

Mineral Industry Surveys

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SILICON IN DECEMBER 2023

Domestic production in December 2023 was withheld to avoid disclosing proprietary data. Total production in 2023 was less than that in 2022. Net shipments of silicon materials in December 2023 were 20,100 metric tons (t), slightly less than those in November 2023 (table 1). Net shipments during 2023 were essentially unchanged from those in 2022. Ending stocks in December 2023 were 20,400 t, 7% less than those in November 2023 and 5% less than those in December 2022.

On a contained weight basis, total ferrosilicon imports were 8,560 t in December 2023, 59% less than those in November 2023 and 60% less than those in December 2022 (fig. 1, table 4). Total silicon metal imports, on a contained weight basis, were 5,920 t in December 2023, 22% less than those in November 2023 and 14% less than those in December 2022.

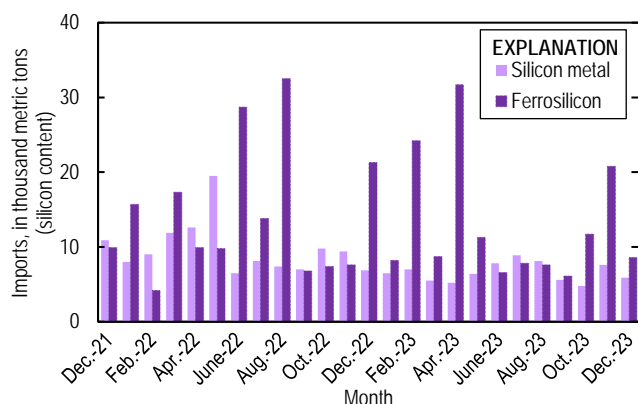


Figure 1. Ferrosilicon and silicon metal imports from December 2021 through December 2023. Source: U.S. Census Bureau.

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

Prices

The average U.S. spot price for silicon metal was 140.00 cents per pound in December 2023, slightly less than the average price in November 2023 and 45% less than the average price in December 2022. The average U.S. spot price for ferrosilicon, 75% grade, was 109.25 cents per pound, 9% more than the average price in November 2023 and 47% less than the average price in December 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.

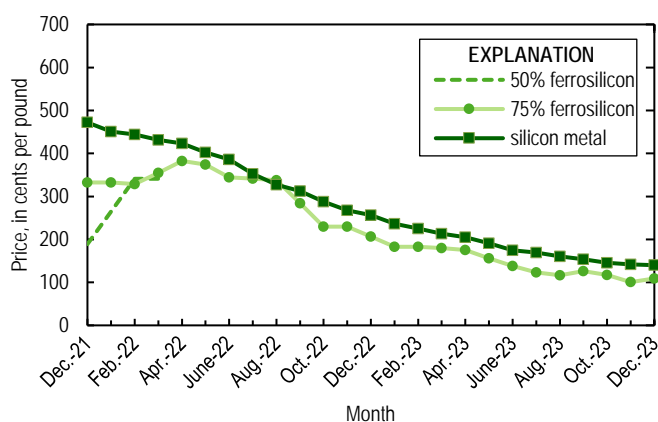


Figure 2. Average monthly spot prices for silicon metal and ferrosilicon, 50% and 75% grades, contained silicon, from December 2021 through December 2023. The average spot prices for ferrosilicon, 50% grade, were discontinued by CRU Group in April 2022. Source: CRU Group and S&P Global Platts Metals 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
December	19,900	W	21,600
2023:			
January	26,600	W	21,700
February	W	19,500	19,400
March	W	22,900 ^r	22,200 ^r
April	W	W	20,900 ^r
May	W	W	20,800 ^r
June	W	19,500 ^r	24,800 ^r
July	W	W	23,200 ^r
August	W	21,900 ^r	23,000 ^r
September	W	W	22,600 ^r
October	28,700 ^r	W	22,900 ^r
November	26,300 ^r	20,500 ^r	22,000 ^r
December	W	20,100	20,400
January–December	W	245,000	20,400

^rRevised. 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 DECEMBER 2023

		Low	Average	High	Average low, mid, and high
Ferrosilicon (75%) ¹	do.	95.00	109.25	120.00	XX
Silicon metal, 553 grade ²	cents per pound	137.00	140.00	144.00	XX

do. Ditto. 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 DECEMBER 2023^{1,2}

(Metric tons, unless otherwise specified)

Country or locality	Gross weight	Silicon content	Value	January–December ³		
				Gross weight	Silicon content	Value
Ferrosilicon:						
More than 55% silicon:						
Belgium	--	--	--	214	135	\$195,000
Canada	58	35	\$130,000	2,450	1,470	4,970,000
France	--	--	--	52	35	114,000
Germany	--	--	--	80	62	177,000
India	6	4	10,000	145	91	310,000
Japan	--	--	--	26	16	40,500
Mexico	94	60	138,000	2,980	1,890	4,780,000
Netherlands	--	--	--	668	401	399,000
Thailand	--	--	--	78	47	184,000
Turkey	--	--	--	305	268	942,000
Other [4 countries and (or) localities]	--	--	--	47	28	71,600
Total	159	99	278,000	7,050	4,440	12,200,000
Other ferrosilicon:						
Belgium	18	8	45,300	288	126	382,000
Brazil	20	10	53,200	214	107	748,000
Canada	30	15	90,700	526	134	856,000
China	--	--	--	2	1	4,270
Germany	--	--	--	60	27	111,000
Mexico	82	27	217,000	752	331	2,570,000
Singapore	9	5	11,700	9	5	11,700
Spain	--	--	--	60	30	159,000
Switzerland	20	9	67,500	80	36	210,000
Turkey	20	9	37,800	240	108	553,000
Total	198	82	523,000	2,230	904	5,600,000
Total ferrosilicon	357	181	801,000	9,280	5,350	17,800,000
Metal:						
More than 99.99% silicon:						
China	30	30	1,040,000	938	938	39,100,000
Denmark	40	40	5,960,000	256	256	33,500,000
Germany	205	205	7,860,000	2,440	2,440	98,000,000
Japan	730	730	34,500,000	9,190	9,190	441,000,000
Korea, Republic of	70	70	3,440,000	703	703	32,200,000
Malaysia	1,300	1,300	8,700,000	3,450	3,450	64,200,000
Singapore	170	170	4,340,000	1,400	1,400	41,600,000
Taiwan	475	475	11,800,000	3,270	3,270	65,400,000
Turkey	45	45	1,250,000	739	739	23,400,000
Vietnam	1,150	1,150	22,200,000	16,000	16,000	447,000,000
Other [31 countries and (or) localities]	3	3	299,000	326	326	17,400,000
Total	4,220	4,220	101,000,000	38,700	38,700	1,300,000,000
99.00%–99.99% silicon:						
Belgium	--	--	--	123	111	167,000
Equatorial Guinea	9	9	12,300	32	32	44,600
France	--	--	--	42	41	58,600
Italy	--	--	--	17	17	23,800
Korea, Republic of	--	--	--	20	22	31,000
Malaysia	--	--	--	49	49	69,700
Norway	--	--	--	33	33	86,300
Singapore	6	6	8,350	32	32	69,100
St. Kitts and Nevis	--	--	--	13	13	18,900
Taiwan	8	8	11,400	29	29	41,100
Other [12 countries and (or) localities]	10	10	14,100	56	67	101,000
Total	33	32	46,200	446	445	711,000

See footnotes at end of table.

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

(Metric tons, unless otherwise specified)

Country or locality	Gross weight	Silicon content	Value	January–December ³		
				Gross weight	Silicon content	Value
Metal—Continued:						
Other silicon:						
Belgium	--	--	--	62	60	\$102,000
Canada	28	27	\$83,700	1,120	1,090	3,690,000
China	--	--	--	97	94	128,000
Germany	(4)	(4)	5,140	206	201	503,000
India	(4)	(4)	4,340	22	21	35,800
Mexico	10	10	29,400	399	388	1,560,000
Netherlands	57	56	46,900	611	593	495,000
South Africa	--	--	--	152	147	200,000
Trinidad and Tobago	--	--	--	57	55	110,000
Vietnam	49	46	576,000	692	658	11,800,000
Other [12 countries and (or) localities]	1	1	10,300	27	30	130,000
Total	145	140	756,000	3,450	3,340	18,800,000
Total silicon metal	4,400	4,390	102,000,000	42,600	42,500	1,320,000,000

-- 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.

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

(Metric tons, unless otherwise specified)

Country or locality	Gross weight	Silicon content	Value	January–December ³		
				Gross weight	Silicon content	Value
Ferrosilicon:						
55%–80% silicon, more than 3% Ca:						
Bhutan	--	--	--	54	41	\$93,500
Brazil	--	--	--	513	323	555,000
China	--	--	--	30	17	60,500
France	19	12	\$66,600	367	233	1,420,000
India	--	--	--	312	248	683,000
Kazakhstan	--	--	--	1,900	1,870	3,300,000
South Africa	--	--	--	15	15	31,600
Thailand	81	48	158,000	216	129	459,000
Total	100	60	225,000	3,400	2,880	6,600,000
55%–80% silicon, other:						
Brazil	1,250	948	2,060,000	31,300	23,500	54,800,000
Canada	1,160	849	3,480,000	15,200	11,000	51,600,000
Iceland	1,250	953	2,150,000	13,300	10,200	28,200,000
India	80	55	238,000	2,230	1,630	4,980,000
Kazakhstan	--	--	--	12,700	9,290	28,400,000
Malaysia	4,040	3,020	5,980,000	23,600	17,300	41,800,000
Paraguay	427	325	687,000	3,410	2,560	6,910,000
Russia	--	--	--	71,300	54,300	164,000,000
South Africa	--	--	--	902	665	4,180,000
Vietnam	1,530	1,150	2,030,000	6,540	4,850	9,840,000
Other [10 countries and (or) localities]	299	220	813,000	3,260	2,350	10,000,000
Total	10,000	7,520	17,400,000	184,000	138,000	404,000,000
More than 90% ferrosilicon:						
China	--	--	--	16	14	39,300
India	--	--	--	(4)	(4)	3,080
Total	--	--	--	16	14	42,400
Magnesium ferrosilicon:						
Brazil	238	109	402,000	2,900	1,310	5,400,000
Canada	645	299	2,160,000	13,300	6,110	45,700,000
China	--	--	--	202	92	294,000
Germany	47	21	153,000	280	126	575,000
India	406	181	721,000	2,060	925	4,570,000
Paraguay	7	3	13,900	96	45	269,000
Spain	25	7	53,600	25	7	53,600
Thailand	225	103	395,000	1,080	501	2,100,000
Total	1,590	723	3,900,000	19,900	9,110	59,000,000
Other ferrosilicon:						
Argentina	--	--	--	52	23	104,000
Canada	635	210	1,130,000	9,570	3,160	16,500,000
China	36	16	48,400	173	77	326,000
France	--	--	--	41	18	82,500
India	19	9	55,300	65	31	241,000
Paraguay	20	10	70,000	210	102	641,000
Slovakia	39	6	72,100	75	23	164,000
Spain	--	--	--	68	30	80,300
Thailand	18	9	35,600	45	23	94,500
Turkey	--	--	--	24	11	76,500
Other [4 countries and (or) localities]	--	--	--	70	32	192,000
Total	767	259	1,410,000	10,400	3,530	18,500,000
Total ferrosilicon	12,500	8,560	23,000,000	217,000	153,000	489,000,000

See footnotes at end of table.

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

(Metric tons, unless otherwise specified)

Country or locality	Gross weight	Silicon content	Value	January–December ³		
				Gross weight	Silicon content	Value
Metal—Continued:						
More than 99.99% silicon:						
Brazil	77	77	\$430,000	1,280	1,280	\$5,810,000
China	(4)	(4)	32,900	95	95	17,600,000
Denmark	(4)	(4)	10,800	1	1	136,000
Finland	(4)	(4)	157,000	1	1	1,720,000
Germany	131	131	4,380,000	735	735	53,000,000
Japan	28	28	1,410,000	74	74	6,760,000
Malaysia	--	--	--	43	43	991,000
Norway	--	--	--	39	39	228,000
Spain	--	--	--	1	1	11,400
Taiwan	21	21	2,570,000	288	288	35,400,000
Other [9 countries and (or) localities]	--	--	--	1	1	314,000
Total	258	258	8,990,000	2,550	2,550	122,000,000
99.00%–99.99% silicon:						
Australia	103	103	\$282,000	2,620	2,600	10,400,000
Brazil	1,620	1,610	4,970,000	18,600	18,400	66,500,000
Canada	2,380	2,360	8,340,000	26,400	26,200	116,000,000
Germany	--	--	--	289	288	843,000
Iceland	--	--	--	161	160	487,000
Laos	--	--	--	2,900	2,880	7,450,000
Malaysia	--	--	--	1,070	1,070	4,380,000
Norway	624	620	2,220,000	6,300	6,260	29,400,000
South Africa	--	--	--	21	21	44,100
Thailand	96	95	221,000	1,700	1,680	5,430,000
Other [5 countries and (or) localities]	--	--	--	7	7	58,100
Total	4,820	4,790	16,000,000	60,000	59,600	241,000,000
Other silicon:						
Belgium	--	--	--	100	96	344,000
Brazil	403	397	884,000	9,450	9,240	38,700,000
Canada	--	--	--	2,220	1,990	12,100,000
France	--	--	--	177	173	654,000
Iceland	--	--	--	125	96	431,000
Japan	(4)	(4)	6,500	53	51	243,000
Laos	200	192	467,000	500	488	1,380,000
Malaysia	50	49	173,000	1,910	1,870	5,210,000
Norway	236	232	539,000	2,760	2,710	9,850,000
Thailand	--	--	--	340	332	1,460,000
Other [6 countries and (or) localities]	1	1	4,400	149	143	699,000
Total	890	871	2,070,000	17,800	17,200	71,100,000
Total silicon metal	5,970	5,920	27,100,000	80,400	79,400	434,000,000

-- 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.