



# Mineral Industry Surveys

---

**For information, contact:**

George M. Bedinger, Titanium Commodity Specialist  
National Minerals Information Center  
U.S. Geological Survey  
989 National Center  
Reston, VA 20192  
Telephone: (703) 648-6183, Fax: (703) 648-7757  
Email: gbedinger@usgs.gov

Joseph J. Kohler (Data)  
Telephone: (703) 648-7954  
Fax: (703) 648-7792  
Email: jkohler@usgs.gov

**Internet:** <http://minerals.usgs.gov/minerals/>

## TITANIUM IN THE FIRST QUARTER 2018

Titanium mill product shipments in the first quarter of 2018 were 9,460 metric tons (t), an increase of 10% from shipments in the previous quarter, and a decrease of 4% from first quarter 2017 shipments. Ingot production in the first quarter of 2018 decreased by 7% from that of the previous quarter and increased 23% from that of the first quarter 2017. Ingot and (or) slab shipments in the first quarter of 2018 decreased by 22% from those of the preceding quarter, and increased slightly from shipments in the first quarter of 2017. Receipts of titanium scrap in the first quarter of 2018 totaled 18,100 t, a slight decrease compared with receipts from the previous quarter and a 17% increase from shipments in the first quarter of 2017 (table 1).

During the first quarter, approximately 82% of mill products and castings were produced for commercial and military aerospace applications. Other applications for titanium mill products and castings included, in descending order of consumption, industrial, consumer, nonaerospace military, medical, and other. Data for titanium metal products are

developed by the U.S. Geological Survey from a voluntary survey of domestic operations. Data for nonrespondents were estimated based on previously reported data.

In the first quarter, domestic exports of titanium mineral concentrates totaled 44,800 t, more than five times those of 2017 (table 2). This increase was due to the movement of stockpiled inventory from Iluka Resources Ltd.'s former operations in southern Virginia. The material was shipped to Australia to be beneficiated at Iluka's synthetic rutile kiln in Western Australia (R. Gibney, General Manager, TiO<sub>2</sub> Sales, Iluka Resources Ltd., written commun., July 20, 2018).

*List services and web feed subscribers are the first to receive notification of USGS minerals information publications and data releases. For information on how to subscribe, go to <http://minerals.usgs.gov/minerals/>.*

TABLE 1  
COMPONENTS OF U.S. TITANIUM METAL SUPPLY AND DEMAND<sup>1</sup>

(Metric tons)

	2017				1st quarter–	2018
	1st quarter	2d quarter	3d quarter	4th quarter	4th quarter	1st quarter
<b>Production:</b>						
Sponge	W	W	W	W	W	W
Ingot	16,300	22,300	21,900	21,600	82,100	20,100
Mill products	9,820	10,000	9,560	8,570	38,000	6,560
<b>Exports:</b>						
Waste and scrap	3,150	2,040 <sup>r</sup>	1,910	2,350	9,450 <sup>r</sup>	2,020
Sponge	1,110	1,260	174	548	3,090	388
Ingot	2,210 <sup>r</sup>	2,110	2,230	2,460	9,010 <sup>r</sup>	2,190
Other unwrought	584	761 <sup>r</sup>	602	780	2,730 <sup>r</sup>	625
Bar, rod, profiles, wire	1,400 <sup>r</sup>	1,380	1,490 <sup>r</sup>	1,280	5,540 <sup>r</sup>	1,190
Bloom, sheet bar, slab	930	797	923 <sup>r</sup>	831 <sup>r</sup>	3,480	797
Other wrought	3,130	2,850 <sup>r</sup>	2,510 <sup>r</sup>	2,410 <sup>r</sup>	10,900	2,830
Total	12,500	11,200	9,840 <sup>r</sup>	10,700 <sup>r</sup>	44,200	10,000
<b>Imports:</b>						
Waste and scrap	5,470	6,960 <sup>r</sup>	6,470 <sup>r</sup>	6,340 <sup>r</sup>	25,200 <sup>r</sup>	5,950
Sponge <sup>2</sup>	6,130	4,670	6,500 <sup>r</sup>	6,800 <sup>r</sup>	24,100 <sup>r</sup>	5,070
Ingot	184	501	641	225	1,550	314
Powder	36	52	32	37	157	65
Other unwrought	282	356 <sup>r</sup>	252	233	1,120 <sup>r</sup>	349
Wrought	1,950 <sup>r</sup>	2,170 <sup>r</sup>	2,530 <sup>r</sup>	1,270 <sup>r</sup>	7,920 <sup>r</sup>	1,960
Castings	3	7	6	8	25	17
Other	154 <sup>r</sup>	226 <sup>r</sup>	170 <sup>r</sup>	159 <sup>r</sup>	708 <sup>r</sup>	128
Total	14,200	14,900 <sup>r</sup>	16,600	15,100 <sup>r</sup>	60,800 <sup>r</sup>	13,800
<b>Stocks, end of period:</b>						
Sponge, industry	22,000	15,500	14,700	13,200	13,200	10,200
Scrap	16,900	13,500	15,500	15,200	15,200	16,000
Ingot	7,100	5,620	6,050	5,120	5,120	6,770
<b>Consumption:</b>						
Sponge	9,310	9,170	8,920	10,100	37,400	8,850
Scrap	13,800	15,600	16,100	16,900	62,400	13,900
Ingot	14,600	19,100	17,500	16,600	67,800	16,400
<b>Shipments:</b>						
Ingot and slab (producer net shipments)	4,690	4,800	5,920	6,110	21,500	4,750
<b>Mill products (net shipments):</b>						
Forging and extrusion billet	6,680	6,370	6,730	6,200	26,000	6,560
Other	3,140	3,250	2,290	2,360	11,000	2,900
Total	9,820	9,610	9,010	8,570	37,000	9,460
Castings	W	W	W	W	W	W
<b>Receipts, scrap:</b>						
Home	5,380	5,430	5,600	5,720	22,100	6,010
Purchased	10,200	12,500	13,300	12,600	48,600	12,100
Total	15,600	17,900	18,900	18,300	70,700	18,100

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data.

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

<sup>2</sup>Estimated by the U.S. Geological Survey.

TABLE 2  
U.S. EXPORTS OF TITANIUM PRODUCTS<sup>1</sup>

(Metric tons)

	HTS <sup>2</sup> Code	2017				1st quarter–	2018
		1st quarter	2d quarter	3d quarter	4th quarter	4th quarter	1st quarter
<b>Metal:</b>							
Waste and scrap	8108.30.0000	3,150	2,040 <sup>r</sup>	1,910	2,350	9,450 <sup>r</sup>	2,020
<b>Unwrought:</b>							
Sponge	8108.20.0010	1,110	1,260	174	548	3,090	388
Ingot	8108.20.0030	2,210 <sup>r</sup>	2,110	2,230	2,460	9,010 <sup>r</sup>	2,190
Other unwrought	8108.20.0090	584	761 <sup>r</sup>	602	780	2,730 <sup>r</sup>	625
<b>Wrought:</b>							
Bar, rod, profiles, wire	8108.90.6031	1,400 <sup>r</sup>	1,380	1,490 <sup>r</sup>	1,280	5,540 <sup>r</sup>	1,190
Bloom, sheet bar, slab	8108.90.6020	930	797	923 <sup>r</sup>	831 <sup>r</sup>	3,480	797
Other	8108.90.8000	3,130	2,850 <sup>r</sup>	2,510 <sup>r</sup>	2,410 <sup>r</sup>	10,900	2,830
Ferrotitanium and ferrosilicon titanium	7202.91.0000	398	630	813	578	2,420	539
Ores and concentrates	2614.00.0000	2,850	2,740	1,930	1,420	8,940	44,800
<b>Pigment:</b>							
80% or more titanium dioxide	3206.11.0000	156,000	144,000	147,000 <sup>r</sup>	161,000	608,000	130,000
Other titanium dioxide	3206.19.0000	5,330	5,460 <sup>r</sup>	5,810 <sup>r</sup>	5,440 <sup>r</sup>	22,000	5,350
Unfinished titanium dioxide <sup>3</sup>	2823.00.0000	1,110	1,210 <sup>r</sup>	1,060	748	4,130 <sup>r</sup>	978

<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>Harmonized Tariff Schedule of the United States.

<sup>3</sup>Unmixed and not surface treated.

Source: U.S. Census Bureau.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM METAL<sup>1</sup>

(Metric tons)

	HTS <sup>2</sup> Code	2017				1st quarter–	2018
		1st quarter	2d quarter	3d quarter	4th quarter	4th quarter	1st quarter
<b>Waste and scrap:</b>							
	8108.30.0000						
Brazil		53	--	49	28	130	12
Canada		332	415	346	419	1,510	329
China		131	138	128	62	459	86
Czechia		53	17	91	70	231	146
France		681	715	629	912	2,940	796
Germany		800	1,160	1,200	859	4,020	731
India		9	17	27	18	71	28
Israel		82	54 <sup>†</sup>	66	72	274 <sup>†</sup>	106
Italy		254	500	525	584	1,860	358
Japan		657	1,180	978	730	3,550	991
Korea, Republic of		178	323	308	346	1,160	173
Mexico		138	159	286	229	812	238
Singapore		131	132	194	197	654	142
Spain		241	148	130	147	666	177
Sweden		--	63	--	--	63	68
Taiwan		64	41	59	58	222	45
United Kingdom		1,520	1,630	1,200 <sup>†</sup>	1,380	5,730 <sup>†</sup>	1,270
Other		146	265 <sup>†</sup>	250	231 <sup>†</sup>	892 <sup>†</sup>	252
Total		5,470	6,960 <sup>†</sup>	6,470 <sup>†</sup>	6,340 <sup>†</sup>	25,200 <sup>†</sup>	5,950
<b>Unwrought:</b>							
<b>Sponge:</b>							
	8108.20.0010						
Japan		4,670	3,840	5,400 <sup>†</sup>	5,450 <sup>†</sup>	19,400 <sup>†</sup>	4,610
Kazakhstan <sup>e</sup>		900	330	660	615	2,510	405
Russia		54	41	14	27	136	--
Ukraine		502	440	428	595 <sup>†</sup>	1,970 <sup>†</sup>	52
Other		--	16	(3)	109	126	4
Total		6,130	4,670	6,500 <sup>†</sup>	6,800 <sup>†</sup>	24,100 <sup>†</sup>	5,070
<b>Ingot:</b>							
	8108.20.0030						
Russia		168	484	612	225	1,490	314
Other		16	17	29	(3)	62	7
Total		184	501	641	225	1,550	321
Powder	8108.20.0015	36	52	32	37	157	65
Other	8108.20.0095	282	356 <sup>†</sup>	252	233	1,120 <sup>†</sup>	349
<b>Wrought:</b>							
Bar, rod, profiles, wire	8108.90.6031	513 <sup>†</sup>	576 <sup>†</sup>	495 <sup>†</sup>	426 <sup>†</sup>	2,010 <sup>†</sup>	507
Bloom, sheet bar, slab	8108.90.6020	289 <sup>†</sup>	266	332	211 <sup>†</sup>	1,100 <sup>†</sup>	311
Plate, sheet, strip, foil	8108.90.6045	920 <sup>†</sup>	1,030 <sup>†</sup>	1,340	482	3,780 <sup>†</sup>	902
Tube and pipe	8108.90.6060	95 <sup>†</sup>	79	108	61	343 <sup>†</sup>	127
Other	8108.90.6075	132 <sup>†</sup>	221 <sup>†</sup>	249	87 <sup>†</sup>	690 <sup>†</sup>	113
Total		1,950 <sup>†</sup>	2,170 <sup>†</sup>	2,530 <sup>†</sup>	1,270 <sup>†</sup>	7,920 <sup>†</sup>	1,960
<b>Other articles of titanium:</b>							
Castings	8108.90.3030	3	7	6	8	25	17
Other	8108.90.3060	154 <sup>†</sup>	226 <sup>†</sup>	170 <sup>†</sup>	159 <sup>†</sup>	710 <sup>†</sup>	128
Ferrotitanium and ferrosilicon titanium	7202.91.0000	553	528 <sup>†</sup>	710	761	2,550 <sup>†</sup>	846

<sup>e</sup>Estimated. <sup>†</sup>Revised. -- Zero.

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

<sup>2</sup>Harmonized Tariff Schedule of the United States.

<sup>3</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM CONCENTRATES<sup>1</sup>

(Metric tons)

	HTS <sup>2</sup> Code	2017				1st quarter–	2018
		1st quarter	2d quarter	3d quarter	4th quarter	4th quarter	1st quarter
<b>Ilmenite:</b>	2614.00.6020						
Australia		49,600	53,800	95,800	30,000	229,000	53,600
Madagascar		72,600	50,000	64,000	11,000	198,000	53,000
Mozambique		25,300	65,000	43,200	57,000	191,000	34,700
Senegal		30,000	--	35,100	--	65,100	--
Ukraine		--	24,200	16,500 <sup>r</sup>	25,200	65,900 <sup>r</sup>	20,100
United Kingdom		--	--	--	--	--	2
<b>Total</b>		<b>178,000</b>	<b>193,000</b>	<b>255,000<sup>r</sup></b>	<b>123,000</b>	<b>748,000<sup>r</sup></b>	<b>161,000</b>
<b>Titanium slag:</b>	2620.99.5000						
Australia		1,500	--	--	--	1,500	--
Canada		22,500	28,900	22,500	32,200	106,000	27,700
Norway		--	--	13,200	19,500	32,700	--
South Africa		85,000	96,600	58,000	99,100	339,000	88,800
<b>Total</b>		<b>109,000</b>	<b>126,000</b>	<b>93,600</b>	<b>151,000</b>	<b>479,000</b>	<b>117,000</b>
<b>Rutile:</b>	2614.00.6040						
Australia		13,600	45,300	5,200	20,100	84,200	23,200
Kenya		17,000	--	9,040	4,500	30,500	--
Sierra Leone		19	60	10,100	40	10,200	40
South Africa		24,500	31,700	49,500	34,700	140,000	51,900
Ukraine		9,890	57	40	10,200	20,200	98
Other		--	21	3,500	6	3,530	40
<b>Total</b>		<b>65,000</b>	<b>77,100</b>	<b>77,300</b>	<b>69,500</b>	<b>289,000</b>	<b>75,200</b>
<b>Synthetic rutile:</b>	2614.00.3000						
Australia		12,000	9,560	12,000	--	33,600	9,010
Kenya		--	10,000	--	--	10,000	--
Other		145	737	498	120	1,500	--
<b>Total</b>		<b>12,100</b>	<b>20,300<sup>r</sup></b>	<b>12,500</b>	<b>120</b>	<b>45,100<sup>r</sup></b>	<b>9,010</b>
<b>Titaniferous iron ore, Canada<sup>3</sup></b>		--	34	11,800	103	11,900	--

<sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>Harmonized Tariff Schedule of the United States.

<sup>3</sup>Includes materials consumed for purposes other than the production of titanium commodities, principally heavy aggregate and steel-furnace flux. Titaniferous ore from Canada is classified as ilmenite under the Harmonized Tariff Schedule of the United States and is not included in the previous ilmenite totals.

Source: U.S. Census Bureau.

TABLE 5  
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM PIGMENT<sup>1</sup>

(Metric tons)

	HTS <sup>2</sup> Code	2017				2018
		1st quarter	2d quarter	3d quarter	4th quarter	1st quarter
80% or more titanium dioxide:	3206.11.0000					
Australia		273	35	143	106	557
Belgium		2,480	2,110	2,190	2,150	8,930
Canada		20,700	23,600	20,100	21,200	85,500
China		10,300	9,900	8,190	7,990	36,400
Czechia		835	550	657	1,400	3,440
Finland		1,400	206	86	146	1,840
Germany		4,110	4,330	4,300	4,650	17,400
India		308	373	242	389	1,310
Italy		481	873	665	525	2,540
Japan		1,470	2,010	1,510	1,600	6,590
Mexico		4,100	2,420	2,410	2,450	11,400
Norway		295	817	391	391	1,890
Spain		1,320	2,010	1,720	826	5,880
Ukraine		624	1,340	566	696	3,230
Other		1,380 <sup>r</sup>	821 <sup>r</sup>	816 <sup>r</sup>	873 <sup>r</sup>	3,890 <sup>r</sup>
Total		50,100	51,400	44,000	45,400	191,000
Other titanium dioxide:	3206.19.0000					
Canada		2,480 <sup>r</sup>	2,760 <sup>r</sup>	3,060	2,540	10,800 <sup>r</sup>
China		199	494	391	297	1,380
Columbia		17	68	85	147	317
France		24	24	30	138	216
Germany		69	71	72	79	291
India		111	68	57	22	258
Italy		300	225	139	143	807
Japan		56 <sup>r</sup>	46	29	20	151 <sup>r</sup>
Other		202 <sup>r</sup>	99 <sup>r</sup>	64 <sup>r</sup>	53 <sup>r</sup>	418 <sup>r</sup>
Total		3,450	3,860 <sup>r</sup>	3,920	3,440	14,700
Unfinished titanium dioxide: <sup>3</sup>	2823.00.0000					
Canada		76	60	122	177	435
China		3,040	3,790	3,690	3,830	14,400
Czechia		768	960	669	168	2,570
Finland		820	392	259	56	1,530
France		1,810	886	347	828	3,870
Germany		1,240	1,920	1,660	1,640	6,460
India		295	1,080	276	562	2,210
Israel		220	100	102	20	442
Japan		71	90	26	135	322
Korea, Republic of		129	121	70	40	360
Other		341 <sup>r</sup>	230 <sup>r</sup>	118 <sup>r</sup>	189 <sup>r</sup>	878 <sup>r</sup>
Total		8,800	9,630	7,340	7,650	33,400
Grand total		62,300	64,900	55,200	56,400	239,000

<sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>Harmonized Tariff Schedule of the United States.

<sup>3</sup>Unmixed and not surface treated.

<sup>4</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 6  
PRICES FOR TITANIUM MATERIALS

(End of period)

		2017				2018
		1st quarter	2d quarter	3d quarter	4th quarter	1st quarter
<b>Concentrate:</b>						
Ilmenite, f.o.b. Australian ports <sup>1</sup>	dollars per metric ton	100-110	160-180	160-185	160-185	NA
Ilmenite, CIF, China <sup>1</sup>	do.	NA	NA	NA	NA	185-200
Titanium slag, import <sup>2</sup>	do.	659-702 <sup>r</sup>	646-728 <sup>r</sup>	583-694 <sup>r</sup>	601-728 <sup>r</sup>	650-789
<b>Rutile, natural:<sup>1</sup></b>						
Bagged, f.o.b. Australian ports	do.	750-800	770-890	770-850	770-850	950-1,200
Bulk, f.o.b. Australian ports	do.	700-750	710-770	710-770	710-770	800-900
<b>Metal:</b>						
Sponge metal, Japan, import <sup>2</sup>	dollars per kilogram	10.50	10.50	10.90	11.30	10.90
Titanium mill products	producer price index <sup>3</sup>	164	167	167	170 <sup>r</sup>	170
Titanium scrap, turnings, unprocessed (Ti-6Al-4V) <sup>4</sup>	dollars per pound	0.40-0.55	0.50-0.60	0.55-0.65	0.55-0.65	0.65-0.70
Ferrotitanium, 70% (max. 4.5% Al) per pound Ti <sup>4</sup>	do.	1.70-1.80	1.80-1.95	2.10-2.20	2.10-2.20	2.20-2.50
<b>Pigment:</b>						
Titanium dioxide pigment, import <sup>2</sup>	dollars per metric ton	2,455 <sup>r</sup>	2,601	2,705	2,782 <sup>r</sup>	2,585
Titanium dioxide pigment	producer price index <sup>3</sup>	167	203	198	205 <sup>r</sup>	214

<sup>r</sup>Revised. do. Ditto. NA Not available.

<sup>1</sup>Source: Industrial Minerals (London).

<sup>2</sup>Unit value based on landed-duty-paid U.S. imports for consumption.

<sup>3</sup>June 1982=100. Source: U.S. Department of Labor, Bureau of Labor Statistics.

<sup>4</sup>Source: Platts Metals Week.