

Mineral Industry Surveys

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TITANIUM IN THE FIRST QUARTER 2008

According to the U.S. Geological Survey (USGS), titanium mill product shipments in the first quarter of 2008 were 8,250 metric tons (t), a 3% decrease compared with shipments in the previous quarter. Receipts of titanium scrap totaled 8,800 t, a 24% increase compared with receipts from the previous quarter. Ingot producer shipments totaled 4,070 t, a slight decrease compared with shipments from the previous quarter.

Approximately 78% 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.

Allegheny Technologies Inc. (Pittsburgh, PA) completed an expansion of titanium sponge capacity at its Albany, OR, facility. A new reduction furnace was brought online in the first quarter raising sponge capacity to nearly 10,000 metric tons per year (t/yr). The company also expected its new 10,900-t/yr sponge facility in Rowley, UT, would begin production in the fourth quarter 2008. When the Utah plant is completed, domestic sponge capacity was expected to increase to 33,800 t/yr, a 25,000-t/yr increase since 2005 (Allegheny Technologies Inc., 2008).

Exxaro Resources Ltd. (Pretoria, South Africa) and Tronox Inc. (Oklahoma City, OK) announced plans to expand the Tiwest joint venture TiO₂ pigment plant in Kwinana, Western Australia, increasing capacity to 150,000 t/yr from 110,000 t/yr. Construction was expected to begin in 2008 and was expected to be completed by 2010 (Exxaro Resources Ltd., 2008a). Exxaro Resources reported that a water ingress incident substantially damaged one of the two titanium slag furnaces at the KZN Sands Empangeni facility in South Africa. Exxaro estimated that maintenance and repairs to the furnace would take 8 months. The Empangeni facility has two furnaces with a nameplate capacity of 250,000 t/yr of slag (Exxaro Resources Ltd., 2008b).

In February, Iluka Resources Ltd. (Perth, Western Australia, Australia) announced that it would proceed with the second stage of its Murray Basin mineral sands project in Australia.

Initial production was expected in early 2009, with production scheduled to increase to approximately 180,000 t/yr of rutile and 150,000 t/yr of zircon by 2012 (Iluka Resources Inc., 2008).

Kemira Pigments Oy (Helsinki, Finland) made plans to increase capacity at its Pori, Finland, sulfate-route TiO₂ pigment plant to 150,000 t/yr from 130,000 t/yr. Kemira reported that it had received an environmental permit allowing the expansion. In 2007, Kemira exported more than 90% of the TiO₂ pigment produced at the Pori plant (Industrial Minerals, 2008).

Kenmare Resources Plc. (Dublin, Ireland) began shipping ilmenite mineral concentrate from its Moma mineral sands operation in Mozambique. Following damage from a cyclone in March, the company expected that it would not achieve its full production rate of up to 800,000 t/yr of ilmenite, 21,000 t/yr of rutile, and 56,000 t/yr of zircon, until the fourth quarter of 2008. The company also planned to expand capacity to 1.2 million metric tons per year of ilmenite plus coproducts. The new capacity was expected onstream by the end of 2009 (Kenmare Resources Plc., 2008).

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

(Metric tons)

	2007					2008
	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter
Production:						
Sponge	W	W	W	W	W	W
Ingot	15,600	14,400	14,400	14,900	59,200	14,500
Mill products	9,300	9,510	9,620	9,770	38,200	9,490
Exports:						
Waste and scrap	4,650	1,660	1,380	1,820	9,510	1,590
Sponge	455	673	554	319	2,000	403
Ingot	713	616	530	412	2,270	260
Other unwrought	176	358	255	214	1,000	493
Bar, rod, profiles, wire	810	678	628	723	2,840	886
Billet	713	746	658	609	2,730	716
Bloom, sheet bar, slab	87	292	382	520	1,280	421
Other wrought	1,950	2,300	2,070	2,350	8,670	2,460
Total	9,560	7,320	6,460	6,960	23,300	7,220
Imports:						
Waste and scrap	3,610	2,960	2,850	2,800	12,200	2,540
Sponge ²	5,270	6,830	6,830 ^r	6,970	25,900	6,320
Ingot	440	688	589	549	2,270	326
Powder	64	91	23	68	246	17
Other unwrought	37	48	9	7	101	23
Wrought	1,100	1,060	1,300	1,510	4,970	2,010
Castings	2	10	1	10	23	1
Other	94	107	90	59	350	81
Total	10,600	11,800	11,100	12,000	46,100	11,300
Stocks, end of period:						
Sponge, industry	7,850	7,630	7,780	7,820	XX	8,260
Scrap	10,400	10,200	11,900	12,600	XX	14,200
Ingot	5,260	4,700	5,740	5,150	XX	5,000
Consumption:						
Sponge	8,270	9,410	7,800	8,180	33,700	8,590
Scrap	5,800	6,130	5,990	5,870	23,800	5,580
Ingot	11,100	13,800	12,500	12,900	50,300	12,300
Shipments:						
Ingot (producer net shipments) ³	3,710	4,130	4,060	4,130	11,900	4,070
Mill products (net shipments):						
Forging and extrusion billet	2,970	3,320	3,110	3,030	12,400	3,260
Plate, sheet, strip	3,650	3,330	3,790	3,910	14,700	3,370
Bar, rod, fastener stock, wire	1,290	1,370	W ⁴	W ⁴	5,350	W ⁴
Other	168	162	1,460	1,590	6,040	1,620
Total	8,080	8,190	8,360	8,530	33,200	8,250
Castings	469	424	431	434	1,760	W
Receipts, scrap:						
Home	3,350	2,690	3,390	2,890	12,300	3,770
Purchased	4,970	4,940	4,640	4,200	18,800	5,040
Total	8,330	7,630	8,040	7,090	31,100	8,800

¹Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

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

³Estimated by the U.S. Geological Survey.

⁴Data series revised to include only ingot producers.

⁵Included with other to avoid disclosing company proprietary data.

TABLE 2
U.S. EXPORTS OF TITANIUM PRODUCTS¹

(Metric tons)

	2007					2008
	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter
Metal:						
Waste and scrap	4,650	1,660	1,380	1,820	9,510	1,590
Unwrought:						
Sponge	455	673	554	319	2,000	403
Ingot	713	616	530	412	2,270	260
Other unwrought	176	358	255	214	1,000	493
Wrought:						
Bar, rod, profiles, wire	810	678	628	723	2,840	886
Billet	713	746	658	609	2,730	716
Bloom, sheet bar, slab	87	292	382	520	1,280	421
Other	1,950	2,300	2,070	2,350	8,670	2,460
Ferrotitanium and ferrosilicon titanium	517	675	433	500	2,120	421
Ores and concentrates	1,520	4,630	2,720	863	9,730	3,320
Pigment:						
80% or more titanium dioxide	120,000	139,000	145,000	160,000	564,000	152,000
Other titanium dioxide	22,400	30,700	32,300	25,800	111,000	22,200
Unfinished titanium dioxide ²	2,490	2,420	1,350	946	7,200	946

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)

	2007					2008
	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter
Waste and scrap:						
Canada	168	253	228	259	908	194
France	412	392	481	381	1,670	310
Germany	452	369	286	325	1,430	255
Israel	50	40	66	76	231	131
Italy	117	118	37	70	342	43
Japan	584	567	595	461	2,210	524
Mexico	69	52	77	47	245	70
Russia	138	146	68	120	472	78
Taiwan	429	130	127	267	953	111
United Kingdom	779	700	629	589	2,700	568
Other	413 ^r	193 ^r	256 ^r	212 ^r	1,070 ^r	254
Total	3,610	2,960	2,850	2,800	12,200	2,540
Unwrought:						
Sponge:						
China	205	907	655	455	2,220	377
Japan	1,880	1,970	2,140	2,260	8,250	1,950
Kazakhstan ^c	2,550	3,690	3,680	3,840	13,800	3,650
Russia	277	262	124	159	822	111
Ukraine	326	5	116	256	703	237
Other ²	30	--	120	1	151	--
Total	5,270	6,830	6,830	6,970	25,900	6,320
Ingot:						
Germany	169	185	280	250	884	164
Russia	271	441	309	282	1,300	129
Other	--	62	--	17	78 ^r	32
Total	440	688	589	549	2,270	326
Powder	64	91	23	68	246	17
Other	37	48	9	7	101	23
Wrought:						
Bar, rod, profiles, wire	354	298	389	366	1,410	552
Billet	77	185	197	295	754	464
Bloom, sheet bar, slab	29	4	8	4	45	31
Plate, sheet, strip, foil	531	486	642	791	2,450	817
Tube and pipe	34	23	26	26	109	28
Other	79	59	39	30	207	116
Total	1,100	1,060	1,300	1,510	4,970	2,010
Other articles of titanium:						
Castings	2	10	1	10	23	1
Other	94	107	90	59	350	81
Ferrotitanium and ferrosilicon titanium	1,670	3,060	2,270	610	7,620	1,170

^cEstimated. ^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)

	2007					2008
	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter
Ilmenite:						
Australia	72,700	39,000	91,700	24,700	228,000	43,300
Mozambique	--	--	--	--	--	50,500
Sierra Leone	--	--	12,000	--	12,000	--
South Africa	--	--	5,990	--	5,990	--
Ukraine	--	--	--	--	--	20,500
Total	72,700	39,000	110,000	24,700	246,000	114,000
Titanium slag:						
Canada	31,200	34,300	48,100	79,800	193,000	6,010
South Africa	57,500	162,000	99,400	156,000	475,000	109,000
Other ²	11,000	54,700	15,000	4	80,700	--
Total	99,700	251,000	162,000	236,000	749,000	115,000
Rutile:						
Australia	66,400	5,420	31,700	41,400	145,000	29,700
Canada ²	18,000	16,300	3	8	34,300	11,600
Sierra Leone	8,000	--	13,000	6,000	27,000	--
South Africa	59,000	41,200	38,500	31,700	170,000	47,000
Other ²	384	421	653	704	2,160	187
Total	152,000	63,300	83,900	79,800	379,000	88,500
Synthetic rutile:						
Australia	650	45,000	19,000	--	64,700	11,400
Malaysia	5,090	18	--	--	2,110	548
South Africa	7,960	--	5,000	2,000	15,000	--
Other ²	2	17	--	--	19	40
Total	13,700	45,000	24,000	2,000	84,800	12,000
Titaniferous iron ore, Canada ²	--	--	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)

	2007					2008
	First quarter	Second quarter	Third quarter	Fourth quarter	Year to date	First quarter
80% or more titanium dioxide:						
Belgium	1,160	1,160	1,040	1,560	4,920	1,250
Canada	17,900	21,900	22,400	18,800	81,100	20,900
China	3,980	4,590	2,410	1,910	12,900	1,480
Finland	3,280	2,680	2,630	3,380	12,000	2,560
Germany	2,310	1,210	1,320	1,120	5,960	1,510
Italy	1,240	1,550	1,310	1,990	6,080	1,230
Japan	832	980	1,050	570	3,440	888
Mexico	1,300	868	612	542	3,320	1,130
Netherlands	863	1,010	1,270	648	3,790	591
Spain	3,290	2,920	2,070	2,260	10,500	1,620
Ukraine	675	1,100	1,150	1,140	4,060	2,250
United Kingdom	792	1,850	974	353	3,970	431
Other	4,230 ^r	4,380 ^r	4,050 ^r	2,390 ^r	15,000 ^r	3,550
Total	41,900	46,200	42,200	36,700	167,000	39,400
Other titanium dioxide:						
Canada	579	479	563	723	2,340	1,040
China	227	163	223	213	826	203
Finland	31	55	47	51	184	53
France	37	59	118	61	275	179
Germany	175	151	210	152	688	242
Japan	63	113	175	348	699	193
Korea, Republic of	45	283	326	266	920	30
Other	166 ^r	222 ^r	93 ^r	148 ^r	631 ^r	171
Total	1,320	1,530	1,760	1,960	6,570	2,110
Unfinished titanium dioxide:²						
China	4,620	4,580	2,780	2,640	14,600	2,460
Czech Republic	794	836	566	535	2,730	689
France	1,580	1,170	1,040	322	4,110	587
Germany	1,700	1,270	1,410	1,870	6,250	1,240
Japan	745	1,120	1,570	1,390	4,820	1,770
Korea, Republic of	1,410	1,350	1,340	848	4,940	878
United Kingdom	2,300	614	2,290	1,880	7,080	1,920
Other	1,670	665	309	164	2,640	688
Total	14,800	11,600	11,300	9,640	47,300	10,200
Grand total	58,000	59,400	55,300	48,300	221,000	51,700

^rRevised. -- 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)

		2007				2008
		First quarter	Second quarter	Third quarter	Fourth quarter	First quarter
Concentrate:						
Ilmenite, f.o.b. Australian ports ¹	dollars per metric ton	\$75- \$85	\$75- \$85	\$75- \$85	\$75- \$85	\$80- \$130
Titanium slag, import ²	do.	381- 508	353- 572	417- 430	418- 457	433- 576
Rutile, natural:¹						
Bagged, f.o.b. Australian ports	do.	570- 700	590- 700	600- 700	650- 700	700- 750
Bulk, f.o.b. Australian ports	do.	450- 500	450- 500	450- 500	475- 500	490- 520
Metal:						
Sponge metal, import ²	dollars per pound	7.66- 9.65	7.62- 9.12	7.23- 8.25	6.33- 7.06	5.69- 8.30
Titanium mill products	producer price index ³	310	299	288	312	259
Titanium scrap, turnings, unprocessed (Ti-6Al-4V) ⁴	dollars per pound	3.60- 3.80	2.10-2.15 ^r	1.75-1.80 ^r	2.00- 2.05 ^r	2.10- 2.15
Ferrotitanium, 70% (max. 4.5% Al) per pound Ti ⁴	do.	6.25- 6.35	4.90- 4.95 ^r	3.60- 3.65 ^r	3.80- 3.85 ^r	3.75- 3.85
Pigment:						
Titanium dioxide pigment, import ²	dollars per metric ton	2,080	1,980	1,990	2,010	2,050
Titanium dioxide pigment,	producer price index ³	165	163	162	160	166

^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.