

Mineral Industry Surveys

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SILICON IN DECEMBER 2017

Domestic production of silicon materials was 44,000 metric tons (t) in December 2017, a 7% decrease from revised November 2017 production and 37% more than December 2016 production (fig. 1, table 1). Net shipments were 24,300 t, a 14% decrease from revised shipments in November 2017 and a 9% decrease from shipments in December 2016. Total production and net shipments during 2017 were 10% and 9% more, respectively, than those during 2016 (table 1).

Ending stocks were 34,600 t in December 2017, 20% more than the revised stocks in November 2017 and 7% less than those in December 2016 (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.

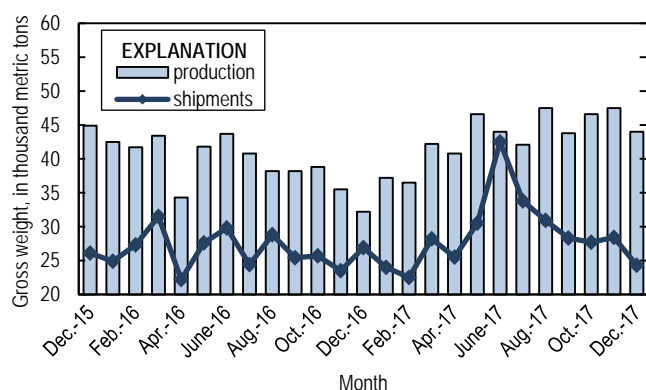


Figure 1. Monthly domestic production of total silicon materials and net shipments from December 2015 through December 2017 (may include revisions to previously published data). Source: U.S. Geological Survey.

The average U.S. spot price for silicon metal was 139.25 cents per pound in December 2017, a slight increase from the average price in November 2017, and a 41% increase from the December 2016 price. The average U.S. spot prices for ferrosilicon, 50% and 75% grades, were the same and 9% more, respectively, than the average prices in November 2017 and were 15% and 24% greater, respectively, than their average prices in December 2016 (fig. 2).

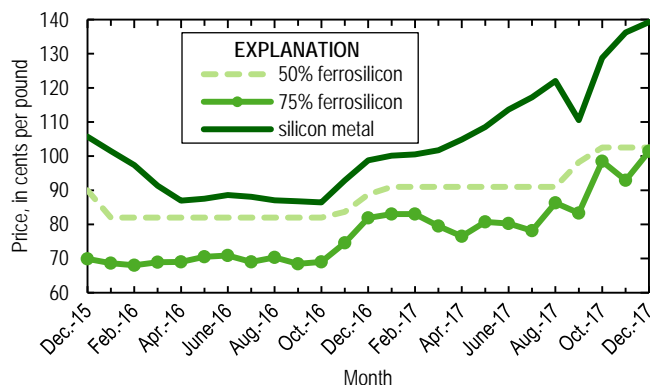


Figure 2. Average monthly spot prices for silicon metal and ferrosilicon 50% and 75% grades, contained silicon, from December 2015 through December 2017. Source: CRU Group and S&P Global Platts.

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

(Metric tons, gross weight)

| | Gross production ³ | Net shipments | Producers' stocks, end of period |
|------------------|----------------------------------|---------------------|--|
| 2016: | | | |
| January–December | 471,000 | 318,000 | 37,100 |
| December | 32,200 | 26,900 | 37,100 |
| 2017: | | | |
| January | 37,200 | 24,000 | 38,400 |
| February | 36,500 | 22,500 | 40,800 |
| March | 42,200 | 28,200 | 41,800 |
| April | 40,800 | 25,500 | 45,200 |
| May | 46,600 | 30,500 | 45,400 |
| June | 44,000 | 42,500 | 28,900 |
| July | 42,100 | 33,800 | 21,400 |
| August | 47,500 ^r | 30,900 ^r | 21,000 ^r |
| September | 43,800 ^r | 28,300 ^r | 22,200 ^r |
| October | 46,600 ^r | 27,700 | 25,900 ^r |
| November | 47,500 ^r | 28,400 ^r | 28,900 ^r |
| December | 44,000 | 24,300 | 34,600 |
| January–December | 519,000 | 347,000 | 34,600 |

^rRevised.

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.

³Ferrosilicon production includes material consumed in the production of miscellaneous silicon alloys.

TABLE 2
PRICES FOR FERROSILICON AND SILICON METAL IN DECEMBER 2017

| | | Low | Average | High | Average low, mid, and high |
|---------------------------------------|--------------------------------------|--------|---------|--------|----------------------------|
| Ferrosilicon: | | | | | |
| 50% ferrosilicon ¹ | cents per pound of contained silicon | 100.00 | XX | 105.00 | 100.00–102.50–105.00 |
| 75% ferrosilicon ² | do. | 92.00 | 101.38 | 108.00 | XX |
| Silicon metal, 553 grade ³ | cents per pound | 135.00 | 139.25 | 141.00 | XX |

do. Ditto. XX Not applicable.

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

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

³S&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 DECEMBER 2017^{1,2}

(Metric tons, unless otherwise specified)

| Country or locality | Gross weight | Contained weight | Value | January–December ³ | | |
|---------------------------|--------------|------------------|-------------|-------------------------------|------------------|---------------|
| | | | | Gross weight | Contained weight | Value |
| Ferrosilicon: | | | | | | |
| More than 55% silicon: | | | | | | |
| Belgium | -- | -- | -- | 293 | 162 | \$133,000 |
| Brazil | -- | -- | -- | 72 | 43 | 148,000 |
| Canada | 205 | 123 | \$308,000 | 4,540 | 2,730 | 6,500,000 |
| India | -- | -- | -- | 172 | 103 | 214,000 |
| Japan | -- | -- | -- | 20 | 12 | 33,200 |
| Mexico | 107 | 64 | 227,000 | 2,910 | 1,740 | 6,020,000 |
| Netherlands | -- | -- | -- | 2,740 | 1,710 | 2,220,000 |
| South Africa | -- | -- | -- | 237 | 142 | 104,000 |
| Turkey | -- | -- | -- | 12 | 7 | 18,500 |
| United Kingdom | -- | -- | -- | 80 | 56 | 49,100 |
| Other (3 countries) | -- | -- | -- | 23 | 14 | 50,400 |
| Total | 312 | 187 | 534,000 | 11,100 | 6,720 | 15,500,000 |
| Other ferrosilicon: | | | | | | |
| Belgium | 56 | 25 | 62,200 | 867 | 390 | 877,000 |
| Brazil | 39 | 20 | 76,000 | 471 | 230 | 836,000 |
| Canada | 20 | 10 | 8,640 | 1,210 | 605 | 600,000 |
| France | 40 | 14 | 66,000 | 320 | 142 | 522,000 |
| Indonesia | -- | -- | -- | 122 | 52 | 185,000 |
| Korea, Republic of | 40 | 17 | 43,200 | 567 | 250 | 621,000 |
| Mexico | 112 | 56 | 257,000 | 3,910 | 1,800 | 7,580,000 |
| Thailand | 40 | 13 | 73,700 | 120 | 50 | 220,000 |
| Turkey | 41 | 20 | 63,700 | 164 | 82 | 246,000 |
| United Kingdom | 80 | 35 | 127,000 | 804 | 366 | 1,270,000 |
| Other (7 countries) | -- | -- | -- | 310 | 151 | 664,000 |
| Total | 468 | 211 | 777,000 | 8,870 | 4,120 | 13,600,000 |
| Total ferrosilicon | 780 | 398 | 1,310,000 | 20,000 | 10,800 | 29,100,000 |
| Metal: | | | | | | |
| More than 99.99% silicon: | | | | | | |
| China | 637 | 637 | 5,890,000 | 5,110 | 5,110 | 64,300,000 |
| Germany | 48 | 48 | 649,000 | 2,780 | 2,780 | 73,100,000 |
| Hong Kong | 364 | 364 | 4,200,000 | 2,970 | 2,970 | 27,400,000 |
| Japan | 4,320 | 4,320 | 140,000,000 | 24,800 | 24,800 | 807,000,000 |
| Korea, Republic of | 364 | 364 | 18,900,000 | 5,570 | 5,570 | 199,000,000 |
| Malaysia | 135 | 135 | 3,680,000 | 660 | 660 | 38,500,000 |
| Norway | 228 | 228 | 1,670,000 | 643 | 643 | 5,270,000 |
| Philippines | -- | -- | -- | 1,680 | 1,680 | 60,400,000 |
| Singapore | 8 | 8 | 55,500 | 1,130 | 1,130 | 27,200,000 |
| Taiwan | 2,570 | 2,570 | 29,400,000 | 20,200 | 20,200 | 255,000,000 |
| Other (43 countries) | 17 | 17 | 1,410,000 | 844 | 844 | 18,800,000 |
| Total | 8,700 | 8,700 | 206,000,000 | 66,400 | 66,400 | 1,580,000,000 |
| 99.00%–99.99% silicon: | | | | | | |
| Belgium | -- | -- | -- | 79 | 79 | 85,500 |
| China | -- | -- | -- | 203 | 203 | 206,000 |
| Germany | -- | -- | -- | 15 | 15 | 21,600 |
| Israel | -- | -- | -- | 26 | 26 | 37,200 |
| Japan | -- | -- | -- | 12 | 12 | 17,000 |
| Mexico | 1 | 1 | 2,980 | 22 | 21 | 52,600 |
| Netherlands | 335 | 332 | 665,000 | 877 | 869 | 1,120,000 |
| Peru | -- | -- | -- | 71 | 71 | 88,600 |
| Thailand | -- | -- | -- | 15 | 15 | 21,700 |
| United Kingdom | 61 | 60 | 76,700 | 643 | 638 | 728,000 |

See footnotes at end of table.

TABLE 3—Continued
U.S. EXPORTS OF FERROSILICON AND SILICON METAL IN DECEMBER 2017^{1,2}

(Metric tons, unless otherwise specified)

| Country or locality | Gross weight | Contained weight | Value | January–December ³ | | |
|------------------------|--------------|------------------|-------------|-------------------------------|------------------|---------------|
| | | | | Gross weight | Contained weight | Value |
| Metal—Continued: | | | | | | |
| 99.00%–99.99% silicon: | | | | | | |
| Other (7 countries) | -- | -- | -- | 30 | 29 | \$55,600 |
| Total | 397 | 394 | \$744,000 | 1,990 | 1,980 | 2,430,000 |
| Other silicon: | | | | | | |
| Belgium | 18 | 18 | 24,400 | 697 | 680 | 798,000 |
| Canada | 31 | 30 | 84,900 | 495 | 481 | 1,210,000 |
| China | 13 | 12 | 16,600 | 268 | 261 | 359,000 |
| Germany | 22 | 21 | 32,200 | 54 | 53 | 90,200 |
| Japan | -- | -- | -- | 24 | 23 | 234,000 |
| Korea, Republic of | -- | -- | -- | 28 | 27 | 58,600 |
| Mexico | 12 | 12 | 27,700 | 380 | 369 | 1,110,000 |
| Netherlands | -- | -- | -- | 157 | 154 | 119,000 |
| South Africa | -- | -- | -- | 88 | 86 | 171,000 |
| United Kingdom | 2 | 2 | 18,100 | 211 | 205 | 481,000 |
| Other (11 countries) | 5 | 5 | 6,740 | 75 | 73 | 334,000 |
| Total | 103 | 100 | 211,000 | 2,480 | 2,410 | 4,970,000 |
| Total silicon metal | 9,200 | 9,190 | 207,000,000 | 70,900 | 70,800 | 1,580,000,000 |

-- Zero.

¹Presentation of monthly data is based on the "January–December" quantities (gross weight) of the leading countries.

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 DECEMBER 2017^{1,2}

(Metric tons, unless otherwise specified)

| Country or locality | Gross weight | Contained weight | Value | January–December ³ | | |
|-----------------------------------|--------------|------------------|------------|-------------------------------|------------------|-------------|
| | | | | Gross weight | Contained weight | Value |
| Ferrosilicon: | | | | | | |
| 55%–80% silicon, more than 3% Ca: | | | | | | |
| Argentina | 96 | 74 | \$195,000 | 96 | 74 | \$195,000 |
| Brazil | 18 | 12 | 203,000 | 3,950 | 2,850 | 5,660,000 |
| China | -- | -- | -- | 725 | 544 | 789,000 |
| France | 54 | 32 | 142,000 | 608 | 366 | 1,650,000 |
| Germany | -- | -- | -- | 2 | 1 | 6,070 |
| South Africa | 54 | 38 | 135,000 | 303 | 211 | 603,000 |
| Total | 222 | 155 | 675,000 | 5,690 | 4,040 | 8,900,000 |
| 55%–80% silicon, other: | | | | | | |
| Brazil | 307 | 231 | 383,000 | 5,930 | 4,450 | 6,890,000 |
| Canada | 692 | 500 | 1,510,000 | 12,200 | 8,870 | 26,500,000 |
| China | 76 | 57 | 107,000 | 14,900 | 11,200 | 16,800,000 |
| France | 54 | 34 | 140,000 | 1,730 | 1,180 | 4,750,000 |
| Iceland | 833 | 658 | 1,060,000 | 18,100 | 14,100 | 20,400,000 |
| Kazakhstan | 3,920 | 2,970 | 5,980,000 | 20,200 | 15,400 | 24,900,000 |
| Malaysia | 76 | 58 | 113,000 | 5,160 | 3,820 | 5,490,000 |
| Norway | -- | -- | -- | 1,010 | 763 | 1,120,000 |
| Russia | 15,700 | 11,900 | 22,800,000 | 77,200 | 59,100 | 97,900,000 |
| South Africa | 396 | 277 | 896,000 | 1,960 | 1,350 | 4,730,000 |
| Other (13 countries) | 393 | 292 | 694,000 | 3,980 | 2,920 | 8,430,000 |
| Total | 22,400 | 17,000 | 33,600,000 | 162,000 | 123,000 | 218,000,000 |
| 80%–90% ferrosilicon: | | | | | | |
| Bosnia and Herzegovina | 19 | 16 | 31,300 | 371 | 317 | 609,000 |
| Germany | 97 | 80 | 92,700 | 123 | 102 | 161,000 |
| Total | 116 | 96 | 124,000 | 494 | 419 | 770,000 |
| More than 90% ferrosilicon: | | | | | | |
| Brazil | 1,270 | 1,180 | 824,000 | 4,620 | 4,280 | 2,360,000 |
| China | -- | -- | -- | 52 | 47 | 15,800 |
| France | -- | -- | -- | 140 | 129 | 42,700 |
| Total | 1,270 | 1,180 | 824,000 | 4,820 | 4,450 | 2,420,000 |
| Magnesium ferrosilicon: | | | | | | |
| Argentina | -- | -- | -- | 655 | 230 | 736,000 |
| Canada | 909 | 416 | 1,630,000 | 12,600 | 5,740 | 22,200,000 |
| China | -- | -- | -- | 286 | 133 | 389,000 |
| France | -- | -- | -- | 10 | 5 | 42,500 |
| Germany | 1 | 1 | 5,220 | 101 | 41 | 271,000 |
| India | 123 | 24 | 171,000 | 2,180 | 672 | 2,740,000 |
| Norway | 27 | 13 | 48,400 | 137 | 65 | 239,000 |
| Total | 1,060 | 453 | 1,850,000 | 16,000 | 6,890 | 26,700,000 |
| Other ferrosilicon: | | | | | | |
| Canada | 693 | 252 | 791,000 | 15,200 | 5,290 | 13,500,000 |
| China | 23 | 5 | 60,200 | 12,000 | 2,120 | 4,040,000 |
| France | -- | -- | -- | 12 | 6 | 43,400 |
| Germany | 1 | (4) | 5,220 | 55 | 21 | 199,000 |
| India | -- | -- | -- | 74 | 33 | 79,900 |
| Japan | 4 | 2 | 6,880 | 13 | 6 | 21,900 |
| Russia | 11 | 6 | 21,600 | 150 | 73 | 236,000 |
| Slovakia | -- | -- | -- | 199 | 49 | 254,000 |
| South Africa | -- | -- | -- | 11 | 5 | 15,500 |
| Trinidad and Tobago | -- | -- | -- | 89 | 14 | 34,800 |

See footnotes at end of table.

TABLE 4—Continued
U.S. IMPORTS OF FERROSILICON AND SILICON METAL IN DECEMBER 2017^{1,2}

(Metric tons, unless otherwise specified)

| Country or locality | Gross weight | Contained weight | Value | January–December ³ | | |
|---------------------------|--------------|------------------|------------|-------------------------------|------------------|-------------|
| | | | | Gross weight | Contained weight | Value |
| Ferrosilicon: | | | | | | |
| Other ferrosilicon: | | | | | | |
| Other (2 countries) | -- | -- | -- | 5 | 2 | \$9,020 |
| Total | 732 | 264 | \$885,000 | 27,800 | 7,620 | 18,400,000 |
| Total ferrosilicon | 25,800 | 19,100 | 38,000,000 | 217,000 | 147,000 | 275,000,000 |
| Metal: | | | | | | |
| More than 99.99% silicon: | | | | | | |
| Brazil | 6 | 6 | 14,300 | 9,170 | 9,170 | 22,000,000 |
| China | 1 | 1 | 396,000 | 78 | 78 | 9,750,000 |
| Denmark | (4) | (4) | 50,100 | 4 | 4 | 1,890,000 |
| Germany | 67 | 67 | 4,170,000 | 819 | 819 | 45,600,000 |
| Japan | 15 | 15 | 893,000 | 232 | 232 | 10,900,000 |
| Norway | -- | -- | -- | 96 | 96 | 602,000 |
| Singapore | -- | -- | -- | 7 | 7 | 51,100 |
| Spain | -- | -- | -- | 3 | 3 | 25,600 |
| Taiwan | 40 | 40 | 1,380,000 | 532 | 532 | 16,200,000 |
| Ukraine | (4) | (4) | 4,680 | 3 | 3 | 253,000 |
| Other (9 countries) | (4) | (4) | 29,800 | 5 | 5 | 645,000 |
| Total | 130 | 130 | 6,940,000 | 10,900 | 10,900 | 108,000,000 |
| 99.00%–99.99% silicon: | | | | | | |
| Australia | -- | -- | -- | 17,500 | 17,300 | 37,400,000 |
| Bosnia and Herzegovina | 2,070 | 2,060 | 4,810,000 | 6,480 | 6,430 | 14,200,000 |
| Brazil | 2,300 | 2,280 | 5,980,000 | 31,100 | 30,800 | 78,500,000 |
| Canada | 1,440 | 1,430 | 4,310,000 | 21,900 | 21,700 | 57,700,000 |
| France | -- | -- | -- | 626 | 620 | 985,000 |
| Kazakhstan | -- | -- | -- | 7,960 | 7,900 | 14,400,000 |
| Laos | 519 | 516 | 1,180,000 | 519 | 516 | 1,180,000 |
| Norway | 601 | 597 | 1,400,000 | 6,530 | 6,490 | 14,700,000 |
| South Africa | -- | -- | -- | 975 | 966 | 2,070,000 |
| Thailand | 1,830 | 1,820 | 4,680,000 | 7,450 | 7,400 | 16,700,000 |
| Other (7 countries) | 43 | 43 | 121,000 | 788 | 781 | 1,530,000 |
| Total | 8,810 | 8,750 | 22,500,000 | 102,000 | 101,000 | 239,000,000 |
| Other silicon: | | | | | | |
| Australia | -- | -- | -- | 1,560 | 1,520 | 3,030,000 |
| Brazil | 309 | 305 | 802,000 | 9,070 | 8,910 | 21,200,000 |
| Canada | 113 | 112 | 292,000 | 1,130 | 1,110 | 2,650,000 |
| France | -- | -- | -- | 385 | 373 | 679,000 |
| Iceland | 60 | 59 | 107,000 | 974 | 957 | 1,640,000 |
| Japan | 32 | 31 | 40,500 | 401 | 385 | 567,000 |
| Kazakhstan | -- | -- | -- | 1,240 | 1,210 | 2,100,000 |
| Norway | 1,370 | 1,340 | 2,620,000 | 7,560 | 7,380 | 13,100,000 |
| South Africa | -- | -- | -- | 522 | 508 | 847,000 |
| Thailand | -- | -- | -- | 394 | 382 | 864,000 |
| Other (9 countries) | 367 | 362 | 832,000 | 879 | 855 | 1,670,000 |
| Total | 2,250 | 2,210 | 4,700,000 | 24,100 | 23,600 | 48,300,000 |
| Total silicon metal | 11,200 | 11,100 | 34,100,000 | 137,000 | 136,000 | 395,000,000 |

-- Zero.

¹Presentation of monthly data is based on the "January–December" quantities (gross weight) of the leading countries.

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.