

TITANIUM MINERAL CONCENTRATES¹

(Data in thousand metric tons of contained TiO₂ unless otherwise noted)

Domestic Production and Use: Two firms produced ilmenite and rutile concentrates from surface mining operations in Florida, Georgia, and Virginia. The value of titanium mineral concentrates consumed in the United States in 2005 was about \$480 million. The major coproduct of mining from ilmenite and rutile deposits was zircon. About 97% of titanium mineral concentrates was consumed by domestic TiO₂ pigment producers. The remaining 3% of consumption was used in welding rod coatings and for manufacturing carbides, chemicals, and metal.

Salient Statistics—United States:	2001	2002	2003	2004	2005^e
Production ² (ilmenite and rutile, rounded)	300	300	300	300	300
Imports for consumption:					
Ilmenite and slag	737	599	569	535	570
Rutile, natural and synthetic	303	368	397	337	305
Exports, ⁶ all forms	5	2	7	6	8
Consumption, reported:					
Ilmenite and slag ³	856	951	959	1,080	994
Rutile, natural and synthetic	448	452	453	414	381
Price, dollars per metric ton, yearend:					
Ilmenite, bulk, minimum 54% TiO ₂ , f.o.b. Australia	100	93	90	81	80
Rutile, bulk, minimum 95% TiO ₂ , f.o.b. Australia	475	450	430	455	470
Slag, 80%-95% TiO ₂ ⁴	335-518	340-527	385-444	347-466	390-555
Stocks, mine, consumer, yearend:					
Ilmenite	221	197	200	299	300
Rutile	118	75	74	70	70
Employment, mine and mill, number ^e	359	349	344	300	286
Net import reliance ⁵ as a percentage of reported consumption	78	74	68	58	63

Recycling: None.

Import Sources (2001-04): South Africa, 44%; Australia, 34%; Canada, 12%; Ukraine, 6%; and other, 4%.

Tariff: Item	Number	Normal Trade Relations
		12-31-05
Synthetic rutile	2614.00.3000	Free.
Ilmenite and ilmenite sand	2614.00.6020	Free.
Rutile concentrate	2614.00.6040	Free.
Titanium slag	2620.99.5000	Free.

Depletion Allowance: Ilmenite and rutile; 22% (Domestic), 14% (Foreign).

Government Stockpile: None.

Events, Trends, and Issues: Owing to new mining capacity in Georgia and Virginia, domestic production of titanium mineral concentrates increased compared with that of 2004. In August, Hurricane Katrina disrupted TiO₂ pigment production in Mississippi. Consequently, domestic consumption of titanium mineral concentrates decreased in 2005 compared with that of 2004. Global consumption of titanium mineral concentrates was estimated to have increased slightly in 2004 compared with that of 2003. International exploration and development projects for producing titanium minerals were underway in Australia (Coburn, Douglas, Eucla Basin, Goondicum, Ludlow, Mindarie, Wemen), Canada (Athabasca, Truro), Chile (Cerro Blanco), The Gambia (Sanyang), India (Tamil Nadu), Kenya (Kwale), Madagascar (Fort-Dauphin), Malawi (Lake Malawi), Mozambique (Corridor Sands, Moebase), Senegal (Grande Côte), and South Africa (Xolobeni). In the Murray Basin, Australia, mine construction was completed at the Ginkgo mine site (Pooncarie Project). In Canada, chloride-grade slag capacity at Sorel was increased to 325,000 tons per year. A further capacity expansion was expected in late 2006. In Mozambique, construction of the 700,000-ton-per-year ilmenite mine near Moma was underway and scheduled for completion in 2006. Efforts were underway to restart the rutile mine in Sierra Leone, which has been idle since 1995.

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World Mine Production, Reserves, and Reserve Base: The reserves and reserve base estimates for Australia and Mozambique have been revised based on new information from those countries.

	Mine production		Reserves ⁶	Reserve base ⁶
	<u>2004</u>	<u>2005^e</u>		
Ilmenite:				
United States ²	7300	7300	6,000	59,000
Australia	1,110	1,140	130,000	160,000
Brazil	130	130	12,000	12,000
Canada ⁸	735	809	31,000	36,000
China	400	400	200,000	350,000
India	281	280	85,000	210,000
Mozambique	—	—	16,000	21,000
Norway ⁸	381	380	37,000	60,000
South Africa ⁸	865	952	63,000	220,000
Ukraine	217	220	5,900	13,000
Vietnam	98	100	2,400	5,900
Other countries	120	120	15,000	78,000
World total (ilmenite, rounded)	4,600	4,800	600,000	1,200,000
Rutile:				
United States	(9)	(9)	400	1,800
Australia	154	160	19,000	31,000
Brazil	3	3	3,500	3,500
India	18	20	7,400	20,000
Mozambique	—	—	480	570
South Africa	105	115	8,300	24,000
Ukraine	57	60	2,500	2,500
Other countries	—	—	8,100	17,000
World total (rutile, rounded)	¹⁰ 340	¹⁰ 360	50,000	100,000
World total (ilmenite and rutile, rounded)	5,000	5,200	650,000	1,300,000

World Resources: Ilmenite supplies about 90% of the world's demand for titanium minerals. World resources of anatase, ilmenite, and rutile total more than 2 billion tons.

Substitutes: Ilmenite, leucosene, rutile, slag, and synthetic rutile compete as feedstock sources for producing TiO₂ pigment, titanium metal, and welding rod coatings.

^eEstimated. — Zero.

¹See also Titanium and Titanium Dioxide.

²Rounded to nearest 0.1 million ton to avoid disclosing company proprietary data.

³Excludes ilmenite used to produce synthetic rutile.

⁴Landed duty-paid value based on U.S. imports for consumption.

⁵Defined as imports – exports + adjustments for Government and industry stock changes.

⁶[See Appendix C for definitions.](#)

⁷Includes rutile.

⁸Mine production is primarily used to produce titaniferous slag.

⁹Included with ilmenite to avoid disclosing company proprietary data.

¹⁰Excludes U.S. production.