

Mineral Industry Surveys

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TITANIUM IN THE FOURTH QUARTER 2007

According to the U.S. Geological Survey (USGS), titanium mill product shipments in the fourth quarter of 2007 were 8,530 metric tons (t), a slight increase compared with revised shipments in the previous quarter. Receipts of titanium scrap totaled 7,090 t, a 12% decrease compared with receipts from the previous quarter. Ingot producer shipments totaled 4,890 t, a 20% increase compared with shipments from the previous quarter. Approximately 77% 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.

In October, Aricom plc. began mining operations at the Kuranakh deposit in the Amur Region, Russia. When fully operational in 2011, the mine is expected to produce 900,000 metric tons per year (t/yr) of iron ore and 290,000 t/yr of ilmenite. Aricom also has a project with Aluminum Corp. of China (Chinalco), China's leading aluminum producer, to produce 15,000 t/yr of titanium sponge (Hambro, 2008).

Iluka Resources Ltd. announced that it was proceeding with development of the Brink deposit near its Old Hickory mining operation in Stony Creek, VA. The project was scheduled to begin in January 2008, with production expected to follow in April 2009. The project includes relocating the Old Hickory wet concentrator plant and constructing mine infrastructure. The company plans to process wet concentrate from Brink at the existing Stony Creek mineral separation plant. The new mine was expected to extend the life of the Stony Creek operation from 2012 to 2014 and was expected to produce approximately 780,000 t of ilmenite and approximately 157,000 t of zircon (Iluka Resources Ltd., 2007).

Rio Tinto plc reported its global TiO₂ mineral feedstock production was 1.458 million metric tons in 2007, a 3% increase compared with that in 2006. Rio Tinto's production included 50% of output from Richards Bay Minerals, South Africa, and 100% of production from QIT-Fer et Titane, Quebec, Canada. Richards Bay Minerals is jointly owned by Rio Tinto and BHP Billiton plc. Rio Tinto also holds 80% interest in the 750,000-t/yr QIT Madagascar Minerals ilmenite mine that was scheduled to begin production by the end of 2008 (Rio Tinto plc, 2008, p. 64).

RTI International Metals Inc. began construction of a facility in Hamilton, MS, to produce up to 9,070 t/yr of titanium sponge. The plant was scheduled to be operational in 2010 and was expected to help support a long-term mill product supply agreement between RTI and Airbus. The new plant was sited proximate to Tronox Inc.'s Hamilton TiO₂ pigment plant, which was expected to supply titanium tetrachloride needed for titanium metal production (RTI International Metals Inc., 2007).

References Cited

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- Iluka Resources Ltd., 2007, Project updates: Perth, Australia, Iluka Resources Ltd. news release, December 13, 1 p. (Accessed March 21, 2008, at <http://www.iluka.com/Default.aspx?page=130&did=221>.)
- Rio Tinto plc, 2008, Rio Tinto 2007 annual review: London, United Kingdom, Rio Tinto plc, 136 p. (Accessed March 21, 2008, at http://www.riotinto.com/documents/ReportsPublications/2007_Annual_report.pdf.)
- RTI International Metals Inc., 2007, RTI announces additional long-term Airbus contract valued in excess of \$1.1 billion over eleven-year term—Company plans to construct new premium-grade sponge plant: Niles, OH, RTI International Metals Inc. news release, September 17, 1 p. (Accessed March 21, 2008, at <http://www.rti-intl.com/press/Airbus%20SpongePlt%209.17.07.pdf>.)

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

(Metric tons)

	2006		2007				
	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date
Production:							
Sponge	W	W	W	W	W	W	W
Ingot	13,000	53,100	15,600 ^r	14,400	14,400	14,900	59,200
Mill products	9,300	36,100	9,300	9,510	9,620	9,770	38,200
Exports:							
Waste and scrap	2,350	10,800	4,650	1,660	1,380	1,820	9,510
Sponge	376	1,380	455	673	554	319	2,000
Ingot	565	2,070	713	616	530	412	2,270
Other unwrought	309	956	176	358	255	214	1,000
Bar, rod, profiles, wire	1,020	3,670	810	678	628	723	2,840
Billet	321	1,200	713	746	658	609	2,730
Bloom, sheet bar, slab	136	532	87	292	382	520	1,280
Other wrought	2,020	7,900	1,950	2,300	2,070	2,350	8,670
Total	7,100	28,500	9,560	7,320	6,460	6,960	23,300
Imports:							
Waste and scrap	3,030	12,800	3,610	2,960	2,850	2,800	12,200
Sponge ²	5,770	24,400	5,270	6,830	6,830 ^r	6,970	25,900
Ingot	474	3,140	440	688	589	549	2,270
Powder	27	152	64	91	23	68	246
Other unwrought	218	1,520	37	48	9	7	101
Wrought	1,250	4,860	1,100	1,060	1,300	1,510	4,970
Castings	8	31	2	10	1	10	23
Other	136	470	94	107	90	59	350
Total	10,900	47,400	10,600	11,800	11,700	12,000	46,100
Stocks, end of period:							
Sponge, industry	8,240	XX	7,850	7,630	7,780	7,820	XX
Scrap	8,940	XX	10,400	10,200	11,900	12,600	XX
Ingot	4,330	XX	5,260	4,700	5,740	5,150	XX
Consumption:							
Sponge	7,220	28,400	8,270	9,410	7,800	8,180	33,700
Scrap	5,180	25,000	5,800	6,130	5,990	5,870	23,800
Ingot	10,400	45,100	11,100	13,800	12,500	12,900	50,300
Shipments:							
Ingot (producer net shipments) ³	4,200	16,800	3,710	4,130	4,060	4,880	16,800
Mill products (net shipments):							
Forging and extrusion billet	3,220	11,800	2,970	3,320	3,110	3,030	12,400
Plate, sheet, strip	3,270	12,200	3,650	3,330	3,790 ^r	3,910	14,700
Bar, rod, fastener stock, wire	W	W	1,290	1,370	W	W	5,350
Other	1,580 ⁴	6,270 ⁴	168 ⁴	162 ⁴	1,460 ⁵	1,590 ⁵	696 ⁴
Total	8,070	30,200	8,080	8,190	8,360 ^r	8,530	33,200
Castings	W	431	469	424	431	434	1,760
Receipts, scrap:							
Home	1,880	13,500	3,350	2,690	3,390	2,890	12,300
Purchased	4,250	19,400	4,970	4,940	4,640	4,200	18,800
Total	6,130	32,900	8,330	7,630	8,040	7,090	31,100

^rRevised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

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

²Estimated by the U.S. Geological Survey.

³Data series revised to include only ingot producers.

⁴Data for pipe and tube and other have been combined to avoid disclosing company proprietary data.

⁵Data for bar, rod, fastener stock, pipe and tube, wire and other have been combined to avoid disclosing company proprietary data.

TABLE 2
U.S. EXPORTS OF TITANIUM PRODUCTS¹

(Metric tons)

	2006		2007				
	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date
Metal:							
Waste and scrap	2,350	10,800	4,650	1,660	1,380	1,820	9,510
Unwrought:							
Sponge	376	1,380	455	673	554	319	2,000
Ingot	565	2,070	713	616	530	412	2,270
Other unwrought	309	956	176	358	255	214	1,000
Wrought:							
Bar, rod, profiles, wire	1,020	3,670	810	678	628	723	2,840
Billet	321	1,200	713	746	658	609	2,730
Bloom, sheet bar, slab	136	532	87	292	382	520	1,280
Other	2,020	7,900	1,950	2,300	2,070	2,350	8,670
Ferrotitanium and ferrosilicon titanium	819	2,320	517	675	433	500	2,120
Ores and concentrates	7,420	32,800	1,520	4,630	2,720	863	9,730
Pigment:							
80% or more titanium dioxide	134,000	513,000	120,000	139,000	145,000	160,000	564,000
Other titanium dioxide	18,600	57,100	22,400	30,700	32,300	25,800	111,000
Unfinished titanium dioxide ²	1,580	10,800	2,490	2,420	1,350	946	7,200

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

²Unmixed and not surface treated.

Source: U.S. Census Bureau.

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

(Metric tons)

	2006		2007				
	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date
Waste and scrap:							
Canada	147	664	168	253	228	259	908
China	150	596	172	50	50	3	275
France	355	1,350	412	392	481	381	1,670
Germany	421	2,070	452	369	286	325	1,430
Israel	112	325	50	40	66	76	231
Italy	85	400	117	118	37	70	342
Japan	541	2,320	584	567	595	461	2,210
Mexico	80	218	69	52	77	47	245
Russia	98	586	138	146	68	120	472
Singapore	88	133	92	31	71	21	215
Taiwan	147	657	429	130	127	267	953
United Kingdom	567	2,160	779	700	629	589	2,700
Other	238	2,420	149	447	135	428	1,780
Total	3,030	12,800	3,610	2,960	2,850	2,800	12,200
Unwrought:							
Sponge:							
China	219	579	205	907	655	455	2,220
Japan	2,040	8,070	1,880	1,970	2,140	2,260	8,250
Kazakhstan ^e	3,050	12,500	2,550	3,690	3,680 ^r	3,840	13,800
Russia	87	1,570	277	262	124	159	822
Ukraine	317	1,650	326	5	116	256	703
Other ²	63	111	30	--	120	1	151
Total	5,770	24,400	5,270	6,830	6,830^r	6,970	25,900
Ingot:							
Germany	193	555	169	185	280	250	884
Russia	235	2,430	271	441	309	282	1,300
Other	46	159	--	62	--	17	79
Total	474	3,140	440	688	589	549	2,270
Powder	27	152	64	91	23	68	246
Other	218	1,520	37	48	9	7	101
Wrought:							
Bar, rod, profiles, wire	329	1,270	354	298	389	366	1,410
Billet	135	494	77	185	197	295	754
Bloom, sheet bar, slab	345	1,580	29	4	8	4	45
Plate, sheet, strip, foil	390	1,190	531	486	642	791	2,450
Tube and pipe	33	128	34	23	26	26	109
Other	21	194	79	59	39	30	207
Total	1,250	4,860	1,100	1,060	1,300	1,510	4,970
Other articles of titanium:							
Castings	8	31	2	10	1	10	23
Other	136	470	94	107	90	59	350
Ferrotitanium and ferrosilicon titanium	1,500	7,080	1,670	3,060	2,270	610	7,620

^eEstimated. ^rRevised. -- Zero.

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

²All 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 CONCENTRATES¹

(Metric tons)

	2006		2007				
	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date
Ilmenite:							
Australia	68,200	127,000	72,700	39,000	91,700	24,700	228,000
Sierra Leone	--	--	--	--	12,000	--	12,000
South Africa	--	--	--	--	5,990	--	5,990
Ukraine	20,000	60,100	--	--	--	--	--
Total	88,300	187,000	72,700	39,000	110,000	24,700	246,000
Titanium slag:							
Canada	69,500	159,000	31,200	34,300	48,100	79,800	193,000
South Africa	155,000	512,000	57,500	162,000	99,400	156,000	475,000
Other ²	1	22,000	11,000	54,700	15,000	4	80,700
Total	224,000	693,000	99,700	251,000	162,000	236,000	749,000
Rutile:							
Australia	32,400	60,100	66,400	5,420	31,700	41,400	145,000
Canada ²	5,710	41,300	18,000	16,300	3	8	34,300
Sierra Leone	--	7,500	8,000	--	13,000	6,000	27,000
South Africa	44,600	136,000	59,000	41,200	38,500	31,700	170,000
Other ²	129	6,010	384	421	653	704	2,160
Total	82,900	251,000	152,000	63,300	83,900	79,800	379,000
Synthetic rutile:							
Australia	6,010	73,000	650	45,000	19,000	--	64,700
Malaysia	4,500	9,060	5,090	18	--	--	5,110
South Africa	--	22,100	7,960	--	5,000	2,000	15,000
Other ²	--	175	2	17	--	--	19
Total	10,500	104,000	13,700	45,000	24,000	2,000	84,800
Titaniferous iron ore, Canada ²	--	49,800	--	--	72	--	72

-- Zero.

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

²All 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 PIGMENT¹

(Metric tons)

	2006		2007				
	Fourth quarter	Year to date	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date
80% or more titanium dioxide:							
Australia	892	7,730	1,340	704	109	209	2,360
Belgium	2,080	9,060	1,160	1,160	1,040	1,560	4,920
Canada	15,000	76,200	17,900	21,900	22,400	18,800	81,100
China	6,610	26,900	3,980	4,590	2,410	1,910	12,900
Finland	4,270	15,100	3,280	2,680	2,630	3,380	12,000
Germany	2,500	17,700	2,310	1,210	1,320	1,120	5,960
Italy	1,740	6,880	1,240	1,550	1,310	1,990	6,080
Japan	896	4,240	832	980	1,050	570	3,440
Netherlands	1,400	5,110	863	1,010	1,270	648	3,790
Spain	3,580	12,200	3,290	2,920	2,070	2,260	10,500
United Kingdom	1,140	6,420	792	1,850	974	353	3,970
Other	4,900	18,900	4,870	5,640	5,700	3,870	20,100
Total	45,000	206,000	41,900	46,200	42,200	36,700	167,000
Other titanium dioxide:							
Canada	511	1,870	579	479	563	723	2,340
China	329	1,270	227	163	223	213	825
Finland	56	269	31	55	47	51	184
France	34	53	37	59	118	61	275
Germany	247	762	175	151	210	152	688
India	60	208	--	--	20	41	61
Japan	63	284	63	113	175	348	698
Korea, Republic of	--	30	45	283	326	266	920
United Kingdom	21	111	44	78	20	40	183
Other	165	567	122	144	53	67	387
Total	1,490	5,420	1,320	1,530	1,760	1,960	6,570
Unfinished titanium dioxide:²							
Canada	--	16,200	--	42	--	18	60
China	4,620	17,800	4,620	4,580	2,780	2,640	14,600
Czech Republic	675	3,610	794	836	566	535	2,730
France	2,940	13,300	1,580	1,170	1,040	322	4,110
Germany	1,350	6,110	1,700	1,270	1,410	1,870	6,250
Japan	406	1,150	745	1,120	1,570	1,390	4,820
Korea, Republic of	1,110	6,360	1,410	1,350	1,340	848	4,940
United Kingdom	912	2,460	2,300	614	2,290	1,880	7,080
Other	1,720	9,230	1,670	623	309	146	2,750
Total	13,700	76,200	14,800	11,600	11,300	9,640	47,300
Grand total	60,200	288,000	58,000	59,400	55,300	48,300	221,000

-- Zero.

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

²Unmixed and not surface treated.

Source: U.S. Census Bureau.

TABLE 6
PRICES FOR TITANIUM MATERIALS

(End of period)

		2006	2007			
		Fourth quarter	First quarter	Second quarter	Third quarter	Fourth quarter
Concentrate:						
Ilmenite, f.o.b. Australian ports ¹	dollars per metric ton	\$75- \$85	\$75- \$85	\$75- \$85	\$75- \$85	\$75- \$85
Titanium slag, import ²	do.	402- 454	381- 508	353- 572	417- 430	418- 457
Rutile, natural:¹						
Bagged, f.o.b. Australian ports	do.	570- 700	570- 700	590- 700	600- 700	650- 700
Bulk, f.o.b. Australian ports	do.	450- 500	450- 500	450- 500	450- 500	475- 500
Metal:						
Sponge metal, import ²	dollars per pound	5.87- 12.84	7.66- 9.65	7.62- 9.12	7.23- 8.25	6.33- 7.06
Titanium mill products	producer price index ³	300	310	299	288	312
Titanium scrap, turnings, unprocessed (Ti-6Al-4V) ⁴	dollars per pound	4.00- 4.40	3.60- 3.80	2.33- 2.45	1.91- 1.99	2.01- 2.09
Ferrotitanium, 70% (max. 4.5% Al) per pound Ti ⁴	do.	6.79- 7.00	6.25- 6.35	5.16- 5.23	3.99- 4.15	3.82- 3.90
Pigment:						
Titanium dioxide pigment, import ²	dollars per metric ton	2,030	2,080	1,980	1,990	2,010
Titanium dioxide pigment.	producer price index ³	165	165	163	162 ^r	160

^rRevised.

¹Source: Industrial Minerals (London).

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

³1982=100. Source: U.S. Department of Labor, Bureau of Labor Statistics.

⁴Source: Platts Metals Week.