



# Mineral Industry Surveys

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## TITANIUM IN THE FIRST QUARTER 2007

According to the U.S. Geological Survey (USGS), titanium mill product shipments in the first quarter of 2007 were 8,080 metric tons (t), nearly unchanged compared with revised shipments in the previous quarter. Receipts of titanium scrap totaled 8,330 t, a 36% increase compared with revised receipts from the previous quarter. Approximately 72% 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)

	2006					2007
	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter
<b>Production:</b>						
Sponge	W	W	W	W	W	W
Ingot	12,900	13,300	13,900	13,000 <sup>r</sup>	53,100 <sup>r</sup>	14,900
Mill products	9,010	8,850	8,900	9,300 <sup>r</sup>	36,100 <sup>r</sup>	9,300
<b>Exports:</b>						
Waste and scrap	2,360	3,500	2,610	2,350 <sup>r</sup>	10,800 <sup>r</sup>	4,650
Sponge	285	377	343	376 <sup>r</sup>	1,380 <sup>r</sup>	455
Ingot	518	527	463	565 <sup>r</sup>	2,070 <sup>r</sup>	713
Other unwrought	208	216	222	309 <sup>r</sup>	956 <sup>r</sup>	176
Bar, rod, profiles, wire	832	867	946	1,020 <sup>r</sup>	3,670 <sup>r</sup>	810
Billet	311	325	247	321 <sup>r</sup>	1,200 <sup>r</sup>	713
Bloom, sheet bar, slab	127	178	90	136 <sup>r</sup>	532 <sup>r</sup>	87
Other wrought	1,780	2,080	2,020	2,020 <sup>r</sup>	7,900 <sup>r</sup>	1,950
Total	6,420	8,070	6,930	7,100 <sup>r</sup>	28,500 <sup>r</sup>	9,560
<b>Imports:</b>						
Waste and scrap	2,990	3,320	3,480	3,030 <sup>r</sup>	12,800 <sup>r</sup>	3,610
Sponge <sup>2</sup>	5,440	6,920	6,290	5,770 <sup>r</sup>	24,400 <sup>r</sup>	5,270
Ingot	831	1,130	708	474 <sup>r</sup>	3,140 <sup>r</sup>	440
Powder	10	78	36	27 <sup>r</sup>	152 <sup>r</sup>	64
Other unwrought	383	470	447	218 <sup>r</sup>	1,520 <sup>r</sup>	37
Wrought	1,090	1,270	1,250	1,250 <sup>r</sup>	4,860 <sup>r</sup>	1,100
Other articles of titanium	113 <sup>r</sup>	129	117	144 <sup>r</sup>	501 <sup>r</sup>	96
Total	10,900	13,300	12,300	10,900 <sup>r</sup>	47,400 <sup>r</sup>	10,600
<b>Stocks, end of period:</b>						
Sponge, industry	5,210	6,520	7,960 <sup>r</sup>	8,240 <sup>r</sup>	XX	7,850
Scrap	8,740	8,000	8,890 <sup>r</sup>	8,940 <sup>r</sup>	XX	10,400
Ingot	3,470	3,810	4,750 <sup>r</sup>	4,330 <sup>r</sup>	XX	5,220
<b>Consumption:</b>						
Sponge	8,380	6,370	6,420 <sup>r</sup>	7,220 <sup>r</sup>	28,400 <sup>r</sup>	8,270
Scrap	7,950	6,460	5,430 <sup>r</sup>	5,180 <sup>r</sup>	25,000 <sup>r</sup>	5,800
Ingot	11,200	11,100	12,400 <sup>r</sup>	10,400 <sup>r</sup>	45,100 <sup>r</sup>	11,100
<b>Shipments:</b>						
Ingot (net shipments)	2,710	2,890	2,150	2,710 <sup>r</sup>	10,500 <sup>r</sup>	2,870
<b>Mill products (net shipments):</b>						
Forging and extrusion billet	2,300	3,100	3,140	3,220 <sup>r</sup>	11,800 <sup>r</sup>	2,970
Plate, sheet, strip	3,060	3,030	2,850	3,270 <sup>r</sup>	12,200 <sup>r</sup>	3,650
Bar, rod, fastener stock, wire	1,380	1,300	1,500	W	4,180	1,290
Other <sup>3</sup>	173	182	160 <sup>r</sup>	1,580 <sup>r</sup>	2,090	168
Total	6,910	7,610	7,650 <sup>r</sup>	8,070 <sup>r</sup>	30,200 <sup>r</sup>	8,080
Castings	213	218	W	W	431 <sup>r</sup>	238
<b>Receipts, scrap:</b>						
Home	6,690	2,910	2,020 <sup>r</sup>	1,880 <sup>r</sup>	13,500 <sup>r</sup>	3,350
Purchased	3,470	6,170	5,500 <sup>r</sup>	4,250 <sup>r</sup>	19,400 <sup>r</sup>	4,970
Total	10,200	9,080	7,510 <sup>r</sup>	6,130 <sup>r</sup>	32,900 <sup>r</sup>	8,330

<sup>r</sup>Revised. NA Not available. 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 for pipe and tube and other have been combined to avoid disclosing company proprietary data.

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

(Metric tons)

	2006					2007
	First quarter	Second quarter	Third quarter	Fourth quarter <sup>f</sup>	Year to date <sup>f</sup>	First quarter
<b>Metal:</b>						
Waste and scrap	2,360	3,500	2,610	2,350	10,800	4,650
<b>Unwrought:<sup>2</sup></b>						
Sponge	285	377	343	376	1,380	455
Ingot	518	527	463	565	2,070	713
Other unwrought	208	216	222	309	956	176
<b>Wrought:</b>						
Bar, rod, profiles, wire	832	867	946	1,020	3,670	810
Billet	311	325	247	321	1,200	713
Bloom, sheet bar, slab	127	178	90	136	532	87
Other	1,780	2,080	2,020	2,020	7,900	1,950
Ferrotitanium and ferrosilicon titanium	538	486	479	819	2,320	517
Ores and concentrates	3,340	13,400	8,640	7,420	32,800	1,520
<b>Pigment:</b>						
80% or more titanium dioxide	97,300	130,000	151,000	134,000	513,000	120,000
Other titanium dioxide	9,600	13,700	15,200	18,600	57,100	22,400
Unfinished titanium dioxide <sup>2</sup>	3,190	3,540	2,500	1,580	10,800	2,490

<sup>f</sup>Revised.

<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)

	2006					2007
	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter
<b>Waste and scrap:</b>						
Belgium	149	56	33	11	250	18
Canada	229	151	137	147 <sup>r</sup>	664 <sup>r</sup>	168
China	107	163	176	150	596	172
France	315	358	320	355 <sup>r</sup>	1,350 <sup>r</sup>	412
Germany	513	443	697	421 <sup>r</sup>	2,070 <sup>r</sup>	452
Israel	92	70	52	112 <sup>r</sup>	325 <sup>r</sup>	50
Japan	519	637	626	541 <sup>r</sup>	2,320 <sup>r</sup>	584
Taiwan	169	76	265	147 <sup>r</sup>	657 <sup>r</sup>	429
United Kingdom	509	642	443	567 <sup>r</sup>	2,160 <sup>r</sup>	779
Other	392 <sup>r</sup>	724 <sup>r</sup>	730 <sup>r</sup>	578 <sup>r</sup>	2,420 <sup>r</sup>	547
<b>Total</b>	<b>2,990</b>	<b>3,320</b>	<b>3,480</b>	<b>3,030<sup>r</sup></b>	<b>12,800<sup>r</sup></b>	<b>3,610</b>
<b>Unwrought:</b>						
<b>Sponge:</b>						
Japan	1,870	2,060	2,100	2,040 <sup>r</sup>	8,070 <sup>r</sup>	1,880
Kazakhstan <sup>e</sup>	2,840	3,560	3,000	3,050	12,500	2,550
Russia	140	733	605	87 <sup>r</sup>	1,570 <sup>r</sup>	277
Ukraine	436	405	492	317	1,650	326
Other <sup>3</sup>	154	158	96	282 <sup>r</sup>	690 <sup>r</sup>	235
<b>Total</b>	<b>5,440</b>	<b>6,920</b>	<b>6,290</b>	<b>5,770<sup>r</sup></b>	<b>24,400<sup>r</sup></b>	<b>5,270</b>
<b>Ingot:</b>						
Belgium	--	34	--	--	34	--
France	11	--	--	28	39	--
Germany	108	180	74	193 <sup>r</sup>	555 <sup>r</sup>	169
Russia	690	892	607	235 <sup>r</sup>	2,430 <sup>r</sup>	271
Other	22	20 <sup>r</sup>	27	18	86 <sup>r</sup>	--
<b>Total</b>	<b>831</b>	<b>1,130</b>	<b>708</b>	<b>474</b>	<b>3,140</b>	<b>440</b>
Powder	10	78	36	27 <sup>r</sup>	152 <sup>r</sup>	64
Other	383	470	447	218 <sup>r</sup>	1,520 <sup>r</sup>	37
<b>Wrought:</b>						
Bar, rod, profiles, wire	320	275	347	329 <sup>r</sup>	1,270 <sup>r</sup>	354
Billet	144	105	110	135 <sup>r</sup>	494 <sup>r</sup>	77
Bloom, sheet bar, slab	276	530	431	345 <sup>r</sup>	1,580	29
Plate, sheet, strip, foil	256	261	284	390 <sup>r</sup>	1,190 <sup>r</sup>	531
Tube and pipe	37	33	25	33 <sup>r</sup>	128 <sup>r</sup>	34
Other	56	63	54	21 <sup>r</sup>	194 <sup>r</sup>	79
<b>Total</b>	<b>1,090</b>	<b>1,270</b>	<b>1,250</b>	<b>1,250<sup>r</sup></b>	<b>4,860<sup>r</sup></b>	<b>1,100</b>
<b>Other articles of titanium:</b>						
Castings	4	4	15	8 <sup>r</sup>	31 <sup>r</sup>	2
Other	107	125	102	136 <sup>r</sup>	470 <sup>r</sup>	94
<b>Ferrotitanium and ferrosilicon titanium</b>	<b>1,690</b>	<b>2,140</b>	<b>1,750</b>	<b>1,500<sup>r</sup></b>	<b>7,080<sup>r</sup></b>	<b>1,670</b>

<sup>e</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.

Source: U.S. Census Bureau.

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

(Metric tons)

	2006					2007
	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter
<b>Ilmenite:</b>						
Australia	8,140	--	50,100	68,200 <sup>r</sup>	127,000 <sup>r</sup>	72,700
Ukraine	--	20,000	20,100	20,000	60,100	--
Total	8,140	20,000	70,200	88,300 <sup>r</sup>	187,000 <sup>r</sup>	72,700
<b>Titanium slag:</b>						
Canada	4,500	28,800	56,100	69,500 <sup>r</sup>	159,000 <sup>r</sup>	31,200
South Africa	82,300	156,000	120,000	155,000 <sup>r</sup>	512,000 <sup>r</sup>	57,500
Other <sup>2</sup>	20,600 <sup>r</sup>	1,390 <sup>r</sup>	--	1 <sup>r</sup>	22,000 <sup>r</sup>	11,000
Total	107,000	186,000 <sup>r</sup>	176,000	224,000 <sup>r</sup>	693,000 <sup>r</sup>	99,700
<b>Rutile:</b>						
Australia	10,400	658	16,700	32,400 <sup>r</sup>	60,100 <sup>r</sup>	66,400
Canada	10,400	25,200	7	5,710	41,300 <sup>r</sup>	18,000
Sierra Leone	--	--	7,500	--	7,500	--
South Africa	23,400	36,300	31,500	44,600 <sup>r</sup>	136,000 <sup>r</sup>	59,000
Ukraine	200	200	5,070	64 <sup>r</sup>	5,530 <sup>r</sup>	344
Other <sup>2</sup>	224	112	77 <sup>r</sup>	65 <sup>r</sup>	479 <sup>r</sup>	8,040
Total	44,500	62,500	60,800	82,900	251,000 <sup>r</sup>	152,000
<b>Synthetic rutile:</b>						
Australia	18,200	31,500	17,200	6,010 <sup>r</sup>	73,000 <sup>r</sup>	650
Malaysia	--	4,560	--	4,500	9,060	5,090
South Africa	--	10,000	12,100	--	22,100	7,960
Other <sup>2</sup>	175	--	1 <sup>r</sup>	--	175	2
Total	18,400	46,100	29,300	10,500 <sup>r</sup>	104,000 <sup>r</sup>	13,700
Titaniferous iron ore, Canada <sup>2</sup>	--	11,700	38,100	--	49,800	--

<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.

Source: U.S. Census Bureau.

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

(Metric tons)

	2006					2007
	First quarter	Second quarter	Third quarter	Fourth quarter <sup>r</sup>	Year to date <sup>r</sup>	First quarter
<b>80% or more titanium dioxide:</b>						
Australia	3,350	1,770	1,710	892	7,730	1,340
Belgium	2,330	2,830	1,810	2,080	9,060	1,160
Canada	23,600	19,500	18,100	15,000	76,200	17,900
China	9,220	6,070	4,950	6,610	26,900	3,980
Finland	3,100	4,050	3,710	4,270	15,100	3,280
France	501	668	675	922	2,770	824
Germany	4,920	7,980	2,340	2,500	17,700	2,310
Italy	1,600	3,010	534	1,740	6,880	1,240
Japan	1,270	1,020	1,050	896	4,240	832
Korea, Republic of	109	75	154	698	1,040	257
Mexico	1,430	249	880	1,090	3,650	1,300
Netherlands	727	2,090	893	1,400	5,110	863
Norway	452	1,660	1,010	444	3,570	676
Singapore	599	272	526	435	1,830	600
Slovenia	--	748	778	398	1,920	314
Spain	3,750	987	3,900	3,580	12,200	3,290
United Kingdom	3,780	738	765	1,140	6,420	792
Other	744 <sup>r</sup>	1,050 <sup>r</sup>	1,400 <sup>r</sup>	910	4,100	895
Total	61,400	54,800	45,200	45,000	206,000	41,900
<b>Other titanium dioxide:</b>						
Canada	460	354	541	511	1,870	579
China	233	396	309	329	1,270	227
Other	403 <sup>r</sup>	549 <sup>r</sup>	686 <sup>r</sup>	646	2,280	518
Total	1,100	1,300	1,540	1,490	5,420	1,320
<b>Unfinished titanium dioxide:<sup>2</sup></b>						
Canada	7,230	9,000	--	--	16,200	--
China	3,900	4,300	4,950	4,620	17,800	4,620
Czech Republic	1,390	541	1,000	675	3,610	794
France	3,020	4,340	3,000	2,940	13,300	1,580
Germany	2,060 <sup>r</sup>	1,700	1,000	1,350	6,110	1,700
Other	5,140 <sup>r</sup>	5,840 <sup>r</sup>	5,360 <sup>r</sup>	4,140	19,200	6,120
Total	22,700	25,700 <sup>r</sup>	15,300	13,700	76,200	14,800
Grand total	85,300	80,500	62,100	60,200	288,000	58,000

<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

	2006				2007
	First quarter	Second quarter	Third quarter	Fourth quarter	First quarter
Ilmenite, per metric ton, f.ob. Australian ports <sup>1</sup>	\$75- \$85	\$75- \$85	\$75- \$85	\$75- \$85	\$75- \$85
Titanium slag, per metric ton <sup>2</sup>	452- 555	414- 550	406- 595	402- 454	381- 508
Rutile, per metric ton, natural: <sup>1</sup>					
Bagged, f.o.b. Australian ports	570- 700	570- 700	570- 700	570- 700	570- 700
Bulk, f.o.b. Australian ports	470- 485	450- 480	450- 480	450- 500	450- 500
Sponge metal, per pound, import <sup>2</sup>	3.55-12.81	3.54-12.85	5.00-12.81	5.87-12.84	7.66- 9.65
Titanium mill products, producer price index <sup>3</sup>	222	338	343	300 <sup>r</sup>	341
Titanium scrap, per pound, turnings, unprocessed (Ti-6Al-4V) <sup>4</sup>	3.60- 4.10	5.35- 5.50	4.65- 4.75	4.00- 4.40 <sup>r</sup>	3.60- 3.80
Ferrotitanium, per pound, 70% (max. 4.5% Al) per pound Ti <sup>4</sup>	6.80- 7.75	7.70- 8.00	7.25- 7.32	6.79- 7.00 <sup>r</sup>	6.25- 6.35
Titanium dioxide pigment, producer price index <sup>3</sup>	169	169	169	165 <sup>r</sup>	160

<sup>r</sup>Revised.

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

<sup>2</sup>Unit value based on land-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.