Ferromanganese:</b>						
All grades: <sup>2</sup>						
Australia	78,600	60,000	86,800	41,200	31,500	37,300
Brazil	2,500	1,840	2,680	2,520	1,880	2,170
India	1,630	1,270	1,990	2,590	1,970	2,450
Japan	1,350	1,060	2,260	1,060	849	1,480
Korea, Republic of	35,400	29,100	58,700	28,300	23,000	36,700
Malaysia	59,500	45,100	53,400	47,100	35,800	37,400
Mexico	6,760	5,280	11,400	1,540	1,180	2,360
Norway	49,000	39,700	80,100	33,700	27,300	46,300
Russia	24,500	18,700	22,100	26,100	19,800	22,700
South Africa	52,900	41,300	75,200	37,300	29,100	44,200
Other [10 countries and (or) localities]	19,900 <sup>r</sup>	15,900 <sup>r</sup>	28,200 <sup>r</sup>	1,880	1,360	2,330
<b>Total</b>	<b>332,000</b>	<b>259,000</b>	<b>423,000</b>	<b>223,000</b>	<b>174,000</b>	<b>235,000</b>
<b>1% or less carbon:</b>						
China	927	871	1,810	516	419	874
Germany	470	441	1,180 <sup>r</sup>	4	4	11
Iceland	--	--	--	45	36	76
Japan	1,350	1,060	2,260	758	608	1,120
Korea, Republic of	12,900	11,300	24,900	5,010	4,610	9,000
Mexico	2,270	1,790	4,040	318	253	461
Norway	36,200	29,300	60,900	28,600	23,100	40,400

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</sup>

Country or locality	2019			2020		
	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>						
South Africa	800	667	1,290	2,250	1,940	3,340
Spain	9,890	7,980	16,300	--	--	--
Vietnam	1	1	3	--	--	--
Total	64,800	53,400	113,000	37,500	31,000	55,300
<b>More than 1% but not more than 2% carbon:<sup>2</sup></b>						
Australia	--	--	--	10,400	7,940	9,550
Brazil	--	--	--	540	430	497
India	393	324	643	301	241	419
Japan	--	--	--	298	240	362
Korea, Republic of	17,900	14,300	28,800	19,200	15,300	24,200
Malaysia	21	16	31	--	--	--
Mexico	4,480	3,480	7,290 <sup>r</sup>	1,220	931	1,900
Norway	12,100	9,830	18,200	4,700	3,800	5,590
South Africa	24,500	19,600	42,300	16,600	13,300	23,000
Spain	300	242	488	--	--	--
Other [1 country and (or) locality]	21	16	28	--	--	--
Total	59,700	47,800	97,800	53,200	42,200	65,500
<b>More than 4% carbon:<sup>2</sup></b>						
Australia	78,600	60,000	86,800	30,800	23,500	27,700
Brazil	2,500	1,840	2,680	1,980	1,450	1,670
France	3,960	3,020	4,350	748	571	857
India	1,240	942	1,350	2,290	1,730	2,030
Korea, Republic of	4,600	3,510	5,010	4,090	3,050	3,540
Malaysia	59,400 <sup>r</sup>	45,100	53,400	47,100	35,800	37,400
Norway	776	602	945	450	351	331
Russia	24,500	18,700	22,100	26,100	19,800	22,700
South Africa	27,600	21,000	31,600	18,500	13,900	17,900
Zambia	218	175	224	430	230	339
Other [6 countries and (or) localities]	4,140 <sup>r</sup>	3,150 <sup>r</sup>	3,760 <sup>r</sup>	135	98	181
Total	208,000	158,000	212,000	133,000	100,000	115,000
<b>Silicomanganese:<sup>2</sup></b>						
Australia	67,300	44,600	83,300	65,100	43,000	63,200
Brazil	631	413	639	1,150	749	978
Georgia	85,900	63,600	108,000	82,400	59,800	88,600
Malaysia	31,300	20,400	33,000	10,600	6,920	9,140
Mexico	30,700	20,000	32,400	15,300	10,100	14,000
Norway	43,500	27,600	52,500	17,200	8,840	20,300
Oman	--	--	--	1,390	912	1,320
Russia	163	109	165	11,300	2,660	10,700
Saudi Arabia	4,550	2,870	4,470	5,600	4,390	4,700
South Africa	79,300	51,500	86,100	58,500	36,500	54,800
Other [7 countries and (or) localities]	7,610 <sup>r</sup>	4,890 <sup>r</sup>	9,070 <sup>r</sup>	293	198	301
Total	351,000	236,000	409,000	269,000	174,000	268,000
<b>Metal:</b>						
<b>Unwrought:<sup>2,3</sup></b>						
Belgium	36	XX	87	56	XX	106
China	27,800 <sup>r</sup>	XX	55,000	20,600	XX	32,000
Germany	2,040	XX	4,810	767	XX	1,510
Japan	2	XX	2,310	2	XX	2,150
Luxembourg	--	XX	--	306	XX	526
Mexico	269	XX	999	86	XX	317
Poland	(4)	XX	9	(4)	XX	12
Singapore	--	XX	--	48	XX	73

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</sup>

Country or locality	2019			2020		
	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>Unwrought:<sup>2,3</sup>—Continued</b>						
South Africa	5,750	XX	15,000	6,630	XX	13,100
Spain	143	XX	245	33	XX	55
Other [4 countries and (or) localities]	299 <sup>r</sup>	XX	617 <sup>r</sup>	--	XX	--
Total	36,400	XX	79,100	28,500	XX	49,800
<b>Other manganese, wrought:</b>						
Austria	(4)	XX	6	--	XX	--
China	(4)	XX	27	306	XX	532
Germany	346	XX	4,220	166	XX	2,260
Italy	--	XX	--	(4)	XX	2
Japan	(4)	XX	68	(4)	XX	25
Korea, Republic of	(4)	XX	51	--	XX	--
Luxembourg	--	XX	--	44	XX	175
Mexico	636	XX	1,740	325	XX	816
Sweden	10 <sup>r</sup>	XX	130	45	XX	609
United Kingdom	(4)	XX	2	(4)	XX	5
Total	992	XX	6,250	887	XX	4,420
<b>Waste and scrap:</b>						
Canada	364	XX	119	555	XX	161
Japan	--	XX	--	(4)	XX	7
Mexico	--	XX	--	2	XX	5
Total	364	XX	119	557	XX	173
<b>Manganese dioxide:<sup>2</sup></b>						
Belgium	55	XX	263	48	XX	226
Brazil	104	XX	155	157	XX	198
Canada	--	XX	--	5	XX	21
Germany	33	XX	174	14	XX	75
Greece	470	XX	1,160 <sup>r</sup>	413	XX	955
India	505	XX	872	47	XX	86
Japan	3,360	XX	7,460	4,230	XX	9,440
Mexico	--	XX	--	63	XX	107
Morocco	337	XX	579	274	XX	465
Spain	56	XX	96	202	XX	343
Other [3 countries and (or) localities]	65 <sup>r</sup>	XX	150 <sup>r</sup>	1	XX	6
Total	4,980 <sup>r</sup>	XX	10,900	5,450	XX	11,900
<b>Potassium permanganate:</b>						
Australia	--	XX	--	8	XX	27
Canada	(4)	XX	3	(4)	XX	18
India	1,230	XX	3,040	709	XX	1,680
Japan	1	XX	23	7	XX	24
Malaysia	6	XX	13	--	XX	--
Spain	--	XX	--	4	XX	36
United Kingdom	--	XX	--	(4)	XX	3
Total	1,240	XX	3,080	728	XX	1,790

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

<sup>1</sup>Table includes data available through July 20, 2021. 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 2020 annual quantities (gross weight) of the leading countries and (or) localities.

<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>	2016	2017	2018	2019	2020
<b>Australia:</b> <sup>4,5</sup>					
Gross weight	5,164	6,473	8,193	7,545	7,976
Manganese (Mn) content, 37% to 53% Mn	2,325	2,821	3,475	3,177	3,331
<b>Brazil:</b>					
Gross weight	2,811	3,334 <sup>r</sup>	3,189 <sup>r</sup>	3,726 <sup>r</sup>	2,385
Mn content, 21% to 51% Mn	1,199	1,344	1,281 <sup>r</sup>	1,452 <sup>r</sup>	494
<b>Bulgaria:</b> <sup>5</sup>					
Gross weight	67	33	--	--	--
Mn content, 25% to 35% Mn	19	9	--	--	--
<b>Burkina Faso:</b>					
Gross weight	--	9 <sup>r</sup>	9 <sup>r,c</sup>	9 <sup>r,c</sup>	30 <sup>c</sup>
Mn content, 36% to 51% Mn	--	4 <sup>r,c</sup>	4 <sup>r,c</sup>	4 <sup>r,c</sup>	13
<b>Burma:</b> <sup>5</sup>					
Gross weight	293	346	518	1,100 <sup>r</sup>	634
Mn content, 39% to 40% Mn	117	138	207	430	254
<b>China:</b> <sup>5,6</sup>					
Gross weight	14,117 <sup>r</sup>	18,473 <sup>r</sup>	9,510 <sup>r</sup>	9,499 <sup>r</sup>	10,519
Mn content, 13% to 20% Mn	2,117 <sup>r</sup>	2,771 <sup>r</sup>	1,427 <sup>r</sup>	1,206 <sup>r</sup>	1,336
<b>Congo (Kinshasa), gross weight</b>	--	--	15	11	10 <sup>c</sup>
<b>Côte d'Ivoire:</b> <sup>5</sup>					
Gross weight	105	470	864	1,175	1,280
Mn content, 41% to 45% Mn	47	212	354	482	525
<b>Egypt:</b> <sup>5</sup>					
Egypt, gross weight	19	36	40	36	16
Mn content, 30% to 40% Mn	6	12	13	12	5
<b>Gabon:</b> <sup>5</sup>					
Gross weight	3,379	4,717	5,071	6,169 <sup>r</sup>	7,326
Mn content, 45% to 53% Mn	1,622	2,193	2,336	2,759 <sup>r</sup>	3,314
<b>Georgia, concentrate:</b> <sup>5</sup>					
Gross weight	339 <sup>r</sup>	463 <sup>r</sup>	507 <sup>r</sup>	409 <sup>r</sup>	489
Mn content, 30% to 47% Mn	130	186 <sup>r</sup>	193 <sup>r</sup>	155 <sup>r</sup>	186
<b>Ghana:</b>					
Gross weight	1,967	3,004	4,552	5,383 <sup>r</sup>	2,358
Mn content, 27% to 30% Mn <sup>5</sup>	559 <sup>r</sup>	824 <sup>r</sup>	1,364	1,554	637
<b>Hungary:</b>					
Gross weight	18	--	--	--	-- <sup>c</sup>
Mn content, 25% to 35% Mn	5 <sup>c</sup>	--	--	--	-- <sup>c</sup>
<b>India:</b> <sup>5</sup>					
Gross weight	3,365 <sup>r</sup>	2,625 <sup>r</sup>	3,901 <sup>r</sup>	3,139 <sup>r</sup>	2,066
Mn content, 10% to 58% Mn	1,140 <sup>r</sup>	889 <sup>r</sup>	1,217 <sup>r</sup>	963 <sup>r</sup>	632
<b>Indonesia:</b> <sup>5</sup>					
Gross weight	90	56	--	--	51
Mn content, 28% to 44% Mn	39	24	--	--	18
<b>Iran:</b> <sup>c</sup>					
Gross weight	79	101 <sup>r</sup>	129 <sup>r</sup>	134 <sup>r</sup>	10
Mn content, 30% to 43% Mn	32	39	45	45	3
<b>Kazakhstan, concentrate:</b>					
Gross weight	510	464	434	460 <sup>r</sup>	480 <sup>c</sup>
Mn content, 35% to 36% Mn	183	167	143	152 <sup>r</sup>	158 <sup>c</sup>
<b>Malaysia:</b>					
Gross weight	701	1,226	1,263 <sup>r</sup>	1,131 <sup>r</sup>	890 <sup>c</sup>
Mn content, 32% to 45% Mn <sup>c</sup>	273	478	492 <sup>r</sup>	441 <sup>r</sup>	347
<b>Mexico:</b>					
Gross weight <sup>e</sup>	600	590	560	520	535
Mn content, 34% to 38% Mn <sup>7</sup>	206	212	209	202	198

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>	2016	2017	2018	2019	2020
<b>Morocco:</b>					
Gross weight	68	99	80	50 <sup>r,e</sup>	80 <sup>e</sup>
Mn content, 47% to 53% Mn <sup>e,8</sup>	36	59	42	27 <sup>r</sup>	42
<b>Namibia:</b>					
Gross weight <sup>e</sup>	48	80	66	92	106
Mn content, 35% Mn	17	28	23	32	37
<b>Nigeria:</b>					
Gross weight	70	37	59 <sup>r</sup>	59 <sup>r,e</sup>	59 <sup>e</sup>
Mn content, 25% to 37% Mn <sup>e</sup>	25	13	21 <sup>r</sup>	21 <sup>r</sup>	21
<b>Oman:</b>					
Gross weight	15	14	45 <sup>r</sup>	33 <sup>r</sup>	10 <sup>e</sup>
Mn content, 21% to 27% Mn <sup>e</sup>	4	3	11 <sup>r</sup>	8 <sup>r</sup>	2
<b>Romania, concentrate:</b>					
Gross weight	4 <sup>r</sup>	14	10	52 <sup>r</sup>	17
Mn content, 20% to 30% Mn	1	3	1	9 <sup>r</sup>	3 <sup>e</sup>
<b>Russia, concentrate:</b>					
Gross weight	--	1	57	57 <sup>e</sup>	57 <sup>e</sup>
Mn content, 20% to 30% Mn	--	(9)	14	14 <sup>e</sup>	14 <sup>e</sup>
<b>South Africa, metallurgical:</b>					
Gross weight, all forms <sup>10</sup>	10,806	14,653 <sup>r</sup>	14,920 <sup>r</sup>	17,000 <sup>r</sup>	16,500 <sup>e</sup>
Mn content, 30% to 48% Mn <sup>e</sup>	4,200	5,700 <sup>r</sup>	5,800	6,600 <sup>r</sup>	6,500
<b>Sudan:</b>					
Gross weight	34	42 <sup>e</sup>	41 <sup>e</sup>	40 <sup>e</sup>	-- <sup>e</sup>
Mn content, 29% to 33% Mn	10	12 <sup>e</sup>	12 <sup>e</sup>	10 <sup>e</sup>	-- <sup>e</sup>
<b>Thailand:</b>					
Gross weight	9	8	4	5	5 <sup>e</sup>
Mn content, 44% to 50% Mn <sup>e</sup>	4	4	2	2	2
<b>Turkey:</b>					
Gross weight	47 <sup>r</sup>	40 <sup>s</sup>	41 <sup>s</sup>	45 <sup>s</sup>	40 <sup>s</sup>
Mn content, 30% to 40% Mn	16 <sup>r,e</sup>	14 <sup>s</sup>	14 <sup>s</sup>	16 <sup>s</sup>	14 <sup>s</sup>
<b>Ukraine:</b>					
Gross weight	1,250	1,425	1,521	1,687 <sup>r</sup>	1,700 <sup>e</sup>
Mn content, 30% to 35% Mn <sup>e</sup>	425	484	517	574 <sup>r</sup>	578
<b>Vietnam:<sup>5</sup></b>					
Gross weight	215 <sup>r</sup>	236 <sup>r</sup>	258 <sup>r</sup>	262 <sup>r</sup>	281
Mn content, 43% Mn	92 <sup>r</sup>	102 <sup>r</sup>	111 <sup>r</sup>	113 <sup>r</sup>	121
<b>Zambia:</b>					
Gross weight <sup>11</sup>	20 <sup>r</sup>	131 <sup>r</sup>	159 <sup>r</sup>	257 <sup>r</sup>	186
Mn content, 27% to 35% Mn <sup>e</sup>	9 <sup>r</sup>	58 <sup>r</sup>	70 <sup>r</sup>	113 <sup>r</sup>	82
<b>Total:</b>					
Gross weight	46,200 <sup>r</sup>	59,200 <sup>r</sup>	56,000 <sup>r</sup>	60,100 <sup>r</sup>	56,100
Mn content	14,900 <sup>r</sup>	18,800 <sup>r</sup>	19,400 <sup>r</sup>	20,600 <sup>r</sup>	18,900

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

<sup>1</sup>Table includes data available through August 4, 2021. All data are reported unless otherwise noted; totals may include estimated data. 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>Includes manganiferous ore.

<sup>7</sup>Mostly oxide nodules; may include smaller quantities of direct-shipping carbonate and oxide ores for metallurgical and battery operations, and

<sup>8</sup>Mn content estimated at 84% of manganese dioxide (MnO<sub>2</sub>).

<sup>9</sup>Less than ½ unit.

<sup>10</sup>Calculated metal content includes allowance for assumed moisture content. Includes ore and sinter.

<sup>11</sup>Imports received to all countries from Zambia. Source: UN Comtrade.

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

(Metric tons, gross weight)

Country or locality <sup>2</sup>	2016	2017	2018	2019	2020
Argentina, silicomanganese <sup>3</sup>	10,000	--	--	--	--
Australia: <sup>3</sup>					
Ferromanganese	116,900	125,100	148,300	114,000	83,000
Silicomanganese	83,700	120,200	112,900	95,000	101,000
Total	200,600	245,300	261,200	209,000	184,000
Bahrain, silicomanganese <sup>3</sup>	5,000	--	--	--	--
Brazil: <sup>3</sup>					
Ferromanganese	83,780	123,470	136,000 <sup>r</sup>	120,000 <sup>r</sup>	85,000
Silicomanganese	166,680	202,520	228,690	216,000	206,000
Total	250,460	325,990	364,690 <sup>r</sup>	336,000 <sup>r</sup>	291,000
China:					
Ferromanganese: <sup>e</sup>					
Blast furnace	340,000	220,000	270,000	290,000	250,000
Electric furnace	1,610,000	1,560,000	1,660,000	1,770,000	1,500,000
Silicomanganese	7,267,000	6,610,000	9,450,000	12,600,000	12,900,000 <sup>e</sup>
Total	9,217,000	8,390,000	11,380,000	14,660,000	14,700,000 <sup>e</sup>
Egypt, ferromanganese <sup>3</sup>	12,000	12,000	13,000	12,000	5,000
France: <sup>3</sup>					
Ferromanganese	119,008	95,442	125,383	115,000	68,000
Silicomanganese	58,223	58,443	56,652	68,000	62,000
Total	177,231	153,885	182,035	183,000	130,000
Gabon, silicomanganese <sup>3</sup>	14,900	21,300	42,900	43,000	37,000
Georgia, silicomanganese	244,600 <sup>r</sup>	289,800	335,000	291,600 <sup>r</sup>	223,800
India: <sup>3</sup>					
Ferromanganese	621,000	753,000	635,000 <sup>r</sup>	642,000 <sup>r</sup>	648,000
Silicomanganese	1,768,000	2,038,000	2,133,000	1,889,000 <sup>r</sup>	1,760,000
Total	2,389,000	2,791,000	2,768,000 <sup>r</sup>	2,531,000 <sup>r</sup>	2,408,000
Indonesia, silicomanganese <sup>3</sup>	40,000	40,000	4,000	21,000 <sup>r</sup>	29,000
Japan:					
Ferromanganese	473,740	456,460	456,518	462,740	387,000 <sup>3</sup>
Silicomanganese <sup>3</sup>	22,700	24,500	21,100	31,000	15,000
Total	496,440	480,960	477,618	493,740	402,000 <sup>3</sup>
Kazakhstan, silicomanganese	135,885	123,977	137,710	123,464	120,000 <sup>e</sup>
Korea, Republic of:					
Ferromanganese	425,000 <sup>3</sup>	360,000 <sup>3</sup>	374,000 <sup>3</sup>	317,478 <sup>r</sup>	258,787
Silicomanganese <sup>3</sup>	135,000	117,000	164,000	162,000	152,000
Total	560,000 <sup>3</sup>	477,000 <sup>3</sup>	538,000 <sup>3</sup>	479,478 <sup>r</sup>	410,787
Malaysia: <sup>3</sup>					
Ferromanganese	58,801	264,555	315,000 <sup>r</sup>	266,000	215,000
Silicomanganese	20,975	230,535	283,414	312,000	301,000
Total	79,776	495,090	598,414 <sup>r</sup>	578,000	516,000
Mexico: <sup>3</sup>					
Ferromanganese	84,530	90,013	95,468	73,000	57,000
Silicomanganese	134,251	148,130	152,000	154,000	148,000
Total	218,781	238,143	247,468	227,000	205,000
Norway: <sup>3</sup>					
Ferromanganese	329,100	400,800	327,600	337,000	277,000
Silicomanganese	306,100	284,500	330,000	287,000	262,000
Total	635,200	685,300	657,600	624,000	539,000
Russia:					
Ferromanganese	124,200	253,000	281,000	273,000	238,000
Silicomanganese	203,216	44,917	43,334	51,774	--
Total	327,416	297,917	324,334	324,774	238,000

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>	2016	2017	2018	2019	2020
<b>Saudi Arabia:</b> <sup>3</sup>					
Ferromanganese	10,000	10,000	15,000 <sup>r</sup>	12,000 <sup>r</sup>	10,000
Silicomanganese	55,000	65,000	70,000 <sup>r</sup>	63,000 <sup>r</sup>	35,000
Total	65,000	75,000	85,000 <sup>r</sup>	75,000 <sup>r</sup>	45,000
<b>Slovakia:</b>					
Ferromanganese	35,589	42,115	32,364	46,513	42,800 <sup>e</sup>
Silicomanganese	35,719	40,265	37,225	26,187	17,800 <sup>e</sup>
Total	71,308	82,380	69,589	72,700	60,600 <sup>e</sup>
<b>South Africa:</b> <sup>3</sup>					
Ferromanganese	261,000 <sup>r</sup>	257,100	235,600	232,000	122,000
Silicomanganese	144,000	160,400	164,200	172,000	108,000
Total	405,000 <sup>r</sup>	417,500	399,800	404,000	230,000
<b>Spain:</b> <sup>3</sup>					
Ferromanganese	120,100	132,100	86,200	55,500	28,000
Silicomanganese	123,100	138,700	156,100	98,400	83,000
Total	243,200	270,800	242,300	153,900	111,000
<b>Ukraine:</b>					
Ferromanganese	104,470	114,500	79,480	151,090	129,461
Silicomanganese	814,970	810,670	859,640	804,680	584,698
Total	919,440	925,170	939,120	955,770	714,159
United States, ferromanganese <sup>4</sup>	W	W	W	W	W
Venezuela, silicomanganese <sup>3</sup>	42,000	18,670	--	--	--
Grand total	16,800,000	16,900,000	20,100,000 <sup>r</sup>	22,800,000 <sup>r</sup>	21,500,000
Of which:					
Ferromanganese	4,930,000 <sup>r</sup>	5,270,000	5,290,000 <sup>r</sup>	5,290,000 <sup>r</sup>	4,400,000
Silicomanganese	11,800,000	11,600,000	14,800,000	17,500,000 <sup>r</sup>	17,100,000

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

<sup>1</sup>Table includes data available through August 4, 2021. All data are reported unless otherwise noted; totals may include estimated data. Grand totals 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>U.S. output of ferromanganese includes silicomanganese.