

Mineral Industry Surveys

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MANGANESE IN OCTOBER 2000

In October, reported consumption of manganese ore containing 35% or more manganese, exclusive of that at iron and steel plants, was 37,700 metric tons (t), which was a slight increase compared with that for the previous month, according to the U.S. Geological Survey. This brought the revised year-to-date total to 379,000 t. The figures for October increase to 40,100 t and 412,000 t when estimates for annual respondents are added on the basis of 1999 data. Corresponding industry stocks of ore at the end of the month were 256,000 t, which includes an estimate for annual respondents on the basis of 1999 data. This was an increase of about 14% compared with the corresponding figure for stocks at the end of September.

Data for domestic consumption and stocks of manganese ferroalloys and metal in 2000 will appear in a subsequent monthly report.

Foreign trade data for October will appear in a subsequent report. The data for September tabulated in this report indicate that the quantity of silicomanganese imported through September now somewhat exceeds that for all of 1999. **Note:** For early availability, the trade data appearing in this report are being placed on MINES FaxBack in preliminary form. The data for September were placed on FaxBack as of November 29. The FaxBack document number for the October trade data will be 420210.

The Defense National Stockpile Center of the Defense Logistics Agency, U.S. Department of Defense, reported that cash disposals of manganese materials from the National Defense Stockpile in

October consisted of 1 t of natural battery-grade ore and 45,359 t of high-carbon ferromanganese. These disposals were the result of contract modifications.

Manganese and Its Role in Biological Processes (Sigel and Sigel, 2000) is a report on the availability of manganese to all types of organisms, how it is obtained and circulated in microorganisms and plants, and the role that it plays in health and disease. This book is the 37th in a series that focuses on the connection between chemistry of metal ions and their role in living organisms.

In Russia, blast furnace production of high-carbon ferromanganese, in which manganese concentrates from the Zhairemsky metallurgical combine in Kazakhstan were used, was tested at the Orsko-Khalilovsky Iron and Steel Works. The trials were conducted from 1997 through 1999 (Mul'ko and others, 2000). The steelworks, which is controlled by the joint-stock company Nosta, is located at Novotroitsk in the southern Urals, slightly northeast of the Aktyubinsk ferroalloy plant in neighboring Kazakhstan.

References Cited

- Mul'ko, G.N., Bondar', A.A., Zaietsev, V.A., Nitskiy, E.A., and Cherkasov, E.G., 2000, [Smelting of ferromanganese in blast furnaces]: *Metallurg*, no. 2, p. 21-23.
- Sigel, Astrid, and Sigel, Helmut, eds., 2000, *Manganese and its role in biological processes*, v. 37 of *Metal ions in biological systems*: New York, Marcel Dekker, Inc., 761 p.

TABLE 1
SELECTED U.S. FOREIGN TRADE IN MANGANESE 1/

(Metric tons, manganese content) 2/

| | Imports for consumption | | | Exports | | |
|-------------------|-------------------------|----------------------|---------|----------|----------------------|--------|
| | Ore and dioxide | Ferroalloy and metal | Total | Ore | Ferroalloy and metal | Total |
| 1999: 3/ | | | | | | |
| September | 1,910 | 23,600 | 25,500 | 96 | 720 | 816 |
| January-September | 186,000 | 338,000 | 523,000 | 944 | 11,300 | 12,200 |
| 2000: | | | | | | |
| January | 17,200 4/ | 27,600 4/ | 44,800 | 144 | 926 | 1,070 |
| February | 25,900 4/ | 38,100 | 64,000 | 202 | 1,380 | 1,580 |
| March | 17,700 4/ | 56,300 4/ | 74,000 | 383 4/ | 1,000 | 1,390 |
| April | 19,500 4/ | 38,600 4/ | 58,100 | 1,140 4/ | 937 | 2,080 |
| May | 4,130 4/ | 42,700 | 46,800 | 310 4/ | 541 | 851 |
| June | 21,500 4/ | 68,700 4/ | 90,300 | 398 | 484 | 883 |
| July | 60,600 4/ | 52,400 | 113,000 | 228 | 822 | 1,050 |
| August | 21,200 4/ | 44,700 | 65,800 | 438 | 652 | 1,090 |
| September | 25,100 4/ | 53,500 4/ | 78,600 | 168 | 1,040 | 1,210 |
| Total | 213,000 | 422,000 | 635,000 | 3,410 | 7,790 | 11,200 |

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ As reported except as estimated for imports of manganese dioxide and manganese waste and scrap and for exports from gross weights.

3/ Data may include revisions by the U.S. Census Bureau.

4/ All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 2
U.S. IMPORTS FOR CONSUMPTION OF SILICOMANGANESE IN SEPTEMBER 2000 1/

(Metric tons, unless otherwise specified)

| Source | Gross weight | Mn content | Customs value | Year to date | | |
|------------------------|--------------|------------|---------------|--------------|------------|---------------|
| | | | | Gross weight | Mn content | Customs value |
| Argentina | 20 | 9 | \$17,600 | 40 | 18 | \$35,200 |
| Australia | 2,810 | 1,860 | 1,300,000 | 40,400 | 35,600 | 19,700,000 |
| Brazil | -- | -- | -- | 15 | 12 | 20,400 |
| Bulgaria | -- | -- | -- | 2,450 | 1,590 | 1,030,000 |
| Canada | -- | -- | -- | 77 | 51 | 18,600 |
| France | -- | -- | -- | 1,350 | 918 | 636,000 |
| Georgia | -- | -- | -- | 2,990 | 2,170 | 1,520,000 |
| India | 1,540 | 1,050 | 640,000 | 48,200 | 31,300 | 20,800,000 |
| Kazakhstan | 7,660 | 5,180 | 3,020,000 | 53,900 | 36,500 | 23,900,000 |
| Korea, Republic of | -- | -- | -- | 2,800 | 1,850 | 1,240,000 |
| Mexico | 9,020 | 5,910 | 4,230,000 | 42,200 | 26,400 | 19,700,000 |
| Norway | 1,000 | 615 | 670,000 | 2,400 | 1,460 | 1,620,000 |
| Romania | -- | -- | -- | 4,040 | 2,640 | 1,830,000 |
| South Africa | 15,400 | 10,300 | 6,920,000 | 80,800 | 53,000 | 37,500,000 |
| United Kingdom 2/ | 3,400 | 2,230 | 1,610,000 | 3,400 | 2,230 | 1,610,000 |
| Venezuela | -- | -- | -- | 20,100 | 13,500 | 9,070,000 |
| Total | 40,800 | 27,200 | 18,400,000 | 305,000 | 209,000 | 140,000,000 |
| Total, general imports | 40,800 | 27,200 | 18,400,000 | 305,000 | 209,000 | 140,000,000 |

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 3
U.S. IMPORTS FOR CONSUMPTION OF FERROMANGANESE IN SEPTEMBER 2000 1/

(Metric tons)

| Source | Gross weight | Mn content | Customs value | Year to date p/ 2/ | | |
|---|--------------|------------|---------------|--------------------|------------|---------------|
| | | | | Gross weight | Mn content | Customs value |
| Low carbon: | | | | | | |
| Brazil | -- | -- | -- | 999 | 807 | \$648,000 |
| China | 9 | 8 | \$19,400 | 1,080 | 977 | 1,160,000 |
| Italy | 256 | 213 | 189,000 | 5,210 | 4,430 | 5,120,000 |
| Japan | 55 | 52 | 70,700 | 4,460 | 3,740 | 3,680,000 |
| Mexico | 217 | 177 | 196,000 | 947 | 765 | 832,000 |
| Norway | -- | -- | -- | 30 | 24 | 22,800 |
| South Africa | 260 | 240 | 397,000 | 1,430 | 1,340 | 2,260,000 |
| Ukraine | -- | -- | -- | 240 | 228 | 275,000 |
| Total, low carbon | 797 | 689 | 871,000 | 14,400 | 12,300 | 14,000,000 |
| Total, general imports of low carbon | 797 | 689 | 871,000 | 14,400 | 12,300 | 14,000,000 |
| Medium carbon, 1%-2% C: | | | | | | |
| Brazil | -- | -- | -- | 108 | 85 | 76,800 |
| China | 2,680 | 2,150 | 1,690,000 | 4,720 | 3,790 | 2,880,000 |
| France | -- | -- | -- | 60 | 48 | 37,400 |
| Germany | -- | -- | -- | 80 | 65 | 52,800 |
| Japan | 3,750 | 3,020 | 2,650,000 | 6,250 | 5,140 | 4,100,000 |
| Korea, Republic of | -- | -- | -- | 5,700 | 4,560 | 3,260,000 |
| Mexico | 3,330 | 2,700 | 2,350,000 | 17,900 | 14,500 | 11,900,000 |
| Norway | 1,070 | 877 | 478,000 | 9,260 | 7,530 | 5,570,000 |
| South Africa | -- | -- | -- | 20,600 | 16,700 | 12,600,000 |
| Total, m.c., 1%-2% C | 10,800 | 8,740 | 7,170,000 | 64,700 | 52,400 | 40,500,000 |
| Total, general imports of m.c., 1%-2% C | 10,800 | 8,740 | 7,170,000 | 64,700 | 52,400 | 40,500,000 |
| Medium carbon, 2%-4% C: | | | | | | |
| Brazil | -- | -- | -- | 1 | (3/) | 2,490 |
| South Africa | -- | -- | -- | 30 | 24 | 16,800 |
| Total, m.c., 2%-4% C | -- | -- | -- | 31 | 24 | 19,300 |
| Total, general imports of m.c., 2%-4% C | -- | -- | -- | 31 | 24 | 19,300 |
| High carbon: | | | | | | |
| Australia | 1,510 | 1,150 | 640,000 | 26,300 | 19,600 | 9,970,000 |
| Brazil | -- | -- | -- | 8,310 | 6,410 | 3,370,000 |
| Canada | -- | -- | -- | 36 | 28 | 26,200 |
| France | -- | -- | -- | 39,400 | 31,200 | 17,200,000 |
| Mexico | 1,400 | 1,100 | 625,000 | 1,400 | 1,100 | 625,000 |
| South Africa | 17,200 | 13,400 | 6,780,000 | 100,000 | 77,700 | 38,000,000 |
| Total, high carbon | 20,100 | 15,600 | 8,040,000 | 176,000 | 136,000 | 69,200,000 |
| Total, general imports of high carbon | 20,100 | 15,600 | 8,040,000 | 176,000 | 136,000 | 69,200,000 |
| Grand total | 31,700 | 25,100 | 16,100,000 | 255,000 | 201,000 | 124,000,000 |
| Grand total, general imports | 31,700 | 25,100 | 16,100,000 | 255,000 | 201,000 | 124,000,000 |

p/ Preliminary. -- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ May include revisions to previous months' data.

3/ Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 4
U.S. IMPORTS OF MANGANESE ORE (20% OR MORE Mn) IN SEPTEMBER 2000 1/ 2/

(Metric tons)

| Source | 20% - 47% Mn | | 47% or more Mn | | Total | |
|---------------|--------------|------------|----------------|------------|--------------|------------|
| | Gross weight | Mn content | Gross weight | Mn content | Gross weight | Mn content |
| Gabon | -- | -- | 36,000 3/ | 21,400 3/ | 36,000 | 21,400 |
| India | 37 3/ | 235 3/ | -- | -- | 37 | 235 |
| Mexico | 1,430 | 552 | -- | -- | 1,430 | 552 |
| Total | 1,470 | 787 | 36,000 | 21,400 | 37,500 | 22,200 |
| Year to date: | | | | | | |
| Australia | -- | -- | 23,700 | 12,300 | 23,700 | 12,300 |
| Belgium | 18 | 6 | -- | -- | 18 | 6 |
| Brazil | 7,030 | 3,250 | -- | -- | 7,030 | 3,250 |
| Gabon | 36,500 | 15,500 | 288,000 | 153,000 | 324,000 | 169,000 |
| India | 125 | 794 | -- | -- | 125 | 794 |
| Mexico | 6,570 | 3,520 | -- | -- | 6,570 | 3,520 |
| Morocco | -- | -- | 20 | 11 | 20 | 11 |
| Total | 50,300 | 23,000 | 311,000 | 166,000 | 362,000 | 189,000 |

-- Zero.

1/ Quantities for general imports and imports for consumption are identical.

2/ Data are rounded to no more than three significant digits; may not add to totals shown.

3/ All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF MANGANESE DIOXIDE AND MANGANESE METAL IN SEPTEMBER 2000 1/

(Metric tons, gross weight, unless otherwise specified)

| Source | Manganese dioxide | | | | Manganese metal | | | |
|------------------------|-------------------|---------------|--------------|---------------|-----------------|--------------|----------|--------------|
| | Quantity | Customs value | Year to date | | Unwrought | | Other | |
| | | | Quantity | Customs value | Quantity | Year to date | Quantity | Year to date |
| Australia | 3,020 | \$4,280,000 | 21,200 | \$30,500,000 | -- | -- | -- | -- |
| Belgium | 36 | 52,600 | 609 | 1,010,000 | -- | -- | -- | -- |
| Brazil | -- | -- | 29 | 31,500 | -- | -- | -- | -- |
| Canada | -- | -- | -- | -- | -- | -- | -- | 12 |
| China | -- | -- | 274 | 278,000 | 318 | 3,250 | -- | 92 |
| France | -- | -- | -- | -- | -- | -- | -- | 80 |
| Germany | -- | -- | 84 | 437,000 | 184 | 1,120 | 7 | 35 |
| Ghana | -- | -- | 3 | 4,530 | -- | -- | -- | -- |
| Greece | -- | -- | 1,140 | 1,480,000 | -- | -- | -- | -- |
| Hong Kong | 131 2/ | 234,000 2/ | 131 | 234,000 | -- | -- | -- | -- |
| India | -- | -- | -- | -- | -- | -- | 20 | 41 |
| Ireland | 729 | 1,010,000 | 7,270 | 9,910,000 | -- | -- | -- | -- |
| Italy | -- | -- | -- | -- | -- | -- | 1 | 1 |
| Japan | -- | -- | (3/) | 3,850 | -- | -- | (3/) | 5 |
| Mexico | -- | -- | -- | -- | -- | -- | -- | 20 |
| Netherlands | -- | -- | 40 | 53,800 | -- | 106 | 1 | 73 |
| Peru | -- | -- | -- | -- | -- | -- | -- | 4 |
| South Africa | 960 | 1,340,000 | 9,170 | 12,900,000 | 603 | 6,940 | -- | -- |
| Switzerland | -- | -- | 79 | 80,200 | -- | -- | -- | -- |
| Taiwan | -- | -- | -- | -- | -- | -- | -- | 18 |
| Ukraine | -- | -- | -- | -- | -- | 20 | -- | -- |
| United Kingdom | -- | -- | 117 | 174,000 | 57 | 531 | -- | 3 |
| Venezuela | -- | -- | -- | -- | -- | -- | -- | 36 |
| Total | 4,880 | 6,920,000 | 40,200 | 57,200,000 | 1,160 | 12,000 | 28 | 419 |
| Total, general imports | 4,880 | 6,920,000 | 40,200 | 57,300,000 | 1,270 | 12,500 | 28 | 419 |

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ All or part of these data have been referred to the U.S. Census Bureau for verification.

3/ Less than 1/2 unit.

Note: Imports for consumption of metallic manganese waste and scrap totaled less than one-half unit ton, all of which was from Canada, to give a year-to-date total of 199 tons.

Source: U.S. Census Bureau.

TABLE 6
U.S. EXPORTS OF MANGANESE ORE (20% OR MORE Mn), FERROMANGANESE,
SILICOMANGANESE, AND MANGANESE METAL BY COUNTRIES OF DESTINATION IN 2000 1/

(Metric tons, gross weight)

| | Manganese ore | | Ferromanganese, 2% or less C | | Silicomanganese | | Manganese metal 2/ | |
|--------------------|---------------|--------------|---------------------------------|--------------|-----------------|--------------|--------------------|--------------|
| | September | Year to date | September | Year to date | September | Year to date | September | Year to date |
| Australia | -- | 172 | -- | -- | -- | -- | -- | -- |
| Austria | -- | -- | -- | -- | -- | -- | -- | 39 |
| Belgium | -- | -- | -- | -- | -- | -- | 1 | 39 |
| Brazil | -- | 67 | -- | -- | -- | 4 | -- | -- |
| Canada | 163 | 3,290 | 358 | 4,110 | 132 | 1,130 | 102 | 614 |
| Chile | -- | -- | -- | -- | -- | -- | -- | 4 |
| Colombia | -- | -- | -- | -- | -- | -- | -- | 8 |
| Czech Republic | -- | 16 | -- | -- | -- | -- | -- | -- |
| Egypt | -- | 5 | -- | -- | -- | -- | -- | -- |
| Finland | -- | -- | -- | -- | -- | -- | -- | 67 |
| France | -- | 82 | -- | -- | -- | 4 | -- | 5 |
| Germany | 90 | 1,420 | -- | -- | -- | -- | -- | -- |
| Hong Kong | 54 | 54 | -- | -- | -- | -- | -- | 3 |
| Italy | -- | 300 | -- | -- | -- | -- | -- | 28 |
| Japan | -- | 70 | -- | -- | -- | -- | 20 | 537 |
| Korea, Republic of | 8 | 8 | -- | -- | -- | -- | 3 | 12 |
| Mexico | -- | 1,080 | 12 | 136 | -- | 332 | 13 | 171 |
| Netherlands | -- | 24 | -- | -- | -- | 9 | -- | 55 |
| Norway | -- | 139 | -- | -- | -- | -- | -- | -- |
| Panama | -- | -- | -- | 18 | -- | -- | -- | -- |
| Peru | -- | -- | -- | -- | -- | -- | -- | 1 |
| Singapore | -- | 24 | -- | -- | -- | -- | -- | -- |
| Switzerland | 19 | 52 | -- | -- | -- | -- | -- | -- |
| Taiwan | -- | 11 | -- | -- | -- | -- | 18 | 48 |
| United Kingdom | -- | -- | -- | -- | -- | -- | -- | 17 |
| Venezuela | -- | 17 | -- | -- | -- | -- | -- | -- |
| Total | 335 | 6,830 | 370 | 4,260 | 132 | 1,480 | 157 | 1,650 |

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes manganese-aluminum, some other alloys, and waste and scrap.

Note: Exports of ferromanganese with more than 2% carbon totaled 637 tons, all of which went to Canada, to give a year-to-date total of 2,280 tons.

Source: U.S. Census Bureau.

TABLE 7
U.S. FOREIGN TRADE IN SELECTED MANGANESE CHEMICALS IN SEPTEMBER 2000, BY CLASS 1/

| Class | Gross weight (metric tons) | Value 2/ (thousands) | Principal sources and destinations: gross weight (metric tons); value 2/ (thousands) | Year to date | | |
|---|-------------------------------|-------------------------|---|-------------------------------|-------------------------|---|
| | | | | Gross weight (metric tons) | Value 2/ (thousands) | Principal sources and destinations: gross weight (metric tons); value 2/ (thousands) |
| Imports for consumption: | | | | | | |
| Manganese oxides other than dioxide | 152 | \$141 | Mexico 95; \$30 | 1,120 | \$1,540 | Mexico 485; \$156 |
| Sulfates, basket category, including manganese sulfate | 1,810 | 1,340 | Mexico 1,190; \$741 | 28,400 | 15,900 | Mexico 12,800; \$6,500 |
| Potassium permanganate | 104 | 185 | Czech Republic 68; \$131 | 1,180 | 2,270 | Czech Republic 582; \$1,120 |
| Manganites, manganates, and other permanganates | -- | -- | -- | 37 | 260 | Germany 36; \$257 |
| Exports: | | | | | | |
| Manganese dioxide | 254 | 532 | Canada 109; \$53 | 2,570 | 3,370 | Canada 1,370; \$609 |
| Manganese oxides other than dioxide | 487 | 790 | Canada 168; \$65 | 6,660 | 8,100 | Canada 2,630; \$1,040 |
| Sulfates, basket category, including manganese sulfate | 1,640 | 957 | Canada 1,430; \$414 | 15,400 | 8,080 | Canada 12,800; \$3,830 |
| Potassium permanganate | 148 | 192 | Spain 99; \$78 | 1,170 | 2,310 | Spain 235; \$347 |
| Manganites, manganates, and other permanganates | 15 | 111 | Taiwan 15; \$106 | 201 | 1,060 | Taiwan 66; \$468 |

-- Zero.

1/ Data are rounded to no more than three significant digits.

2/ For imports, Customs value; for exports, f.a.s. value.

Source: U.S. Census Bureau.