

# Mineral Industry Surveys

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## SILICON IN MARCH 2020

Domestic production of silicon materials was 38,400 metric tons (t) in March 2020, a 10% increase from February 2020 production and 8% less than March 2019 production (fig. 1, table 1). Net shipments were 26,000 t, 4% more than shipments in February 2020 and 13% less than shipments in March 2019. Total production and net shipments during the first 3 months of 2020 were 9% less and 14% less, respectively, than those during the same period in 2019 (table 1).

Ending stocks were 21,800 t in March 2020, 19% more than stocks in February 2020 and slightly less than those in March 2019 (table 1). Adjustments in stocks included in-plant consumption of ferrosilicon to produce magnesium ferrosilicon and other alloys. All comparative statistics were calculated based on unrounded, gross-weight figures.

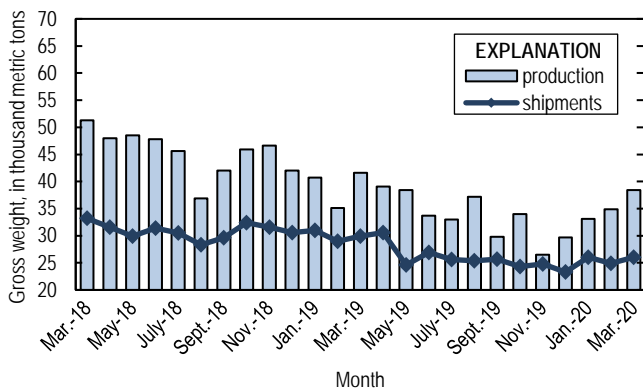


Figure 1. Monthly domestic production of total silicon materials and net shipments from March 2018 through March 2020 (may include revisions to previously published data).

### Prices

The average U.S. spot price for silicon metal was 97.75 cents per pound in March 2020, slightly more than the average price in February 2020 and 14% less than that in March 2019. The average U.S. spot price for ferrosilicon, 50% grade, was 104 cents per pound, unchanged since November 2019 and slightly more than the average price in March 2019. The average U.S. spot price for ferrosilicon, 75% grade, was 92.63 cents per pound, 14% more than the average price in February 2020 and 8% less than that in March 2019 (fig. 2).

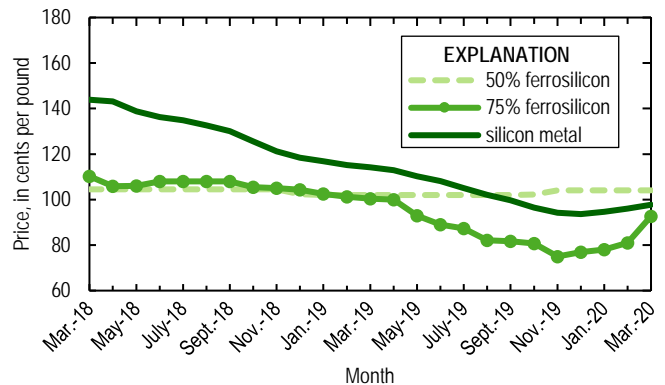


Figure 2. Average monthly spot prices for silicon metal and ferrosilicon 50% and 75% grades, contained silicon, March 2018 through March 2020. Source: CRU Group and S&P Global Platts.

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TABLE 1  
 PRODUCTION, SHIPMENTS, AND STOCKS OF SILICON ALLOYS  
 AND METAL IN THE UNITED STATES<sup>1,2,3</sup>

(Metric tons, gross weight)

|                  | Gross<br>production <sup>4</sup> | Net<br>shipments    | Producers'<br>stocks,<br>end of period |
|------------------|----------------------------------|---------------------|--|
| 2019:            |                                  |                     |  |
| January–December | 419,000                          | 321,000             | 18,900                                 |
| January–March    | 117,000 <sup>r</sup>             | 89,900 <sup>r</sup> | 22,300 <sup>r</sup>                    |
| March            | 41,600                           | 29,900              | 22,300                                 |
| April            | 39,100                           | 30,600              | 23,000                                 |
| May              | 38,400                           | 24,600              | 28,400                                 |
| June             | 33,700                           | 26,900              | 29,000                                 |
| July             | 33,000                           | 25,600              | 29,000                                 |
| August           | 37,200                           | 25,400              | 31,800                                 |
| September        | 29,800                           | 25,700              | 27,900                                 |
| October          | 34,000                           | 24,300              | 27,800                                 |
| November         | 26,500                           | 24,800              | 22,200                                 |
| December         | 29,700                           | 23,300              | 18,900                                 |
| 2020:            |                                  |                     |  |
| January          | 33,100                           | 26,000              | 16,700                                 |
| February         | 34,900 <sup>r</sup>              | 24,900 <sup>r</sup> | 18,300 <sup>r</sup>                    |
| March            | 38,400                           | 26,000              | 21,800                                 |
| January–March    | 106,000                          | 76,900              | 21,800                                 |

<sup>r</sup>Revised.

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

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

<sup>3</sup>Includes USGS estimates.

<sup>4</sup>Ferrosilicon production includes material consumed in the production of miscellaneous silicon alloys.

TABLE 2  
PRICES FOR FERROSILICON AND SILICON METAL IN MARCH 2020

|                                       |                                      | Low    | Average | High   | Average low, mid, and high |
|---------------------------------------|--------------------------------------|--------|---------|--------|----------------------------|
| Ferrosilicon:                         |                                      |        |         |        |                            |
| 50% ferrosilicon <sup>1</sup>         | cents per pound of contained silicon | 103.00 | XX      | 105.00 | 103.00–104.00–105.00       |
| 75% ferrosilicon <sup>2</sup>         | do.                                  | 83.00  | 92.63   | 101.00 | XX                         |
| Silicon metal, 553 grade <sup>3</sup> | cents per pound                      | 95.00  | 97.75   | 100.00 | XX                         |

do. Ditto. XX Not applicable.

<sup>1</sup>CRU Group transaction price, duty paid, f.o.b. Pittsburgh, producing plant or Chicago/Pittsburgh warehouse. Average price reported for price range.

<sup>2</sup>S&P Global Platts, in U.S. warehouse, U.S. origin and imported material. Average price reported for all transactions during the month.

<sup>3</sup>S&P Global Platts, 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 MARCH 2020<sup>1,2</sup>

(Metric tons, unless otherwise specified)

| Country or locality                      | Gross weight | Contained weight | Value      | January–March <sup>3</sup> |                  |             |
|--|--------------|------------------|------------|----------------------------|------------------|-------------|
|  |              |                  |            | Gross weight               | Contained weight | Value       |
| <b>Ferrosilicon:</b>                     |              |                  |            |                            |                  |             |
| More than 55% silicon:                   |              |                  |            |                            |                  |             |
| Bahamas                                  | 1            | (4)              | \$2,780    | 1                          | (4)              | \$2,780     |
| Brazil                                   | 12           | 7                | 18,500     | 12                         | 7                | 18,500      |
| Canada                                   | 221          | 132              | 351,000    | 648                        | 389              | 966,000     |
| France                                   | --           | --               | --         | 80                         | 48               | 95,100      |
| Mexico                                   | 229          | 140              | 446,000    | 500                        | 305              | 1,070,000   |
| South Africa                             | 19           | 13               | 14,200     | 19                         | 13               | 14,200      |
| United Kingdom                           | --           | --               | --         | 86                         | 51               | 134,000     |
| Total                                    | 481          | 293              | 832,000    | 1,350                      | 814              | 2,300,000   |
| Other ferrosilicon:                      |              |                  |            |                            |                  |             |
| Belgium                                  | 36           | 16               | 25,200     | 108                        | 48               | 75,600      |
| Brazil                                   | --           | --               | --         | 77                         | 39               | 152,000     |
| Canada                                   | 31           | 15               | 66,500     | 184                        | 92               | 307,000     |
| Finland                                  | --           | --               | --         | 20                         | 10               | 29,800      |
| Japan                                    | --           | --               | --         | 2                          | 1                | 9,400       |
| Mexico                                   | 55           | 26               | 129,000    | 325                        | 95               | 582,000     |
| Spain                                    | 40           | 20               | 62,700     | 60                         | 30               | 94,000      |
| Switzerland                              | 40           | 18               | 70,000     | 40                         | 18               | 70,000      |
| United Kingdom                           | 40           | 18               | 72,000     | 60                         | 27               | 108,000     |
| Total                                    | 242          | 114              | 425,000    | 875                        | 359              | 1,430,000   |
| Total ferrosilicon                       | 723          | 407              | 1,260,000  | 2,220                      | 1,170            | 3,730,000   |
| <b>Metal:</b>                            |              |                  |            |                            |                  |             |
| More than 99.99% silicon:                |              |                  |            |                            |                  |             |
| China                                    | 88           | 88               | 1,370,000  | 527                        | 527              | 8,080,000   |
| Germany                                  | 439          | 439              | 15,900,000 | 792                        | 792              | 21,200,000  |
| Japan                                    | 644          | 644              | 16,600,000 | 2,210                      | 2,210            | 79,900,000  |
| Korea, Republic of                       | 151          | 151              | 3,270,000  | 1,130                      | 1,130            | 14,300,000  |
| Malaysia                                 | 7            | 7                | 1,160,000  | 34                         | 34               | 5,410,000   |
| Norway                                   | 65           | 65               | 600,000    | 245                        | 245              | 2,250,000   |
| Peru                                     | --           | --               | --         | 35                         | 35               | 150,000     |
| Singapore                                | 23           | 23               | 463,000    | 88                         | 88               | 1,820,000   |
| Taiwan                                   | 26           | 26               | 148,000    | 334                        | 334              | 2,150,000   |
| Vietnam                                  | 344          | 344              | 3,240,000  | 606                        | 606              | 5,380,000   |
| Other [18 countries and (or) localities] | 6            | 6                | 585,000    | 62                         | 62               | 3,850,000   |
| Total                                    | 1,800        | 1,800            | 43,300,000 | 6,070                      | 6,070            | 144,000,000 |
| 99.00%–99.99% silicon:                   |              |                  |            |                            |                  |             |
| Dominican Republic                       | 5            | 5                | 6,800      | 5                          | 5                | 6,800       |
| Germany                                  | 19           | 18               | 19,400     | 19                         | 18               | 19,400      |
| Guatemala                                | 4            | 4                | 5,860      | 4                          | 4                | 5,860       |
| Mexico                                   | 2            | 2                | 5,720      | 5                          | 5                | 14,100      |
| Netherlands                              | 53           | 48               | 54,000     | 53                         | 48               | 54,000      |
| Pakistan                                 | --           | --               | --         | 5                          | 5                | 7,400       |
| United Kingdom                           | --           | --               | --         | 76                         | 76               | 78,900      |
| Total                                    | 83           | 78               | 91,700     | 168                        | 162              | 186,000     |
| Other silicon:                           |              |                  |            |                            |                  |             |
| Argentina                                | --           | --               | --         | 4                          | 4                | 5,450       |
| Australia                                | --           | --               | --         | 7                          | 7                | 8,960       |
| Belgium                                  | --           | --               | --         | 71                         | 69               | 65,600      |
| Canada                                   | 40           | 39               | 84,800     | 47                         | 46               | 121,000     |
| China                                    | 14           | 14               | 18,700     | 20                         | 19               | 25,900      |

See footnotes at end of table.

TABLE 3—Continued  
 U.S. EXPORTS OF FERROSILICON AND SILICON METAL IN MARCH 2020<sup>1,2</sup>

(Metric tons, unless otherwise specified)

| Country or locality                     | Gross weight | Contained weight | Value          | January–March <sup>3</sup> |                  |                |
|---|--------------|------------------|----------------|----------------------------|------------------|----------------|
|   |              |                  |                | Gross weight               | Contained weight | Value          |
| Metal—Continued:                        |              |                  |                |                            |                  |                |
| France                                  | 2            | 2                | \$2,580        | 8                          | 8                | \$10,300       |
| Mexico                                  | 22           | 21               | 62,200         | 24                         | 24               | 82,700         |
| Singapore                               | --           | --               | --             | 9                          | 9                | 11,800         |
| South Africa                            | --           | --               | --             | 17                         | 17               | 34,100         |
| United Kingdom                          | --           | --               | --             | 14                         | 14               | 18,800         |
| Other [4 countries and (or) localities] | 4            | 4                | 33,400         | 5                          | 5                | 57,900         |
| <b>Total</b>                            | <b>82</b>    | <b>80</b>        | <b>202,000</b> | <b>227</b>                 | <b>221</b>       | <b>442,000</b> |
| Total silicon metal                     | 1,970        | 1,960            | 43,600,000     | 6,470                      | 6,450            | 145,000,000    |

<sup>1</sup>Presentation of monthly data is based on the quantities (gross weight) of the leading countries.

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

<sup>3</sup>May include revisions to previously published data.

<sup>4</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS OF FERROSILICON AND SILICON METAL IN MARCH 2020<sup>1,2</sup>

(Metric tons, unless otherwise specified)

| Country or locality                     | Gross weight | Contained weight | Value      | January–March <sup>3</sup> |                  |            |
|---|--------------|------------------|------------|----------------------------|------------------|------------|
|   |              |                  |            | Gross weight               | Contained weight | Value      |
| <b>Ferrosilicon:</b>                    |              |                  |            |                            |                  |            |
| 55%–80% silicon, more than 3% Ca:       |              |                  |            |                            |                  |            |
| China                                   | 40           | 22               | \$89,400   | 80                         | 43               | \$179,000  |
| France                                  | 36           | 22               | 103,000    | 70                         | 44               | 172,000    |
| South Africa                            | 18           | 11               | 38,800     | 54                         | 38               | 94,900     |
| Total                                   | 94           | 55               | 232,000    | 204                        | 125              | 446,000    |
| 55%–80% silicon, other:                 |              |                  |            |                            |                  |            |
| Brazil                                  | 1,190        | 895              | 1,180,000  | 2,080                      | 1,560            | 2,230,000  |
| Canada                                  | 1,020        | 734              | 2,240,000  | 3,140                      | 2,290            | 6,630,000  |
| France                                  | 144          | 97               | 327,000    | 270                        | 180              | 662,000    |
| Iceland                                 | 1080         | 853              | 1,120,000  | 3,380                      | 2,670            | 3,360,000  |
| Kazakhstan                              | 1,940        | 1,480            | 2,540,000  | 4,190                      | 3,210            | 5,160,000  |
| Malaysia                                | 216          | 155              | 208,000    | 1,400                      | 1,050            | 1,320,000  |
| Norway                                  | 153          | 119              | 203,000    | 153                        | 119              | 203,000    |
| Paraguay                                | 151          | 117              | 149,000    | 1,310                      | 1,030            | 2,060,000  |
| Russia                                  | --           | --               | --         | 12,400                     | 9,450            | 13,500,000 |
| South Africa                            | 180          | 131              | 324,000    | 526                        | 383              | 825,000    |
| Other [4 countries and (or) localities] | 74           | 55               | 308,000    | 181                        | 132              | 719,000    |
| Total                                   | 6,150        | 4,640            | 8,590,000  | 29,100                     | 22,100           | 36,700,000 |
| 80%–90% ferrosilicon, Brazil            | 166          | 137              | 359,000    | 166                        | 137              | 359,000    |
| <b>Magnesium ferrosilicon:</b>          |              |                  |            |                            |                  |            |
| Argentina                               | 76           | 34               | 68,800     | 190                        | 86               | 176,000    |
| Brazil                                  | --           | --               | --         | 102                        | 46               | 117,000    |
| Canada                                  | 1,200        | 549              | 2,110,000  | 3,040                      | 1,400            | 5,420,000  |
| Germany                                 | 16           | 6                | 45,700     | 16                         | 6                | 45,700     |
| India                                   | 12           | 5                | 19,000     | 43                         | 19               | 66,800     |
| Norway                                  | 24           | 12               | 46,800     | 24                         | 12               | 46,800     |
| Total                                   | 1,320        | 606              | 2,290,000  | 3,420                      | 1,570            | 5,870,000  |
| <b>Other ferrosilicon:</b>              |              |                  |            |                            |                  |            |
| Brazil                                  | --           | --               | --         | 216                        | 93               | 248,000    |
| Canada                                  | 1,100        | 397              | 1,380,000  | 2,840                      | 968              | 3,540,000  |
| China                                   | --           | --               | --         | 107                        | 47               | 184,000    |
| France                                  | --           | --               | --         | 9                          | 4                | 22,200     |
| Germany                                 | --           | --               | --         | 2                          | 1                | 10,400     |
| India                                   | 16           | 7                | 24,900     | 36                         | 16               | 51,600     |
| Russia                                  | 20           | 9                | 42,000     | 21                         | 10               | 44,900     |
| Slovakia                                | 77           | 22               | 93,100     | 114                        | 39               | 120,000    |
| Spain                                   | --           | --               | --         | 1                          | 1                | 4,910      |
| Total                                   | 1,210        | 436              | 1,540,000  | 3,350                      | 1,180            | 4,230,000  |
| Total ferrosilicon                      | 8,950        | 5,870            | 13,000,000 | 36,200                     | 25,100           | 47,600,000 |
| <b>Metal:</b>                           |              |                  |            |                            |                  |            |
| More than 99.99% silicon:               |              |                  |            |                            |                  |            |
| Brazil                                  | 64           | 64               | 175,000    | 285                        | 285              | 772,000    |
| China                                   | 16           | 16               | 1,890,000  | 31                         | 31               | 3,830,000  |
| Denmark                                 | (4)          | (4)              | 2,560      | (4)                        | (4)              | 180,000    |
| France                                  | --           | --               | --         | (4)                        | (4)              | 9,970      |
| Germany                                 | 27           | 27               | 3,010,000  | 77                         | 77               | 6,870,000  |
| Japan                                   | 30           | 30               | 1,840,000  | 86                         | 86               | 4,430,000  |
| Laos                                    | --           | --               | --         | 36                         | 36               | 792,000    |
| Spain                                   | --           | --               | --         | (4)                        | (4)              | 3,240      |
| Taiwan                                  | 18           | 18               | 2,020,000  | 52                         | 52               | 5,900,000  |

See footnotes at end of table.

TABLE 4—Continued  
U.S. IMPORTS OF FERROSILICON AND SILICON METAL IN MARCH 2020<sup>1,2</sup>

(Metric tons, unless otherwise specified)

| Country or locality                     | Gross weight | Contained weight | Value             | January–March <sup>3</sup> |                  |                   |
|---|--------------|------------------|-------------------|----------------------------|------------------|-------------------|
|   |              |                  |                   | Gross weight               | Contained weight | Value             |
| <b>Metal—Continued:</b>                 |              |                  |                   |                            |                  |                   |
| More than 99.99% silicon:               |              |                  |                   |                            |                  |                   |
| United Kingdom                          | 2            | 2                | \$10,500          | 2                          | 2                | \$10,500          |
| Other [2 countries and (or) localities] | (4)          | (4)              | 11,300            | (4)                        | (4)              | 40,000            |
| <b>Total</b>                            | <b>157</b>   | <b>157</b>       | <b>8,960,000</b>  | <b>570</b>                 | <b>570</b>       | <b>22,800,000</b> |
| 99.00%–99.99% silicon:                  |              |                  |                   |                            |                  |                   |
| Australia                               | --           | --               | --                | 725                        | 720              | 1,600,000         |
| Bosnia and Herzegovina                  | 872          | 865              | 1,470,000         | 2,580                      | 2,560            | 4,270,000         |
| Brazil                                  | 839          | 832              | 1,830,000         | 4,300                      | 4,270            | 9,790,000         |
| Canada                                  | 1,590        | 1,580            | 3,820,000         | 3,630                      | 3,600            | 8,760,000         |
| Iceland                                 | 624          | 619              | 1,010,000         | 1,310                      | 1,300            | 2,080,000         |
| Laos                                    | 360          | 356              | 792,000           | 360                        | 356              | 792,000           |
| Malaysia                                | 840          | 832              | 1,380,000         | 1,740                      | 1,730            | 2,630,000         |
| Norway                                  | 624          | 620              | 1,830,000         | 1,670                      | 1,660            | 4,500,000         |
| South Africa                            | --           | --               | --                | 200                        | 198              | 239,000           |
| Vietnam                                 | 48           | 48               | 77,000            | 48                         | 48               | 77,000            |
| Other [1 country or locality]           | --           | --               | --                | 20                         | 20               | 28,800            |
| <b>Total</b>                            | <b>5,800</b> | <b>5,750</b>     | <b>12,200,000</b> | <b>16,600</b>              | <b>16,400</b>    | <b>34,800,000</b> |
| Other silicon:                          |              |                  |                   |                            |                  |                   |
| Australia                               | 879          | 854              | 1,750,000         | 975                        | 948              | 1,950,000         |
| Belgium                                 | --           | --               | --                | 40                         | 38               | 85,800            |
| Brazil                                  | 563          | 557              | 1,120,000         | 3,080                      | 3,020            | 6,550,000         |
| Canada                                  | --           | --               | --                | 216                        | 208              | 515,000           |
| China                                   | 16           | 15               | 17,300            | 83                         | 79               | 90,100            |
| Iceland                                 | 102          | 101              | 150,000           | 102                        | 101              | 150,000           |
| Malaysia                                | 120          | 118              | 218,000           | 120                        | 118              | 218,000           |
| Netherlands                             | 21           | 20               | 69,300            | 60                         | 58               | 195,000           |
| Norway                                  | 751          | 737              | 978,000           | 1,510                      | 1,480            | 2,100,000         |
| Sweden                                  | --           | --               | --                | 40                         | 39               | 44,000            |
| Other [6 countries and (or) localities] | 68           | 66               | 105,000           | 111                        | 108              | 204,000           |
| <b>Total</b>                            | <b>2,520</b> | <b>2,470</b>     | <b>4,410,000</b>  | <b>6,340</b>               | <b>6,190</b>     | <b>12,100,000</b> |
| <b>Total silicon metal</b>              | <b>8,480</b> | <b>8,380</b>     | <b>25,600,000</b> | <b>23,500</b>              | <b>23,200</b>    | <b>69,700,000</b> |

<sup>1</sup>Presentation of monthly data is based on the quantities (gross weight) of the leading countries.

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

<sup>3</sup>May include revisions to previously published data.

<sup>4</sup>Less than ½ unit.

Source: U.S. Census Bureau.