



# Mineral Industry Surveys

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## TITANIUM IN THE SECOND QUARTER 2009

According to the U.S. Geological Survey (USGS), titanium mill product shipments in the second quarter of 2009 were 7,640 metric tons (t), a 13% increase compared with shipments in the previous quarter. Receipts of titanium scrap totaled 7,580 t, nearly unchanged compared with receipts from the previous quarter. Ingot production decreased by 11% compared with production in the previous quarter.

Approximately 73% of mill products and castings were used in commercial and military aerospace applications. Other applications for titanium mill products and castings included, in descending order, industrial, nonaerospace military, medical, and consumer uses. Data for titanium metal products are 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)

	2008				2009		
	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Year to date
<b>Production:</b>							
Sponge	W	W	W	W	W	W	W
Ingot	15,800	15,100	13,300	58,600	10,800	9,570	20,400
Mill products	10,100	10,800	9,410	39,700	9,570	9,620	19,200
<b>Exports:</b>							
Waste and scrap	1,730	3,480	1,390	8,180	803	1,240	2,040
Sponge	513	1,040	417	2,370	339	237	576
Ingot	311	84	70	725	443	271	714
Other unwrought	494	765	960	2,710	703	840	1,530
Bar, rod, profiles, wire	804	783	824	3,300	814	530	1,340
Billet	769	810	904	3,200	596	546	1,140
Bloom, sheet bar, slab	713	522	322	1,980	313	224	537
Other wrought	2,540	2,790	2,760	10,500	1,970	2,020	3,980
Total	7,870	10,300	7,650	33,000	5,980	5,900	11,900
<b>Imports:</b>							
Waste and scrap	2,730	3,140	2,040	10,400	1,220	1,070	2,280
Sponge <sup>2</sup>	6,130	6,210	5,220	23,900	5,020 <sup>r</sup>	4,500	9,520
Ingot	220	317	482	1,340	119	103	222
Powder	52	40	25	134	5	7	11
Other unwrought	21	10	5	59	12	1	13
Wrought	1,720	2,520	1,760	8,010	1,310	1,700	3,010
Castings	6	2	2	11	1	3	4
Other	65	69	111	326	88	48	136
Total	10,900	12,300	9,650	44,200	7,770 <sup>r</sup>	7,430	15,200
<b>Stocks, end of period:</b>							
Sponge, industry	11,300	11,900	14,200	XX	15,700	14,100	29,800
Scrap	W	W	W	XX	W	W	W
Ingot	4,920	4,460	3,590	XX	3,960	3,030	6,990
<b>Consumption:</b>							
Sponge	W	8,730	6,860	W	W	5,470	W
Scrap	5,540	6,030	6,090	23,200	7,230	7,380	14,600
Ingot	12,700	12,300	10,400	47,700	8,720	8,730	17,400
<b>Shipments:</b>							
Ingot (producer net shipments) <sup>3</sup>	4,580	4,060	4,460	17,200	2,410	2,280	4,690
<b>Mill products (net shipments):</b>							
Forging and extrusion billet	3,230	3,020	2,780	12,300	2,330	2,460	4,790
Plate, sheet, strip	3,940	4,320	3,960	15,600	3,240	3,690	6,920
Other	1,330	1,990	1,990	6,940	1,180	1,490	2,670
Total	8,500	9,330	8,730	34,800	6,740	7,640	14,400
Castings	W	W	W	W	W	W	W
<b>Receipts, scrap:</b>							
Home	(4)	(4)	(4)	(4)	2,580	2,620	5,200
Purchased	(4)	(4)	(4)	(4)	4,950	4,960	9,910
Total	8,380	7,530	7,180	31,900	7,530	7,580	15,100

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

<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 series revised to include only ingot producers.

<sup>4</sup>Withheld to avoid disclosing company proprietary data; included in "Total."

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

(Metric tons)

	2008				2009		
	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Year to date
<b>Metal:</b>							
Waste and scrap	1,730	3,480	1,390	8,180	803	1,240	2,040
<b>Unwrought:</b>							
Sponge	513	1,040	417	2,370	339	237	576
Ingot	311	84	70	725	443	271	714
Other unwrought	494	765	960	2,710	703	840	1,530
<b>Wrought:</b>							
Bar, rod, profiles, wire	804	783	824	3,300	814	530	1,340
Billet	769	810	904	3,200	596	546	1,140
Bloom, sheet bar, slab	713	522	322	1,980	313	224	537
Other	2,540	2,790	2,760	10,500	1,970	2,020	3,990
Ferrotitanium and ferrosilicon titanium	510	306	382	1,620	182	261	443
Ores and concentrates	5,500	2,220	3,870	14,900	3,170 <sup>r</sup>	5,420	8,590
<b>Pigment:</b>							
80% or more titanium dioxide	184,000	192,000	140,000	668,000	111,000	147,000	258,000
Other titanium dioxide	19,700	11,400	6,880	60,200	5,980	6,960	12,900
Unfinished titanium dioxide <sup>2</sup>	1,620	1,500	969	5,040	677	1,030	1,710

<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)

	2008				2009		
	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Year to date
<b>Waste and scrap:</b>							
Canada	245	187	101	728	16	54	70
France	393	557	302	1,560	274	289	563
Germany	278	378	395	1,310	226	213	440
Israel	94	84	55	363	--	--	--
Japan	405	718	312	1,960	245	31	276
Korea, Republic of	76	69	76	253	27	3	30
Mexico	66	30	66	233	14	19	32
Taiwan	180	100	50	441	2	14	16
United Kingdom	725	847	523	2,660	311	363	675
Other	269 <sup>r</sup>	170 <sup>r</sup>	158 <sup>r</sup>	937 <sup>r</sup>	101	79	180
<b>Total</b>	<b>2,730</b>	<b>3,140</b>	<b>2,040</b>	<b>10,400</b>	<b>1,220</b>	<b>1,070</b>	<b>2,280</b>
<b>Unwrought:</b>							
<b>Sponge:</b>							
China	701	183	247	1,510	45	36	81
Japan	1,910	2,120	1,880	7,860	1,310	1,730	3,040
Kazakhstan <sup>c</sup>	2,760	3,240	2,360	12,000	3,530 <sup>r</sup>	2,370	5,900
Russia	139	250	139	639	141	365	506
Ukraine	491	354	460	1,540	--	--	--
Other <sup>2</sup>	128 <sup>r</sup>	60 <sup>r</sup>	139 <sup>r</sup>	329 <sup>r</sup>	(3)	--	(3)
<b>Total</b>	<b>6,130</b>	<b>6,210</b>	<b>5,220</b>	<b>23,900</b>	<b>5,020<sup>r</sup></b>	<b>4,500</b>	<b>9,520</b>
<b>Ingot:</b>							
Germany	80	218	309	771	77	83	160
Russia	97	82	158	466	41	13	54
Other	43	17	14	106	--	7	7
<b>Total</b>	<b>220</b>	<b>317</b>	<b>482</b>	<b>1,340</b>	<b>119</b>	<b>103</b>	<b>222</b>
Powder	52	40	25	134	5	7	11
Other	21	10	5	59	12	1	13
<b>Wrought:</b>							
Bar, rod, profiles, wire	220	371	394	1,540	314	539	854
Billet	229	401	436	1,530	293	154	447
Bloom, sheet bar, slab	266	839	36	1,170	13	12	26
Plate, sheet, strip, foil	675	717	793	3,000	569	769	1,340
Tube and pipe	66	55	40	189	60	73	134
Other	261	140	63	580	62	153	215
<b>Total</b>	<b>1,720</b>	<b>2,520</b>	<b>1,760</b>	<b>8,010</b>	<b>1,310</b>	<b>1,700</b>	<b>3,010</b>
<b>Other articles of titanium:</b>							
Castings	6	2	2	11	1	3	4
Other	65	69	111	326	88	48	136
Ferrotitanium and ferrosilicon titanium	722	467	469	2,830	438	277	714

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

<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)

	2008				2009		
	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Year to date
<b>Ilmenite:</b>							
Australia	63,300	70,500	41,200	218,000	39,600	45,400	85,000
Mozambique	203	32,600	15,400	98,600	20,000	20,000	40,100
Sierra Leone	--	--	8,530	8,530	--	--	--
South Africa	21,000	--	66,500	87,500	--	21,000 <sup>2</sup>	21,000
Ukraine	--	--	--	20,500	--	--	--
Total	84,500	103,000	132,000	433,000	59,600	86,400	146,000
<b>Titanium slag:</b>							
Canada	40,000	13,600	46,700	106,000	16,000	7,660	23,700
South Africa	121,000	57,000	68,100	355,000	62,700 <sup>1,3</sup>	74,200	137,000
Other <sup>2</sup>	--	--	--	--	51	--	51
Total	161,000	70,600	115,000	461,000	78,800	81,900	161,000
<b>Rutile:</b>							
Australia	49,600	35,200	21,800	136,000	19,300	32,400	51,700
Canada <sup>2</sup>	20,000	8,010	92	39,700	--	--	--
Sierra Leone	--	--	10,900	10,900	240	9,910	10,200
South Africa	39,400	62,000	28,000	176,000	26,300	6,460	32,700
Other <sup>2</sup>	405	894	545	2,030	42	4,980	5,030
Total	109,000	106,000	61,300	365,000	45,800	53,800	99,600
<b>Synthetic rutile:</b>							
Australia	52,900	15,000	32,100	111,000	6,000	9,000	15,000
Malaysia	236	942	1,370	3,090	767	4,020	4,790
South Africa	3,000	2,340	--	5,340	--	--	--
Other <sup>2</sup>	120	353	1,800	2,310	1,330	229	1,560
Total	56,200	18,700	35,300	122,000	8,100	13,300	21,400
Titaniferous iron ore, Canada <sup>2</sup>	51,800	35,200	52,800	140,000	--	10,000	10,000

<sup>1</sup>Revised. -- Zero.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

<sup>3</sup>Includes 9,900 metric tons of slag misclassified as 80% or more titanium dioxide pigment.

Source: U.S. Census Bureau.

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

(Metric tons)

	2008				2009		
	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter	Second quarter	Year to date
<b>80% or more titanium dioxide:</b>							
Belgium	1,060	277	229	2,820	641	194	835
Canada	20,100	19,800	13,400	74,300	15,500	14,200	29,700
China	1,540	944	2,630	6,590	1,510	3,780	5,290
Finland	2,550	2,310	1,850	9,260	1,890	2,300	4,190
Germany	1,270	1,050	914	4,730	1,220	2,280	3,500
Italy	1,850	1,430	1,700	6,210	1,510	1,350	2,860
Japan	1,020	686	347	2,940	788	767	1,560
Mexico	1,350	561	247	3,290	40	64	104
Netherlands	950	644	1,020	3,200	579	818	1,400
Spain	1,760	830	855	5,070	807	360	1,170
Ukraine	1,100	531	578	4,450	1,080	1,370	2,450
Other	3,180 <sup>r</sup>	2,760 <sup>r</sup>	2,390 <sup>r</sup>	12,300 <sup>r</sup>	1,800	3,330	5,130
<b>Total</b>	<b>37,800</b>	<b>31,800</b>	<b>26,200</b>	<b>135,000</b>	<b>27,400<sup>r,2</sup></b>	<b>30,800</b>	<b>58,200</b>
<b>Other titanium dioxide:</b>							
Canada	1,490	1,890	1,510	5,930	1,930	2,040	3,970
China	279	315	275	1,070	114	154	268
France	179	85	72	515	22	18	40
Germany	208	92	74	615	123	446	569
Japan	214	224	87	719	123	139	261
Korea, Republic of	218	276	107	630	100	122	221
Other	295 <sup>r</sup>	282 <sup>r</sup>	270 <sup>r</sup>	1,070 <sup>r</sup>	165	97	264
<b>Total</b>	<b>2,880</b>	<b>3,160</b>	<b>2,400</b>	<b>10,500</b>	<b>2,580</b>	<b>3,010</b>	<b>5,600</b>
<b>Unfinished titanium dioxide<sup>3</sup>:</b>							
China	3,520	1,920	1,730	9,620	1,980	2,300	4,280
Czech Republic	562	573	460	2,290	402	466	868
France	737	706	767	2,800	1,150	1,300	2,440
Germany	1,290	1,070	915	4,510	405	962	1,370
Japan	1,720	1,220	996	5,710	1,580	1,520	3,100
Korea, Republic of	706	550	747	2,880	418	1,160	1,580
United Kingdom	1,190	991	1,190	5,290	670	--	670
Other	923	1,140	1,240	3,990	601	550	1,150
<b>Total</b>	<b>10,600</b>	<b>8,170</b>	<b>8,050</b>	<b>37,100</b>	<b>7,200</b>	<b>8,250</b>	<b>15,500</b>
<b>Grand total</b>	<b>51,300</b>	<b>43,100</b>	<b>36,600</b>	<b>183,000</b>	<b>37,200<sup>r</sup></b>	<b>42,000</b>	<b>79,200</b>

<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>Excludes 9,900 metric tons of material from South Africa reclassified as titanium slag.

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

Source: U.S. Census Bureau.

TABLE 6  
PRICES FOR TITANIUM MATERIALS

(End of period)

		2008			2009	
		Second quarter	Third quarter	Fourth quarter	First quarter	Second quarter
<b>Concentrate:</b>						
Ilmenite, f.o.b. Australian ports <sup>1</sup>	dollars per metric ton	\$84- \$137	\$84- \$137	\$84- \$137	\$75- \$80	\$60- \$80
Titanium slag, import <sup>2</sup>	do.	409- 555	393- 555	393- 407	331- 411	419- 541
<b>Rutile, natural:</b> <sup>1</sup>						
Bagged, f.o.b. Australian ports	do.	700- 750	675- 725	675- 725	675- 725	725- 795
Bulk, f.o.b. Australian ports	do.	490- 520	500- 550	500- 550	480- 540	540- 545
<b>Metal:</b>						
Sponge metal, import <sup>2</sup>	dollars per pound	5.96- 8.29	6.37- 8.13	6.16- 8.02	5.45- 7.30	4.50- 7.08
Titanium mill products	producer price index <sup>3</sup>	247	242	233	281 <sup>r</sup>	233
Titanium scrap, turnings, unprocessed (Ti-6Al-4V) <sup>4</sup>	dollars per pound	2.10- 2.15	1.85- 1.95	0.45- 0.55	0.25- 0.35	0.20- 0.25
Ferrotitanium, 70% (max. 4.5% Al) per pound Ti <sup>4</sup>	do.	3.70- 3.80	3.45- 3.55	2.95- 3.05	1.90- 2.10	1.30- 1.40
<b>Pigment:</b>						
Titanium dioxide pigment, import <sup>2</sup>	dollars per metric ton	2,120	2,170	2,194 <sup>r</sup>	2,274 <sup>5</sup>	2,139
Titanium dioxide pigment	producer price index <sup>3</sup>	166	172	170	159	159

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

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

<sup>5</sup>Excludes South Africa imports believed to be misclassified.