

Mineral Industry Surveys

For information, contact:

Emily K. Schnebele, Silicon Commodity Specialist
National Minerals Information Center
Telephone: (703) 648-4945
Email: eschnebele@usgs.gov

Joshua Braunstein (Data)

Telephone: (703) 648-7958

Email: jbrownstein@usgs.gov

Internet: [https://www.usgs.gov/centers/](https://www.usgs.gov/centers/national-minerals-information-center/mineral-industry-surveys)

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SILICON IN JULY 2023

Domestic production and net shipments of silicon materials in July 2023 were withheld to avoid disclosing proprietary data (table 1). Ending stocks in July 2023 were 24,500 metric tons (t), 3% less than those in June 2023.

On a contained weight basis, total ferrosilicon imports were 7,770 t in July 2023, 17% more than those in June 2023 and 44% less than those in July 2022 (fig. 1, table 4). Total silicon metal imports, on a contained weight basis were 8,890 t in July 2023, 14% more than those in June 2023 and 10% more than those in July 2022.

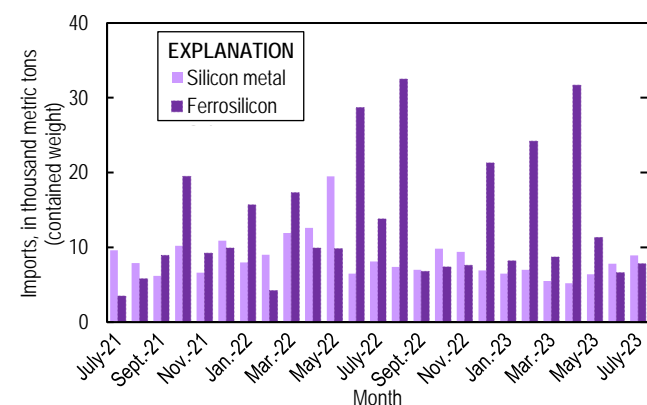


Figure 1. Ferrosilicon and silicon metal imports (excluding solar and semiconductor grades) from July 2021 through July 2023. Source: U.S. Census Bureau.

In July 2023, on a contained-weight basis in descending order of quantity, the leading destinations for silicon metal, more than 99.99% silicon trade category, were Vietnam, Japan, and Germany (table 3). In July 2023, on a contained-weight basis in descending order of quantity, leading import sources for ferrosilicon, 55%–80% grade, were Brazil, Kazakhstan, and Iceland, and the leading import sources for silicon metal, 99.00%–99.99% silicon trade category, were Brazil, Canada, and Norway (table 4).

Prices

The average U.S. spot price for silicon metal was 169.50 cents per pound in July 2023, 3% less than the average price in June 2023 and 52% less than the average price in July 2022. The average U.S. spot price for ferrosilicon, 75% grade, was 123.13 cents per pound, 11% less than the average price in June 2023 and 64% less than the average price in July 2022 (fig. 2, table 2). The average spot prices for ferrosilicon, 50% grade, were discontinued by CRU Group in April 2022 and no other published sources were available.

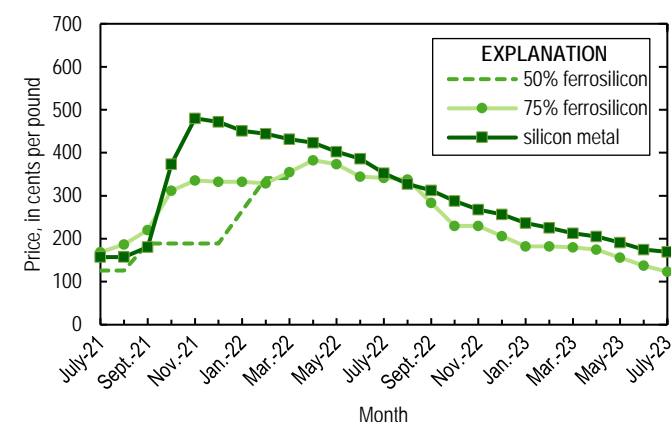


Figure 2. Average monthly spot prices for silicon metal and ferrosilicon, 50% and 75% grades, contained silicon, from July 2021 through July 2023. The average spot prices for ferrosilicon, 50% grade, were discontinued by CRU Group in April 2022. Source: CRU Group and S&P Global Platts Metals Week.

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TABLE 1
PRODUCTION, SHIPMENTS, AND STOCKS OF SILICON ALLOYS
AND METAL IN THE UNITED STATES^{1, 2, 3}

(Metric tons, gross weight)

| | Gross production ⁴ | Net shipments | Producers' stocks, end of period |
|------------------|----------------------------------|------------------|--|
| 2022: | | | |
| January–December | 348,000 | 249,000 | 21,600 |
| January–July | W | W | W |
| July | W | W | W |
| August | W | 22,500 | W |
| September | W | 15,700 | W |
| October | 25,500 | 17,100 | 24,700 |
| November | 22,600 | 20,600 | 22,800 |
| December | 19,900 | W | 21,600 |
| 2023: | | | |
| January | 26,600 | W | 21,700 |
| February | W | 19,500 | 19,400 |
| March | W | 22,500 | 23,400 |
| April | W | 21,700 | 24,700 |
| May | W | 20,400 | 23,500 |
| June | W | 20,100 | 25,400 |
| July | W | W | 24,500 |
| January–July | W | W | 24,500 |

W Withheld to avoid disclosing company proprietary data.

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

²Includes ferrosilicon, miscellaneous silicon alloys, and silicon metal, excluding semiconductor and solar grades, except where noted.

³Includes USGS estimates.

⁴Ferrosilicon production includes material consumed in the production of miscellaneous silicon alloys.

TABLE 2
PRICES FOR FERROSILICON AND SILICON METAL IN JULY 2023

| | | Low | Average | High | Average low, mid, and high |
|---------------------------------------|-----------------|--------|---------|--------|----------------------------|
| Ferrosilicon (75%) ¹ | do. | 120.00 | 123.13 | 130.00 | XX |
| Silicon metal, 553 grade ² | cents per pound | 163.00 | 169.50 | 175.00 | XX |

do. Ditto. NA Not available. XX Not applicable.

¹S&P Global Platts Metals Week, in U.S. warehouse, U.S. origin and imported material. Average price reported for all transactions during the month.

²S&P Global Platts Metals, duty paid, delivered Midwest, U.S. spot and imported 553 grade silicon metal (minimum 98.50% silicon). Average price reported for all transactions during the month.

TABLE 3
U.S. EXPORTS OF FERROSILICON AND SILICON METAL IN JULY 2023^{1,2}

(Metric tons, unless otherwise specified)

| Country or locality | Gross weight | Contained weight | Value | Gross weight | January–July ³ Contained weight | Value |
|--|--------------|------------------|-------------|--------------|---|-------------|
| Ferrosilicon: | | | | | | |
| More than 55% silicon: | | | | | | |
| Belgium | 76 | 52 | \$80,000 | 214 | 135 | \$195,000 |
| Canada | 156 | 93 | 335,000 | 1,860 | 1,120 | 3,780,000 |
| France | -- | -- | -- | 52 | 35 | 114,000 |
| Germany | -- | -- | -- | 80 | 62 | 177,000 |
| India | -- | -- | -- | 42 | 29 | 117,000 |
| Israel | -- | -- | -- | 3 | 2 | 5,000 |
| Mexico | 161 | 97 | 271,000 | 931 | 626 | 1,610,000 |
| Netherlands | 99 | 60 | 67,900 | 395 | 237 | 216,000 |
| Singapore | -- | -- | -- | 15 | 9 | 23,900 |
| Thailand | 4 | 2 | 6,250 | 78 | 47 | 184,000 |
| Turkey | 87 | 80 | 294,000 | 257 | 240 | 868,000 |
| Total | 584 | 384 | 1,050,000 | 3,930 | 2,540 | 7,290,000 |
| Other ferrosilicon: | | | | | | |
| Belgium | 36 | 16 | 35,300 | 180 | 78 | 252,000 |
| Brazil | -- | -- | -- | 175 | 87 | 641,000 |
| Canada | 41 | 14 | 58,700 | 357 | 81 | 489,000 |
| China | -- | -- | -- | 2 | 1 | 4,270 |
| Germany | -- | -- | -- | 60 | 27 | 111,000 |
| Mexico | 77 | 25 | 205,000 | 400 | 181 | 1,420,000 |
| Spain | -- | -- | -- | 40 | 20 | 107,000 |
| Switzerland | 20 | 9 | 37,800 | 20 | 9 | 37,800 |
| Turkey | -- | -- | -- | 220 | 99 | 515,000 |
| Total | 175 | 64 | 337,000 | 1,450 | 583 | 3,580,000 |
| Total ferrosilicon | 758 | 448 | 1,390,000 | 5,380 | 3,120 | 10,900,000 |
| Metal: | | | | | | |
| More than 99.99% silicon: | | | | | | |
| China | 134 | 134 | 5,290,000 | 802 | 802 | 31,800,000 |
| Denmark | 21 | 21 | 2,300,000 | 116 | 116 | 12,600,000 |
| Germany | 310 | 310 | 14,800,000 | 1,730 | 1,730 | 69,400,000 |
| Japan | 1,050 | 1,050 | 50,300,000 | 5,470 | 5,470 | 259,000,000 |
| Korea, Republic of | 59 | 59 | 2,490,000 | 400 | 400 | 17,300,000 |
| Malaysia | 212 | 212 | 7,730,000 | 1,080 | 1,080 | 41,500,000 |
| Singapore | 250 | 250 | 9,080,000 | 914 | 914 | 29,200,000 |
| Taiwan | 64 | 64 | 805,000 | 1,800 | 1,800 | 38,800,000 |
| Turkey | 30 | 30 | 954,000 | 289 | 289 | 9,970,000 |
| Vietnam | 1,720 | 1,720 | 44,500,000 | 9,490 | 9,490 | 301,000,000 |
| Other [23 countries and (or) localities] | 18 | 18 | 1,210,000 | 254 | 254 | 14,800,000 |
| Total | 3,870 | 3,870 | 139,000,000 | 22,400 | 22,400 | 825,000,000 |
| 99.00%–99.99% silicon: | | | | | | |
| Belgium | -- | -- | -- | 80 | 68 | 107,000 |
| Equatorial Guinea | -- | -- | -- | 23 | 23 | 32,400 |
| France | -- | -- | -- | 42 | 41 | 58,600 |
| Hong Kong | 2 | 2 | 3,310 | 5 | 5 | 7,560 |
| India | -- | -- | -- | 11 | 11 | 15,900 |
| Japan | 4 | 4 | 5,820 | 10 | 10 | 14,200 |
| Korea, Republic of | -- | -- | -- | 20 | 22 | 31,000 |
| Norway | 33 | 33 | 86,300 | 33 | 33 | 86,300 |
| Pakistan | -- | -- | -- | 6 | 6 | 8,690 |
| Taiwan | -- | -- | -- | 17 | 16 | 23,300 |
| Other [5 countries and (or) localities] | 3 | 3 | 3,730 | 8 | 20 | 33,300 |
| Total | 42 | 42 | 99,100 | 255 | 255 | 418,000 |

See footnotes at end of table.

TABLE 3—Continued
U.S. IMPORTS OF FERROSILICON AND SILICON METAL IN JULY 2023^{1,2}

(Metric tons, unless otherwise specified)

| Country or locality | Gross weight | Contained weight | Value | Gross weight | January–July ³ Contained weight | Value |
|---|--------------|------------------|-------------|--------------|---|-------------|
| Metal—Continued: | | | | | | |
| Other silicon: | | | | | | |
| Belgium | 22 | 22 | \$29,300 | 60 | 59 | \$86,500 |
| Canada | 334 | 324 | 1,120,000 | 796 | 773 | 2,620,000 |
| China | -- | -- | -- | 42 | 40 | 54,800 |
| Germany | -- | -- | -- | 190 | 186 | 467,000 |
| India | -- | -- | -- | 22 | 21 | 27,900 |
| Mexico | 6 | 6 | 33,200 | 232 | 226 | 948,000 |
| Netherlands | 57 | 56 | 46,900 | 420 | 408 | 339,000 |
| South Africa | 15 | 15 | 19,800 | 78 | 76 | 103,000 |
| Trinidad and Tobago | -- | -- | -- | 27 | 26 | 64,300 |
| Vietnam | 57 | 54 | 1,000,000 | 397 | 378 | 7,500,000 |
| Other [9 countries and (or) localities] | 8 | 8 | 22,400 | 17 | 21 | 84,900 |
| Total | 499 | 483 | 2,270,000 | 2,280 | 2,210 | 12,300,000 |
| Total silicon metal | 4,410 | 4,390 | 141,000,000 | 24,900 | 24,900 | 838,000,000 |

-- Zero.

¹Presentation of monthly data is based on the quantities (gross weight) of the leading countries and (or) localities.

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

³May include revisions to previously published data.

Source: U.S. Census Bureau.

TABLE 4
U.S. IMPORTS OF FERROSILICON AND SILICON METAL IN JULY 2023^{1, 2}

(Metric tons, unless otherwise specified)

| Country or locality | Gross weight | Contained weight | Value | Gross weight | January-July ³ Contained weight | Value |
|---|--------------|------------------|------------|--------------|---|-------------|
| Ferrosilicon: | | | | | | |
| 55%-80% silicon, more than 3% Ca: | | | | | | |
| Bhutan | 54 | 41 | \$93,500 | 54 | 41 | \$93,500 |
| China | -- | -- | -- | 30 | 17 | 60,500 |
| France | 57 | 33 | 207,000 | 237 | 148 | 957,000 |
| India | 55 | 42 | 107,000 | 222 | 180 | 512,000 |
| Kazakhstan | -- | -- | -- | 1,300 | 1,270 | 2,490,000 |
| Total | 166 | 116 | 408,000 | 1,840 | 1,660 | 4,110,000 |
| 55%-80% silicon, other: | | | | | | |
| Brazil | 3,420 | 2,570 | 5,880,000 | 20,400 | 15,400 | 38,300,000 |
| Canada | 906 | 654 | 3,450,000 | 9,260 | 6,740 | 32,600,000 |
| Iceland | 1,080 | 825 | 2,260,000 | 5,840 | 4,490 | 14,200,000 |
| India | 38 | 28 | 96,500 | 1,110 | 822 | 2,640,000 |
| Kazakhstan | 1,400 | 1,070 | 3,390,000 | 10,100 | 7,470 | 23,000,000 |
| Malaysia | 1,030 | 761 | 1,890,000 | 12,500 | 9,270 | 24,800,000 |
| Paraguay | 200 | 149 | 415,000 | 1,650 | 1,240 | 3,590,000 |
| Russia | -- | -- | -- | 52,000 | 39,600 | 134,000,000 |
| South Africa | 54 | 40 | 186,000 | 543 | 401 | 2,580,000 |
| Vietnam | 327 | 246 | 541,000 | 3,180 | 2,320 | 5,110,000 |
| Other [8 countries and (or) localities] | 254 | 185 | 570,000 | 1,800 | 1,300 | 5,690,000 |
| Total | 8,710 | 6,530 | 18,700,000 | 118,000 | 89,000 | 286,000,000 |
| More than 90% ferrosilicon, China | -- | -- | -- | 16 | 14 | 39,300 |
| Magnesium ferrosilicon: | | | | | | |
| Brazil | 202 | 90 | 368,000 | 1,900 | 853 | 3,630,000 |
| Canada | 917 | 423 | 3,160,000 | 8,590 | 3,950 | 30,000,000 |
| China | 193 | 88 | 274,000 | 202 | 92 | 294,000 |
| Germany | -- | -- | -- | 230 | 104 | 415,000 |
| India | 314 | 142 | 728,000 | 869 | 393 | 2,090,000 |
| Paraguay | 37 | 17 | 66,700 | 67 | 31 | 182,000 |
| Thailand | 172 | 81 | 315,000 | 512 | 237 | 1,030,000 |
| Total | 1,840 | 841 | 4,910,000 | 12,400 | 5,660 | 37,600,000 |
| Other ferrosilicon: | | | | | | |
| Canada | 692 | 235 | 1,260,000 | 5,900 | 1,930 | 9,930,000 |
| China | 51 | 23 | 103,000 | 92 | 41 | 174,000 |
| France | -- | -- | -- | 41 | 18 | 82,500 |
| Germany | -- | -- | -- | 23 | 10 | 50,400 |
| India | 19 | 9 | 81,700 | 37 | 18 | 166,000 |
| Norway | -- | -- | -- | 23 | 12 | 62,800 |
| Paraguay | -- | -- | -- | 130 | 64 | 362,000 |
| Spain | 10 | 5 | 38,000 | 52 | 23 | 62,100 |
| Turkey | -- | -- | -- | 24 | 11 | 76,500 |
| United Kingdom | -- | -- | -- | 20 | 9 | 67,500 |
| Other [2 countries and (or) localities] | 17 | 9 | 52,100 | 20 | 11 | 63,000 |
| Total | 789 | 280 | 1,530,000 | 6,360 | 2,150 | 11,100,000 |
| Total ferrosilicon | 11,500 | 7,770 | 25,500,000 | 139,000 | 98,500 | 339,000,000 |
| Metal: | | | | | | |
| More than 99.99% silicon: | | | | | | |
| Brazil | 104 | 104 | 486,000 | 788 | 788 | 3,140,000 |
| China | 1 | 1 | 152,000 | 87 | 87 | 16,500,000 |
| Denmark | (4) | (4) | 4,200 | 1 | 1 | 73,800 |
| Estonia | (4) | (4) | 2,400 | (4) | (4) | 4,800 |
| Germany | 21 | 21 | 3,740,000 | 396 | 396 | 34,000,000 |
| Japan | 2 | 2 | 308,000 | 27 | 27 | 3,430,000 |
| Norway | -- | -- | -- | 39 | 39 | 228,000 |
| Poland | -- | -- | -- | (4) | (4) | 4,290 |
| Spain | -- | -- | -- | 1 | 1 | 8,850 |
| Taiwan | 22 | 22 | 2,680,000 | 199 | 199 | 24,400,000 |
| Other [5 countries and (or) localities] | -- | -- | -- | (4) | (4) | 193,000 |
| Total | 150 | 150 | 7,370,000 | 1,540 | 1,540 | 81,900,000 |
| 99.00%-99.99% silicon: | | | | | | |
| Australia | 107 | 106 | 401,000 | 1,470 | 1,460 | 6,680,000 |

See footnotes at end of table.

TABLE 4—Continued
U.S. IMPORTS OF FERROSILICON AND SILICON METAL IN JULY 2023^{1, 2}

(Metric tons, unless otherwise specified)

| Country or locality | Gross weight | Contained weight | Value | Gross weight | January–July ³ Contained weight | Value |
|---|--------------|------------------|--------------|--------------|---|-------------|
| Metal—Continued: | | | | | | |
| 99.00%–99.99% silicon: | | | | | | |
| Belgium | -- | -- | -- | 4 | 4 | \$26,800 |
| Brazil | 3,090 | 3,070 | \$11,900,000 | 10,600 | 10,500 | 41,800,000 |
| Canada | 2,570 | 2,550 | 11,000,000 | 14,800 | 14,700 | 71,100,000 |
| Germany | -- | -- | -- | 289 | 288 | 843,000 |
| Iceland | -- | -- | -- | 161 | 160 | 487,000 |
| Laos | 350 | 348 | 937,000 | 1,050 | 1,040 | 2,960,000 |
| Malaysia | 222 | 219 | 537,000 | 1,070 | 1,070 | 4,380,000 |
| Norway | 589 | 586 | 2,360,000 | 3,160 | 3,140 | 17,200,000 |
| Thailand | 384 | 382 | 1,110,000 | 1,430 | 1,420 | 4,750,000 |
| Other [3 countries and (or) localities] | -- | -- | -- | 2 | 2 | 22,200 |
| Total | 7,310 | 7,260 | 28,200,000 | 34,000 | 33,800 | 150,000,000 |
| Other silicon: | | | | | | |
| Belgium | -- | -- | -- | 100 | 96 | 344,000 |
| Brazil | 613 | 599 | 2,290,000 | 6,250 | 6,100 | 29,900,000 |
| Canada | -- | -- | -- | 2,220 | 1,990 | 12,100,000 |
| France | 40 | 39 | 161,000 | 117 | 115 | 450,000 |
| Iceland | -- | -- | -- | 125 | 96 | 431,000 |
| Laos | -- | -- | -- | 300 | 296 | 915,000 |
| Malaysia | 200 | 197 | 424,000 | 1,110 | 1,090 | 3,220,000 |
| Norway | 633 | 623 | 2,090,000 | 1,910 | 1,880 | 7,490,000 |
| South Africa | -- | -- | -- | 50 | 49 | 145,000 |
| Thailand | -- | -- | -- | 240 | 236 | 1,180,000 |
| Other [6 countries and (or) localities] | 21 | 20 | 75,900 | 99 | 95 | 564,000 |
| Total | 1,510 | 1,480 | 5,040,000 | 12,500 | 12,000 | 56,800,000 |
| Total silicon metal | 8,970 | 8,890 | 40,600,000 | 48,100 | 47,300 | 289,000,000 |

-- Zero.

¹Presentation of monthly data is based on the quantities (gross weight) of the leading countries and (or) localities.

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

³May include revisions to previously published data.

⁴Less than ½ unit.

Source: U.S. Census Bureau.