

# Mineral Industry Surveys

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## TITANIUM IN THE SECOND QUARTER 2012

Titanium mill product shipments in the second quarter of 2012 were 8,230 metric tons (t), a decrease of 17% compared with shipments in the previous quarter. Ingot production decreased by 4%, and ingot shipments decreased by 27%. Receipts of titanium scrap totaled 11,000 t, a decrease of 20% compared with receipts from the previous quarter.

In the first quarter, approximately 72% of mill products and castings was produced for commercial and military aerospace

applications. Other applications for titanium mill products and castings included, in descending order, industrial, nonaerospace military, medical, other commercial, and consumer. Data for titanium metal products were developed by the USGS from a voluntary survey of domestic operations. Data for nonrespondents were estimated based on previously reported data.

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

(Metric tons)

	2011				2012		
	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	1st quarter– 2d quarter
<b>Production:</b>							
Sponge	W	W	W	W	W	W	W
Ingot	13,800	15,200	16,800	60,300	17,400	16,900	34,300
Mill products	9,860	11,300	9,720	40,500	10,000	10,200	20,200
<b>Exports:</b>							
Waste and scrap	1,230	1,310	1,380	5,150	2,270	2,900	5,160
Sponge	60	36	116	256	209	344	553
Ingot	29	29	157	252	317	935	1,250
Other unwrought	82	182	599	923	26	38	64
Bar, rod, profiles, wire	1,000	861	1,300	4,060	1,010	858	1,870
Billet	889	938	892	3,500	1,040	1,040	2,080
Bloom, sheet bar, slab	326	390	562	1,560	663	599	1,260
Other wrought	3,980	4,490	4,160	15,600	3,830	3,250	7,080
Total	7,590	8,240	9,170	31,300	9,360	9,950	19,300
<b>Imports:</b>							
Waste and scrap	3,960	3,430	3,880	13,900	4,000	3,950	7,950
Sponge <sup>2</sup>	7,910	8,730	9,960	33,800	8,900	9,060	18,000
Ingot	197	115	239	655	221	147	368
Powder	23	21	2	52	3	21	24
Other unwrought	55	23	86	208	186	114	300
Wrought	1,810	1,460	1,360	6,190	1,650	1,640	3,290
Castings	35	12	3	51	5	7	11
Other	158	151	101	574	136	155	291
Total	14,100	13,900	15,600	55,400	15,100	15,100	30,200
<b>Stocks, end of period:</b>							
Sponge, industry	8,490	5,000	10,800	10,800	12,100	14,800	14,800
Scrap	10,400	11,300	12,900	12,900	13,500	13,100	13,100
Ingot	3,470	3,000	3,850	3,850	3,390	3,400	3,400
<b>Consumption:</b>							
Sponge	12,000	12,100	11,700	48,400	8,470	7,890	16,400
Scrap	6,940	9,320	7,850	30,900	8,610	8,660	17,300
Ingot	12,500	15,800	15,400	55,900	15,300	14,100	29,400
<b>Shipments:</b>							
Ingot and slab (producer net shipments)	4,300	4,390	3,770	15,400	4,350	3,180	7,540
<b>Mill products (net shipments):</b>							
Forging and extrusion billet	3,280	4,580	4,110	16,800	4,190	3,280	7,470
Other	11,100	6,550	5,620	28,700	5,780	4,940	10,700
Total	14,300	11,100	9,720	45,500	9,970	8,230	18,200
Castings	W	W	W	W	W	W	W
<b>Receipts, scrap:</b>							
Home	2,990	4,140	5,200	12,300 <sup>3</sup>	7,290	4,470	11,800
Purchased	7,770	7,290	6,170	21,200 <sup>3</sup>	6,420	6,560	13,000
Total	10,800	11,400	11,400	40,200	13,700	11,000	24,700

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.

<sup>3</sup>Data for second, third, and fourth quarter.

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

(Metric tons)

	2011				2012		
	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	1st quarter– 2d quarter
<b>Metal:</b>							
Waste and scrap	1,230	1,310	1,380	5,150	2,270	2,900	5,160
<b>Unwrought:</b>							
Sponge	60	36	116	256	209	344	553
Ingot	29	29	157	252	317	935	1,250
Other unwrought	82	182	599	923	26	38	64
<b>Wrought:</b>							
Bar, rod, profiles, wire	1,000	861	1,300	4,060	1,010	858	1,870
Billet	889	938	892	3,500	1,040	1,040	2,080
Bloom, sheet bar, slab	326	390	562	1,560	663	599	1,260
Other	3,980	4,490	4,160	15,600	3,830	3,250	7,080
Ferrotitanium and ferrosilicon titanium	987	895	664	3,210	760	1,080	1,840
Ores and concentrates	7,760	8,540	2,900	26,600	3,460	6,390	9,850
<b>Pigment:</b>							
80% or more titanium dioxide	181,000	204,000	179,000	741,000	178,000	145,000	323,000
Other titanium dioxide	11,600	10,400	8,110	40,000	9,260	10,600	19,900
Unfinished titanium dioxide <sup>2</sup>	1,640	1,830	1,460	7,160	1,230	777	2,010

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

<sup>2</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)

	2011				2012		
	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	1st quarter– 2d quarter
<b>Waste and scrap:</b>							
Canada	178	132	240	738	206	206	412
France	525	447	469	1,790	490	540	1,030
Germany	655	492	498	1,930	649	557	1,210
Israel	143	173	101	523	102	115	217
Italy	107	83	77	329	121	94	214
Japan	612	418	642	2,260	607	554	1,160
Korea, Republic of	106	280	185	655	133	313	446
Mexico	125	82	96	369	104	137	241
Singapore	65	52	57	179	65	24	89
Spain	96	38	38	220	24	31	55
Taiwan	390	114	144	813	136	101	237
United Kingdom	623	840	918	2,820	915	967	1,880
Other	333	274	419	1,300	451	310	761
<b>Total</b>	<b>3,960</b>	<b>3,430</b>	<b>3,880</b>	<b>13,900</b>	<b>4,000</b>	<b>3,950</b>	<b>7,950</b>
<b>Unwrought:</b>							
<b>Sponge:</b>							
China	886	1,550	2,210	5,860	1,470	892	2,370
Japan	3,610	3,690	4,620	16,100	4,370	4,930	9,300
Kazakhstan <sup>c</sup>	2,730	2,660	2,000	8,610	2,420	2,150	4,560
Ukraine	279	485	775	1,950	440	434	874
Other <sup>2</sup>	399	356	363	1,270	199	663	862
<b>Total</b>	<b>7,910</b>	<b>8,730</b>	<b>9,960</b>	<b>33,800</b>	<b>8,900</b>	<b>9,060</b>	<b>18,000</b>
<b>Ingot:</b>							
Germany	99	48	98	344	59	30	89
Russia	91	67	141	302	162	117	279
Other	7	--	--	9	--	--	--
<b>Total</b>	<b>197</b>	<b>115</b>	<b>239</b>	<b>655</b>	<b>221</b>	<b>147</b>	<b>368</b>
Powder	23	21	2	52	3	21	24
Other	55	23	86	208	186	114	300
<b>Wrought:</b>							
Bar, rod, profiles, wire	519	438	385	1,710	505	500	1,010
Billet	259	257	186	885	256	257	513
Bloom, sheet bar, slab	10	4	11	30	4	15	19
Plate, sheet, strip, foil	876	588	591	2,910	751	647	1,400
Tube and pipe	102	127	124	440	92	83	174
Other	41	47	67	218	42	140	182
<b>Total</b>	<b>1,810</b>	<b>1,460</b>	<b>1,360</b>	<b>6,190</b>	<b>1,650</b>	<b>1,640</b>	<b>3,290</b>
<b>Other articles of titanium:</b>							
Castings	35	12	3	51	5	7	11
Other	158	151	101	574	136	155	291
<b>Ferrotitanium and ferrosilicon titanium</b>	<b>635</b>	<b>544</b>	<b>419</b>	<b>2,070</b>	<b>660</b>	<b>767</b>	<b>1,430</b>

<sup>c</sup>Estimated. -- Zero.

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

<sup>2</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

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

(Metric tons)

	2011				2012		
	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	1st quarter– 2d quarter
<b>Ilmenite:</b>							
Australia	57,200	77,500	55,600	244,000	99,000	38,200	137,000
Mozambique	26,100	25,000	31,000	114,000	32,800	20,000	52,800
Ukraine	10,000	--	--	10,000	--	--	--
Other <sup>2</sup>	9,340	--	--	9,340	9,750	9,970	19,700
<b>Total</b>	<b>103,000</b>	<b>103,000</b>	<b>86,600</b>	<b>377,000</b>	<b>142,000</b>	<b>68,200</b>	<b>210,000</b>
<b>Titanium slag:</b>							
Canada	55,800	32,200	81,100	191,000	77,100	59,000	136,000
South Africa	80,900	79,000	93,900	323,000	98,500	83,100	182,000
Other <sup>2</sup>	--	--	--	--	--	1	1
<b>Total</b>	<b>137,000</b>	<b>111,000</b>	<b>175,000</b>	<b>513,000</b>	<b>176,000</b>	<b>142,000</b>	<b>318,000</b>
<b>Rutile:</b>							
Australia	20,000	34,300	16,100	106,000	49,500	22,700	72,200
South Africa	47,900	22,900	39,000	133,000	24,700	41,600	66,300
Other <sup>2</sup>	9,020	613	13,900	23,600	540	5,030	5,570
<b>Total</b>	<b>76,900</b>	<b>57,800</b>	<b>69,000</b>	<b>262,000</b>	<b>74,800</b>	<b>69,300</b>	<b>144,000</b>
<b>Synthetic rutile:</b>							
Australia	50,500	26,800	16,000	112,000	40,100	10,200	50,300
Other <sup>2</sup>	704	1,260	4,900	6,960	3,040	199	3,240
<b>Total</b>	<b>51,200</b>	<b>28,100</b>	<b>20,900</b>	<b>119,000</b>	<b>43,200</b>	<b>10,400</b>	<b>53,600</b>
Titaniferous iron ore, Canada <sup>2</sup>	42	21	33	96	184	--	184

-- Zero.

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

<sup>2</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

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

(Metric tons)

	2011				2012		
	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	1st quarter– 2d quarter
<b>80% or more titanium dioxide:</b>							
Canada	20,600	21,100	16,600	79,000	20,900	20,200	41,100
China	3,880	1,270	2,670	10,300	4,300	7,880	12,200
Finland	1,750	1,470	1,790	6,790	1,130	1,210	2,340
France	1,000	1,140	1,320	4,910	1,660	1,240	2,910
Germany	1,710	2,160	1,730	6,450	1,300	1,870	3,170
Italy	710	933	850	3,460	836	760	1,600
Japan	1,200	1,190	997	4,180	899	1,000	1,900
Ukraine	3,580	2,540	2,270	11,700	2,850	4,030	6,880
Other	3,660	3,540	2,890	13,700	2,610	4,690	7,300
Total	38,100	35,400	31,100	140,000	36,500	42,900	79,400
<b>Other titanium dioxide:</b>							
Canada	2,400	2,390	2,170	8,820	2,280	2,110	4,390
China	167	309	378	1,110	306	447	753
France	--	--	--	--	83	259	342
Germany	216	155	33	666	150	185	335
Japan	198	126	52	552	178	281	459
Other	290	235	241	1,030	273 <sup>r</sup>	391	664
Total	3,280	3,210	2,880	12,200	3,270	3,680	6,940
<b>Unfinished titanium dioxide:<sup>2</sup></b>							
China	6,330	7,000	5,710	24,200	4,400	4,610	9,010
Czech Republic	625	627	516	2,460	588	753	1,340
Finland	842	732	789	2,910	576	552	1,130
France	1,150	1,840	1,560	5,720	1,200	370	1,570
Germany	1,090	1,090	770	4,270	824	1,080	1,910
Italy	1,010	875	268	3,120	669	1,040	1,710
Korea, Republic of	858	406	436	2,630	657	1,310	1,970
Other	679	327	671	2,430	1,470	1,190	2,670
Total	12,600	12,900	10,700	47,700	10,400	10,900	21,300
Grand total	53,900	51,500	44,700	200,000	50,200	57,500	108,000

<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>Unmixed and not surface treated.

Source: U.S. Census Bureau.

TABLE 6  
PRICES FOR TITANIUM MATERIALS

(End of period)

		2011			2012	
		2d quarter	3d quarter	4th quarter	1st quarter	2d quarter
<b>Concentrate:</b>						
Ilmenite, f.o.b. Australian ports <sup>1</sup>	dollars per metric ton	130–150	140–250	140–250	250–350	250–350
Titanium slag, import <sup>2</sup>	do.	449–498	320–475	468–494	682–948	708–1,022
<b>Rutile, natural:<sup>1</sup></b>						
Bagged, f.o.b. Australian ports	do.	950–1,180	1,348–1,600	1,348–1,600	2,480–2,700	2,500–2,800
Bulk, f.o.b. Australian ports	do.	750–875	1,000–1,120	1,300–1,400	1,990–2,050	2,050–2,400
<b>Metal:</b>						
Sponge metal, Japan, import <sup>2</sup>	dollars per pound	5.84	5.68	5.74	6.84	6.81
Titanium mill products	producer price index <sup>3</sup>	200	209	202	200 <sup>r</sup>	202
Titanium scrap, turnings, unprocessed (Ti-6Al-4V) <sup>4</sup>	dollars per pound	2.75–2.85	2.60–2.65	2.00–2.20	2.15–2.30	2.00–2.10
Ferrotitanium, 70% (max. 4.5% Al) per pound Ti <sup>4</sup>	do.	4.30–4.45	4.10–4.20	3.45–3.55	3.60–3.65	3.50–3.55
<b>Pigment:</b>						
Titanium dioxide pigment, import <sup>2</sup>	dollars per metric ton	2,856	3,133	3,530	3,670	3,780
Titanium dioxide pigment	producer price index <sup>3</sup>	221	251	268	291	302

<sup>r</sup>Revised. do. Ditto.

<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.