# MANGANESE

(Data in thousand metric tons, gross weight, unless otherwise noted)

**Domestic Production and Use:** Manganese ore containing 20% or more manganese has not been produced domestically since 1970. Manganese ore was consumed mainly by six companies with plants principally in the East and Midwest. Most ore consumption was related to steel production, either directly in pig iron manufacture or indirectly through upgrading the ore to ferroalloys. Manganese ferroalloys were produced at two plants. Additional quantities of ore were used for nonmetallurgical purposes such as in the production of animal feed, brick colorant, dry cell batteries, and fertilizers.

| Salient Statistics—United States:[1] | 2017 | 2018 | 2019 | 2020 | 2021[e] |
|---|---|---|---|---|---|
| Production, mine | — | — | — | — | — |
| Imports for consumption: | | | | | |
| Manganese ores and concentrates | 297 | 440 | 434 | 367 | 460 |
| Ferromanganese | 331 | 427 | 332 | 223 | 320 |
| Silicomanganese | 351 | 412 | 351 | 269 | 270 |
| Exports: | | | | | |
| Manganese ores and concentrates | 1 | 3 | 1 | 1 | 1 |
| Ferromanganese | 9 | 10 | 5 | 5 | 11 |
| Silicomanganese | 8 | 4 | 2 | 2 | 4 |
| Shipments from Government stockpile:[2] | | | | | |
| Manganese ore | — | — | — | — | 2 |
| Ferromanganese and manganese metal, electrolytic | 12 | 13 | 10 | 54 | 17 |
| Consumption, reported: | | | | | |
| Manganese ore[3] | 378 | 369 | 442 | 378 | 390 |
| Ferromanganese | 345 | 348 | 336 | 325 | 330 |
| Silicomanganese | [4]141 | [4]139 | [4]143 | 229 | 230 |
| Consumption, apparent, manganese content[5] | 715 | 796 | 748 | 620 | 640 |
| Price, average, manganese content, cost, insurance, and freight, China, dollars per metric ton unit[6] | 5.97 | 7.16 | 5.63 | 4.59 | 5.20 |
| Stocks, producer and consumer, yearend: | | | | | |
| Manganese ore[3] | 148 | 191 | 175 | 143 | 170 |
| Ferromanganese | 17 | 27 | 44 | 35 | 35 |
| Silicomanganese | 11 | 21 | 39 | 31 | 31 |
| Net import reliance[7] as a percentage of apparent consumption, manganese content | 100 | 100 | 100 | 100 | 100 |

**Recycling:** Manganese was recycled incidentally as a constituent of ferrous and nonferrous scrap; however, scrap recovery specifically for manganese was negligible. Manganese is recovered along with iron from steel slag.

**Import Sources (2017–20):** Manganese ore: Gabon, 67%; South Africa, 18%; Mexico, 11%; and other, 4%. Ferromanganese: Australia, 20%; South Africa, 20%; Norway, 16%; Malaysia, 14%; and other, 30%. Silicomanganese: Georgia, 27%; Australia, 21%; South Africa, 21%; and other, 31%. Manganese contained in principal manganese imports:[8] Gabon, 23%; South Africa, 19%; Australia, 13%; Georgia, 9%; and other, 36%.

| Tariff: Item | Number | Normal Trade Relations 12–31–21 |
|---|---|---|
| Ores and concentrates: | | |
| Containing less than 47% manganese | 2602.00.0040 | Free. |
| Containing 47% or more of manganese | 2602.00.0060 | Free. |
| Manganese dioxide | 2820.10.0000 | 4.7% ad valorem. |
| High-carbon ferromanganese | 7202.11.5000 | 1.5% ad valorem. |
| Ferrosilicon manganese (silicomanganese) | 7202.30.0000 | 3.9% ad valorem. |
| Metal, unwrought: | | |
| Flake containing at least 99.5% manganese | 8111.00.4700 | 14% ad valorem. |
| Other | 8111.00.4900 | 14% ad valorem. |

**Depletion Allowance:** 22% (domestic), 14% (foreign).

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**Government Stockpile:**[9]

| Material | Inventory as of 9–30–21 | FY 2021 Potential acquisitions | FY 2021 Potential disposals | FY 2022 Potential acquisitions | FY 2022 Potential disposals |
|---|---|---|---|---|---|
| Manganese ore, metallurgical grade | 291 | — | 292 | — | 292 |
| Ferromanganese, high-carbon | 119 | — | 45 | — | 45 |
| Manganese metal, electrolytic | — | 5 | — | 5 | — |

**Events, Trends, and Issues:** Global production of steel, the leading use of manganese, increased in 2021 compared with production in 2020 owing to increased demand following the negative effects of the global COVID-19 pandemic. Global production of manganese ore was estimated to be about 6% more than that in 2020. The leading countries for manganese ore production were, in descending order on a contained-weight basis, South Africa, Gabon, and Australia. On a contained-weight basis, total U.S. manganese imports were estimated to have increased by approximately 20% in 2021 compared with those in 2020. By October 2021, average spot market prices for manganese ore from China had increased by 13% compared with the annual average spot price in 2020.

**World Mine Production (manganese content) and Reserves:** Reserves for Australia and South Africa were revised based on Government and industry sources.

| | Mine production 2020 | Mine production 2021[e] | Reserves[10] |
|---|---|---|---|
| United States | — | — | — |
| Australia | 3,330 | 3,300 | [11]270,000 |
| Brazil | 494 | 400 | 270,000 |
| Burma | 254 | 250 | NA |
| China | 1,340 | 1,300 | 54,000 |
| Côte d'Ivoire | 525 | 500 | NA |
| Gabon | 3,310 | 3,600 | 61,000 |
| Georgia | 186 | 190 | NA |
| Ghana | 637 | 640 | 13,000 |
| India | 632 | 600 | 34,000 |
| Kazakhstan, concentrate | 158 | 160 | 5,000 |
| Malaysia | 347 | 360 | NA |
| Mexico | 198 | 200 | 5,000 |
| South Africa | 6,500 | 7,400 | 640,000 |
| Ukraine, concentrate | 578 | 670 | 140,000 |
| Vietnam | 121 | 120 | NA |
| Other countries | 260 | 260 | Small |
| World total (rounded) | 18,900 | 20,000 | 1,500,000 |

**World Resources:**[10] Land-based manganese resources are large but irregularly distributed; those in the United States are very low grade and have potentially high extraction costs. South Africa accounts for about 30% of the world's manganese reserves.

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

[e]Estimated. NA Not available. — Zero.

[1]Manganese content typically ranges from 35% to 54% for manganese ore and from 74% to 95% for ferromanganese.

[2]Defined as stockpile shipments – receipts.

[3]Exclusive of ore consumed directly at iron and steel plants and associated yearend stocks.

[4]Imports more nearly represent amount consumed than does reported consumption.

[5]Defined as imports – exports + adjustments for Government and industry stock changes. Manganese content based on estimates of average content for all significant components—including ore, manganese dioxide, ferromanganese, silicomanganese, and manganese metal—except imports, for which content is reported.

[6]For average metallurgical-grade ore containing 44% manganese. Source: CRU Group.

[7]Defined as imports – exports + adjustments for Government and industry stock changes.

[8]Includes imports of ferromanganese, manganese ore, silicomanganese, synthetic manganese dioxide, and unwrought manganese metal.

[9]See Appendix B for definitions.

[10]See Appendix C for resource and reserve definitions and information concerning data sources.

[11]For Australia, Joint Ore Reserves Committee-compliant or equivalent reserves were 91 million tons, gross weight.