TITANIUM MINERAL CONCENTRATES[1]

(Data in thousand metric tons of TiO_2 content unless otherwise noted)

Domestic Production and Use: In 2017, two firms recovered ilmenite and rutile concentrates from surface-mining operations in Florida and Georgia and a third company began processing existing mineral sands tailings in Florida. Based on reported data through November 2017, the estimated value of titanium mineral concentrates consumed in the United States in 2017 was $561 million. Zircon was a coproduct of mining from ilmenite and rutile deposits. About 90% of titanium mineral concentrates were consumed by domestic titanium dioxide (TiO_2) pigment producers. The remaining 10% was used in welding-rod coatings and for manufacturing carbides, chemicals, and metal.

Salient Statistics—United States:	2013	2014	2015	2016	2017[e]
Production[2]	200	100	200	100	100
Imports for consumption	1,190	1,110	1,100	1,020	1,050
Exports, all forms[e]	7	1	2	5	6
Consumption, apparent[3]	1,380	1,210	1,300	1,120	1,140
Price, dollars per metric ton:					
Ilmenite, bulk, minimum 54% TiO_2, f.o.b. Australia[4]	265	155	110	105	170
Rutile, bulk, minimum 95% TiO_2, f.o.b. Australia[4]	1,250	950	840	740	740
Slag, 80%–95% TiO_2[5]	538–777	720–762	727–753	650–685	661–703
Employment, mine and mill, number[e]	195	144	214	186	296
Net import reliance[6] as a percentage of apparent consumption	86	92	85	91	91

Recycling: None.

Import Sources (2013–16): South Africa, 37%; Australia, 29%; Canada, 14%; Mozambique, 11%; and other, 9%.

Tariff: Item	Number	Normal Trade Relations 12–31–17
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 production of TiO_2 pigments that are primarily used in paint, paper, and plastics. Domestic apparent consumption of titanium mineral concentrates in 2017 was estimated to have increased slightly from that of 2016.

Domestic mining and production of titanium mineral concentrates took place at one mine near Starke, FL, and one mine near Nahunta, GA. Prices for rutile remained constant throughout 2017, but ilmenite prices increased by over 60% at midyear. A company was conducting a feasibility study of the Dundas ilmenite project on the northwest coast of Greenland. Large-scale production was expected to begin in 2019 contingent upon obtaining customer offtake agreements. A major producer of titanium minerals was restarting its Jacinth-Ambrosia Mine in Western Australia and was further developing its operations in Sierra Leone in order to increase its production of natural rutile. Other projects were being developed in Australia, Mozambique, and Tanzania.

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TITANIUM MINERAL CONCENTRATES

World Mine Production and Reserves: Rutile reserves for Mozambique and Sierra Leone were added based on reported company data. Reserves for Australia were revised based on new Government reports.

	Mine production[e]		Reserves[7]
	2016	2017	
Ilmenite:			
United States[2]	[8]100	[8]100	[8]2,000
Australia	780	900	[9]250,000
Brazil	48	50	43,000
Canada[10]	595	475	31,000
China	840	800	220,000
India	180	200	85,000
Kenya	280	375	54,000
Madagascar	92	140	40,000
Mozambique	540	550	14,000
Norway	260	260	37,000
Senegal	250	300	NA
South Africa[10]	1,020	1,300	63,000
Ukraine	210	350	5,900
Vietnam	240	300	1,600
Other countries	71	90	26,000
World total (ilmenite, rounded)	[8]5,500	[8]6,200	[8]870,000
Rutile:			
United States	([8])	([8])	([8])
Australia	380	450	[9]29,000
India	19	20	7,400
Kenya	84	80	13,000
Mozambique	7	7	880
Senegal	9	10	NA
Sierra Leone	130	160	490
South Africa	67	65	8,300
Ukraine	95	90	2,500
Other countries	8	15	400
World total (rutile, rounded)	[8]800	[8]900	[8]62,000
World total (ilmenite and rutile, rounded)	6,300	7,100	930,000

World Resources: Ilmenite accounts for about 89% 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 TiO_2 pigment, titanium metal, and welding-rod coatings.

[e]Estimated. NA Not available.

[1]See also Titanium and Titanium Dioxide.

[2]Rounded to the nearest 100,000 tons to avoid disclosing company proprietary data.

[3]Defined as production + imports – exports.

[4]Source: Industrial Minerals; yearend average of high-low price.

[5]Landed duty-paid value based on U.S. imports for consumption. Data series revised to reflect annual average price range of significant importing countries.

[6]Defined as imports – exports.

[7]See Appendix C for resource and reserve definitions and information concerning data sources.

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

[9]For Australia, Joint Ore Reserves Committee-compliant reserves for ilmenite and rutile were about 57 million and 7 million tons, respectively.

[10]Mine production is primarily used to produce titaniferous slag.