

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 and Virginia. The value of titanium mineral concentrates consumed in the United States in 2010 was about \$470 million. Zircon was a coproduct of mining from ilmenite and rutile deposits. About 94% of titanium mineral concentrates was consumed by domestic titanium dioxide (TiO₂) pigment producers. The remaining 6% was used in welding rod coatings and for manufacturing carbides, chemicals, and metal.

Salient Statistics—United States:	2006	2007	2008	2009	2010^e
Production ² (rounded)	300	300	200	200	200
Imports for consumption	1,030	1,220	1,110	927	1,230
Exports, ^e all forms	21	6	7	9	11
Consumption, estimated	1,510	1,600	1,440	1,360	1,500
Price, dollars per metric ton, yearend:					
Ilmenite, bulk, minimum 54% TiO ₂ , f.o.b. Australia	80	80	111	73	75
Rutile, bulk, minimum 95% TiO ₂ , f.o.b. Australia	475	488	525	533	760
Slag, 80%–95% TiO ₂ ³	402-454	418-457	393-407	401-439	450-570
Stocks, mine, consumer, yearend	NA	NA	NA	NA	NA
Employment, mine and mill, number ^e	246	225	144	194	180
Net import reliance ⁴ as a percentage of estimated consumption	67	76	78	68	81

Recycling: None.

Import Sources (2006–09): South Africa, 49%; Australia, 29%; Canada, 14%; Mozambique, 3%; and other, 5%.

Tariff: Item	Number	Normal Trade Relations 12-31-10
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: Consumption of titanium mineral concentrates is tied to consumption of TiO₂ pigments primarily used in paint, paper, and plastics. Owing to increased production of TiO₂ pigment, domestic consumption of titanium mineral concentrates was estimated to have increased by 10% in 2010 compared with that in 2009. One of the two U.S. mineral producers acquired land that will extend mining operations near Starke, FL, through 2017. The life of the Stony Creek, VA, operation was recently extended to 2015 through the addition of the Brink deposit.

In Mozambique, plans were announced to expand ilmenite production capacity at the Moma mining operation to 1.8 million tons per year, a 50% increase compared with the existing design capacity. In October, a breach in a settling pond flooded nearby homes and disrupted mining operations at the Moma Mine for 1 month. In Vietnam, Government policies were being implemented to stop ilmenite exports, control illegal mining, and promote the development of upgraded products. An export ban was expected to be implemented in January 2011. The ban was approved in 2008 but has been repeatedly delayed to help mining companies hurt by global economic conditions.

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World Mine Production and Reserves: The reserves estimates for Australia, Sierra Leone, and the United States were revised based on information derived from government and industry reports.

	Mine production		Reserves ⁵
	<u>2009</u>	<u>2010^e</u>	
Ilmenite:			
United States ²	⁶ 200	⁶ 200	2,000
Australia	1,020	1,070	100,000
Brazil	43	43	43,000
Canada ⁷	650	700	31,000
China	500	600	200,000
India	420	420	85,000
Madagascar	47	150	40,000
Mozambique	283	350	16,000
Norway ⁷	302	320	37,000
South Africa ⁷	1,050	1,120	63,000
Sri Lanka	30	40	NA
Ukraine	300	300	5,900
Vietnam	412	410	1,600
Other countries	<u>34</u>	<u>35</u>	<u>26,000</u>
World total (ilmenite, rounded)	5,300	5,800	650,000
Rutile:			
United States	(⁸)	(⁸)	(⁸)
Australia	266	280	18,000
Brazil	3	3	1,200
India	20	20	7,400
Madagascar	2	6	NA
Mozambique	2	2	480
Sierra Leone	61	67	3,800
South Africa	127	130	8,300
Sri Lanka	11	12	NA
Ukraine	57	57	2,500
Other countries	—	—	<u>400</u>
World total (rutile, rounded)	<u>⁸550</u>	<u>⁸580</u>	<u>42,000</u>
World total (ilmenite and rutile, rounded)	5,800	6,300	690,000

World Resources: Ilmenite accounts for about 91% of the world's consumption of titanium minerals. World resources of anatase, ilmenite, and rutile total more than 2 billion tons.

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

^eEstimated. NA Not available. — Zero.

¹See also Titanium and Titanium Dioxide.

²Rounded to one significant digit to avoid disclosing company proprietary data.

³Landed duty-paid value based on U.S. imports for consumption.

⁴Defined as imports – exports + adjustments for Government and industry stock changes.

⁵[See Appendix C for resource/reserve definitions and information concerning data sources.](#)

⁶Includes rutile.

⁷Mine production is primarily used to produce titaniferous slag.

⁸U.S. rutile production and reserves data are included with ilmenite.