

Mineral Industry Surveys

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TITANIUM IN THE FOURTH QUARTER 2022

In the fourth quarter of 2022, U.S. imports of titanium mineral concentrates, excluding titaniferous iron ore, totaled 294,000 metric tons (t) (gross weight) and included ilmenite (128,000 t), rutile (83,500 t), synthetic rutile (84 t), and titanium slag (82,000 t). Imports of ilmenite, rutile, and slag decreased 7%, 5%, 40%, and 5%, respectively, compared with the prior period. In 2022 mineral concentrate imports totaled 1.22 million metric tons (gross weight) and included ilmenite (529,000 t), rutile (353,000 t), synthetic rutile (408 t), and titanium slag (336,000 t). Imports of ilmenite and synthetic rutile, decreased 16% and 59%, respectively, compared with the prior year. Imports of slag were unchanged, and imports of rutile increased 10% compared with the prior year (table 4).

Exports of all forms of titanium mineral concentrates in the fourth quarter of 2022 were 63,300 t, a 16% decrease compared with the prior period. Exports of all forms of titanium mineral concentrates in 2022 totaled 264,00 t, nearly 5 times those in 2021 (table 2).

Imports of all forms of titanium pigment in the fourth quarter of 2022 were 128,000 t compared with 139,000 t in the prior quarter. Imports of all forms of titanium pigment in 2022 totaled 505,000 t compared with 479,000 t in 2021 (table 5).

Exports of all forms of titanium pigment in the fourth quarter of 2022 were 64,700 t compared with 100,000 t in the prior quarter. Exports of all forms of titanium pigment in 2022 were 377,000 t compared with 494,000 t in the prior year (table 2).

In the fourth quarter of 2022, total imports of titanium metal, excluding ferrotitanium, were 18,200 t and were primarily in the form of sponge (56%) and waste and scrap (37%). Imports of sponge and scrap increased by 32% and 36%, respectively, compared with those in the prior quarter (table 3).

Imports of titanium metal, excluding ferrotitanium, totaled 60,000 t in 2022, a 62% increase compared with those in 2021. Imports were primarily in the form of sponge (52%) and waste and scrap (32%). Imports of sponge and scrap increased by 32% and 36%, respectively, compared with those in the prior quarter. The net increase in imports of sponge and scrap was expected to result in increased production of titanium ingot and mill products (table 3).

Exports of all forms of titanium metal in the fourth quarter of 2022 were 7,800 t, a 3% decrease compared with those in the

prior quarter. Exports of all forms of titanium metal in 2022 were 30,500 t, a 12% increase compared with those in 2021 (table 2).

Industry participation is key to the publication of aggregated totals of domestic titanium statistics. In the fourth quarter of 2022, domestic production, consumption, shipments, and stocks of sponge, ingot, slab, and mill products were withheld to avoid disclosing company proprietary data owing to limited responses (table 1).

The U.S. Geological Survey's (USGS) National Minerals Information Center canvasses the nonfuel mining and mineral processing industry in the United States for data on mineral production, consumption, recycling, stocks, and shipments. Reporting is voluntary, and the USGS greatly appreciates the data provided by companies participating in the surveys throughout the United States. The data that companies provide are the foundation upon which the USGS builds its minerals information publications. Unless authorization is granted for release, the data furnished are aggregated to avoid disclosing company proprietary data and are treated as confidential by the Department of the Interior.

Companies may report on a monthly, quarterly, semiannual, and (or) annual basis, depending on the frequency of the surveys. Canvass forms are mailed shortly after the end of the reporting period and are requested to be returned within about 30 days. In addition to reporting by paper canvass forms, companies can electronically submit data to contribute to this valuable effort. Companies already registered with the USGS can sign up to report electronically by selecting the "Sign up" link at <https://mids.er.usgs.gov>. To notify the USGS of a new operation, or for further information on registering for electronic submissions, visit <https://mids.er.usgs.gov>. The USGS titanium metal quarterly survey has a canvas code of G37. For more information on how to participate in the titanium surveys, please contact Joseph Gambogi using the contact information listed above.

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 <https://www.usgs.gov/centers/national-minerals-information-center/minerals-information-publication-list-services>.

TABLE 1
COMPONENTS OF U.S. TITANIUM METAL SUPPLY AND DEMAND¹

(Metric tons)

	2021		2022				
	4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter
Production:							
Sponge	W	W	W	W	W	W	W
Ingot	W	W	W	W	W	W	W
Mill products	W	W	W	W	W	W	W
Exports:							
Waste and scrap	2,520	10,400	1,970	1,940	2,540	2,030	8,460
Sponge	27	117	79	5	9	12	105
Ingot	871	2,580	792	1,370	732	749	3,640
Other unwrought	439	2,030	398	393	258	444	1,490
Bar, rod, profiles, wire	1,210	4,210	1,350	1,530	1,860	1,780	6,530
Bloom, sheet bar, slab	358	1,700	468	436	488	397	1,790
Other wrought	1,840	6,190	1,740	2,210	2,170	2,380	8,510
Total	7,260	27,200	6,810	7,890	8,050	7,800	30,500
Imports:							
Waste and scrap	2,640	10,600	3,430	4,320	4,880	6,630	19,300
Sponge ²	5,380	16,000	6,630	6,720	7,670	10,100	31,100
Ingot	266	875	453	30	14	113	610
Powder	51	214	28	51	75	41	194
Other unwrought	593	1,270	357	186	203	101	848
Wrought	1,880	7,310	3,460	1,380	1,180	993	7,010
Castings	20	44	14	5	10	7	37
Other	168	580	283	296	160	166	905
Total	11,000	36,900	14,700	13,000	14,200	18,200	60,000
Stocks, end of period:							
Sponge, industry	W	W	W	W	W	W	W
Scrap	W	W	W	W	W	W	W
Ingot	W	W	W	W	W	W	W
Consumption:							
Sponge	W	W	W	W	W	W	W
Scrap	W	W	W	W	W	W	W
Ingot	W	W	W	W	W	W	W
Shipments:							
Ingot and slab (producer net shipments)	W	W	W	W	W	W	W
Mill products (net shipments):							
Forging and extrusion billet	W	W	W	W	W	W	W
Other	W	W	W	W	W	W	W
Total	W	W	W	W	W	W	W
Castings	W	W	W	W	W	W	W
Receipts, scrap:							
Home	W	W	W	W	W	W	W
Purchased	W	W	W	W	W	W	W
Total	W	W	W	W	W	W	W

W Withheld to avoid disclosing company proprietary data.

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

²Estimated by the U.S. Geological Survey.

TABLE 2
U.S. EXPORTS OF TITANIUM PRODUCTS¹

(Metric tons)

	HTS ² Code	2021		2022				
		4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter
Metal:								
Waste and scrap	8108.30.0000	2,520	10,400	1,970	1,940	2,540	2,000	8,460
Unwrought:								
Sponge	8108.20.0010	27	117	79	5	9	12	105
Ingot	8108.20.0030	871	2,580	792	1,370	732	749	3,640
Other	8108.20.0090	439	2,030	398	393	258	444	1,490
Wrought:								
Bar, rod, profiles, wire	8108.90.6031	1,210	4,210	1,350	1,530	1,860	1,780	6,530
Bloom, sheet bar, slab	8108.90.6020	358	1,700	468	436	488	397	1,790
Other	8108.90.8000	1,840	6,190	1,740	2,210	2,170	2,380	8,510
Ferrotitanium and ferrosilicon titanium	7202.91.0000	331	1,280	313	397	466	496	1,670
Ores and concentrates	2614.00.0000	46,500	54,100	65,600	60,900	75,100	63,300	265,000
Pigment:								
80% or more titanium dioxide	3206.11.0000	103,000	466,000	96,700	102,000	94,300	60,200	354,000
Other titanium dioxide	3206.19.0000	2,800	13,000	3,120	3,680	3,230	2,470	12,500
Unfinished titanium dioxide ³	2823.00.0000	3,540	15,600	3,520	3,280	2,480	2,050	11,300

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

²Harmonized Tariff Schedule of the United States.

³Unmixed and not surface treated.

Source: U.S. Census Bureau.

TABLE 3
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM METAL¹

(Metric tons)

	HTS ² Code	2021		2022				
		4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter
Waste and scrap:	8108.30.0000							
Canada		381	1,460	451	354	491	515	1,810
China		6	47	151	158	269	157	736
France		308	1,160	457	384	557	659	2,060
Germany		665	2,210	629	671	498	662	2,460
Italy		114	449	186	366	342	460	1,350
Japan		191	857	216	491	492	1,140	2,340
Korea, Republic of		103	755	367	313	212	276	1,170
Mexico		229	766	165	313	531	642	1,650
Poland		18	153	45	140	180	220	585
Singapore		60	238	52	146	156	165	519
United Kingdom		385	1,500	453	686	686	998	2,820
Other		182	1,040	261	299	469	740	1,770
Total		2,640	10,600	3,430	4,320	4,880	6,630	19,300
Unwrought:								
Sponge:	8108.20.0010							
China		--	14	3	2	2	6	12
Germany		34	85	--	89	17	17	123
Japan		4,180	13,900	6,270	5,860	5,120	8,120	25,400
Kazakhstan ⁶		1,120	1,770	300	454	1,240	1,170	3,160
Russia		44	94	32	37	35	--	104
Saudi Arabia		--	18	18	234	1,260	792	2,300
Ukraine		--	--	--	9	--	--	9
Other		(3)	71	(3)	35 ⁷	--	(3)	35
Total		5,380	16,000	6,630	6,720	7,670	10,100	31,100
Ingot:	8108.20.0030							
Kazakhstan		116	260	65	--	14	107	187
Russia		151	614	388	30	--	5	423
Other		--	1	--	--	--	--	--
Total		266	875	453	30	14	113	610
Powder	8108.20.0015	51	214	28	51	75	41	194
Other	8108.20.0095	593	1,270	357	186	203	101	848
Wrought:								
Bar, rod, profiles, wire	8108.90.6031	507	2,160	873	522	495	333	2,220
Bloom, sheet bar, slab	8108.90.6020	627	2,180	1,740	334	35	49	2,160
Plate, sheet, strip, foil	8108.90.6045	549	2,270	659	361	291	294	1,600
Tube and pipe	8108.90.6060	70	281	61	61	179	147	449
Other	8108.90.6075	126	407	128	100	177	169	574
Total		1,880	7,310	3,460	1,380	1,180	993	7,010
Other articles of titanium:								
Castings	8108.90.3030	20	44	14	5	10	7	37
Other	8108.90.3060	168	580	283	296	160	166	905
Ferrotitanium and ferrosilicon titanium	7202.91.0000	569	4,150	534	1,140	1,230	731	3,630

⁶Estimated. ⁷Revised. -- Zero.

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

²Harmonized Tariff Schedule of the United States.

³Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF TITANIUM CONCENTRATES¹

(Metric tons)

	HTS ² Code	2021		2022				
		4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter
Ilmenite:	2614.00.6020							
Madagascar		64,100	291,000	93,000	35,000	59,400	90,000	277,000
Mozambique		40,600	232,000	--	69,900	50,100	22,600	143,000
Senegal		29,000	88,800	45,000	9,000	29,000	8,000	91,100
Ukraine		--	20,300	10,200	--	--	7,700	17,900
Other		40	41	--	40	40	--	80
Total		134,000	632,000	148,000	114,000	139,000	128,000	529,000
Titanium slag:	2620.99.5000							
Canada		48,300	131,000	6,130	319	47,000	31,600	85,100
France		--	--	--	--	15,000	--	15,000
Norway		17,500	57,500	--	17,500	15,000	15,000	47,500
South Africa		17,300	151,000	48,000	46,000	58,900	35,100	188,000
Other		--	--	--	--	--	195	195
Total		83,000	339,000	54,100	63,800	136,000	82,000	336,000
Rutile:	2614.00.6040							
Australia		5,100	127,000	12,700	35,300	19,100	23,700	90,800
Canada		35,700	48,900	2,020	--	5,360	10,000	17,400
Kenya		--	20,200	5,000	3,060	371	20,300	28,700
South Africa		27,900	123,000	47,400	62,300	28,900	29,300	168,000
Spain		1	139	(3)	1	13,800	(3)	13,800
Ukraine		376	1,660	13,500	150	20,300	57	34,000
Other		10	74	45	352	4	78	479
Total		69,000	320,000	80,600	101,000	87,900	83,500	353,000
Synthetic rutile:	2614.00.3000							
Australia		100	100	205	100	--	--	305
Germany		--	--	--	--	11	--	11
Netherlands		300	307	--	--	6	--	6
Sierra Leone		--	260	--	1	--	84	85
South Africa		--	95	--	--	--	--	--
Ukraine		200	227	--	--	--	--	--
Total		601	990	205	101	17	84	408
Titaniferous iron ore, Canada ⁴	2614.00.6020	8,810	13,500	22	--	--	24	46
-- Zero.								

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

²Harmonized Tariff Schedule of the United States.

³Less than ½ unit.

⁴Includes materials consumed for purposes other than the production of titanium commodities, principally heavy aggregate and steel-furnace flux.

Titaniferous iron 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 PIGMENT¹

(Metric tons)

	HTS ² Code	2021		2022				
		4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter
80% or more titanium dioxide:	3206.11.0000							
Australia		3,690	12,600	2,560	3,060	3,230	5,760	14,600
Belgium		2,720	9,020	1,710	1,540	2,920	3,700	9,880
Canada		22,100	102,000	24,500	29,800	25,500	18,800	98,600
China		2,610	15,400	4,170	5,560	4,930	2,700	17,400
Czechia		1,820	5,840	1,180	1,770	1,290	1,970	6,210
Germany		4,430	22,000	3,470	3,440	3,020	4,410	14,300
Italy		1,760	6,790	1,420	1,110	1,940	1,400	5,870
Mexico		1,480	4,220	879	2,790	6,240	3,420	13,300
Norway		1,400	4,270	1,260	1,080	1,500	2,600	6,430
Spain		1,920	8,820	2,240	1,820	3,000	5,870	12,900
United Kingdom		1,060	3,430	751	676	2,780	3,190	7,400
Other		3,120 ^r	16,000 ^r	3,390 ^r	3,980 ^r	4,450 ^r	2,870	14,700
Total		48,100	210,000	47,500	56,600	60,800	56,700	222,000
Other titanium dioxide:	3206.19.0000							
Canada		2,980	13,300	3,120	3,190	3,610	3,180	13,100
China		534	1,570	297	160	255	136	847
Egypt		38	38	75	263	75	94	506
France		6	22	2	8	11	182	203
India		49	125	128	182	242	135	687
Italy		278	1,060	255	468	459	86	1,270
Mexico		92	527	191	292	220	204	907
Other		224 ^r	1,020 ^r	256 ^r	340 ^r	400 ^r	256	1,250
Total		4,200	17,600	4,320	4,900	5,280	4,270	18,800
Unfinished titanium dioxide: ³	2823.00.0000							
Canada		316	4,180	304	945	432	333	2,010
China		3,070	7,200	1,530	2,870	2,190	1,640	8,230
France		794	2,060	1,010	1,110	1,590	1,970	5,680
Germany		1,130	3,360	641	740	777	819	2,980
India		493	2,600	545	1,110	745	417	2,820
Japan		92	493	68	118	172	232	591
Korea, Republic of		471	2,200	280	198	292	226	996
Other		347 ^r	1,380 ^r	276 ^r	369 ^r	251 ^r	99	995
Total		6,720	23,500	4,660	7,460	6,440	5,740	24,300
Grand total		59,100	251,000	56,500	69,000	72,500	66,700	265,000

^rRevised.

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

²Harmonized Tariff Schedule of the United States.

³Unmixed and not surface treated.

Source: U.S. Census Bureau.

TABLE 6
PRICES FOR TITANIUM MATERIALS

(End of period)

		2021				2022			
		1st quarter	2d quarter	3d quarter	4th quarter	1st quarter	2d quarter	3d quarter	4th quarter
Concentrate:									
Ilmenite, CIF, China ¹	dollars per metric ton	260–270	280–290	290–310	360–400	360–400	410–470	380–470	350–470
Titanium slag, import ²									
Canada	do.	1,100	1,200	1,020	870	950	NA	1,030	NA
Norway	do.	NA	730	800	780	NA	870	1,060	NA
South Africa	do.	510	540	780	790	760	810	740	910
Rutile, natural: ¹									
Bagged, f.o.b. Australian ports	do.	1,300–1,400	1,400–1,500	1,450–1,500	1,450–1,550	1,700–2,000	2,200–2,300	2,000–2,400	2,000–2,400
Bulk, f.o.b. Australian ports	do.	1,200–1,300	1,350–1,450	1,350–1,450	1,400–1,500	1,400–1,500	1,450–1,500	1,450–1,500	1,450–1,550
Metal:									
Sponge metal, Japan, import ²	dollars per kilogram	11.10	11.70	11.50	11.60	10.90	10.70	11.60	11.40
Titanium mill products	producer price index ³	168	168	169	171	178	183	197	198
Titanium scrap, turnings, unprocessed (Ti-6Al-4V) ⁴	dollars per pound	1.50–1.90	1.50–1.90	1.50–1.90	1.50–1.90	3.00–3.50	3.00–3.50	3.00–3.40	2.00–2.50
Ferrotitanium, 70% (max. 4.5% Al) per pound Ti ⁴	do.	4.00–4.30	4.00–4.30	4.00–4.30	4.00–4.30	7.00–8.00	7.00–8.00	8.00–9.00	3.00–3.20
Pigment:									
Titanium dioxide pigment, import ²	dollars per metric ton	2,740	2,890	3,030	3,240	3,390	3,430	3,600	3,560

do. Ditto. NA Not available.

¹Source: Fastmarkets IM.

²Unit value based on landed-duty-paid U.S. imports for consumption.

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

⁴Source: S&P Global Platts Metals Week.