

ILMENITE¹(Data in thousand metric tons of contained TiO₂, unless noted)

Domestic Production and Use: Two firms produced ilmenite concentrate from three heavy-mineral sands operations in Florida and one produced ilmenite in California as a byproduct of sand and gravel production. Based on average prices, the value of U.S. ilmenite consumption in 1995 was about \$250 million. Major coproducts of ilmenite from heavy mineral sand deposits are rutile and zircon. About 99% of the ilmenite and titanium slag was consumed by five titanium pigment producers. The remainder was used in welding rod coatings and for manufacturing alloys, carbide, and chemicals.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Production	W	W	W	W	W
Imports for consumption ²	462	615	564	584	608
Exports ^e	12	16	7	9	12
Consumption: ² Reported	751	882	889	W	920
Apparent	W	W	W	W	W
Price, dollars per metric ton:					
Ilmenite:					
Bulk, 54% TiO ₂ , f.o.b. Australian ports	72	65	63	77	80
Slag: ^e					
80% TiO ₂ , f.o.b. Sorel, Quebec	293	276	276	278	300
85% TiO ₂ , f.o.b. Richards Bay, South Africa	293	322	330	334	350
Stocks, mine, distributor and consumer, yearend ²	218	254	218	208	200
Employment, mine and mill ³	395	400	395	400	400
Net import reliance ⁴ as a percent of apparent consumption	W	W	W	W	W

Recycling: None.

Import Sources (1991-94): South Africa, 60%; Australia, 25%; Canada, 10%; and other, 5%.

Tariff:	Item	Number	Most favored nation (MFN)	Non-MFN⁵
			12/31/95	12/31/95
	Ilmenite and ilmenite sand	2614.00.6020	Free	Free.
	Titanium slag	2620.90.5000	Free	Free.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Government Stockpile: None.

ILMENITE

Events, Trends, and Issues: Another record year of titanium pigment production resulted in a moderate increase in the domestic consumption of ilmenite plus titanium slag. Total imports of ilmenite plus slag increased about 4% with Australia, Canada, and South Africa contributing more than 75% of imports. Imports from Brazil, India, and Ukraine increased significantly.

Exploration and development of titanium mineral deposits were on the rise in 1995. In South Africa, a new producer of titanium concentrates was expected to commission a titanium slag operation by yearend. At full production, the operation was expected to produce 195,000 tons per year of slag. In Western Australia, plans were announced to proceed with the development of the Beenup deposit. The deposit was reported to be 4% heavy mineral sands and low in impurities with the potential for 500,000 tons per year of ilmenite.

Domestic environmental problems related to ilmenite include (1) land use conflicts where heavy-mineral sands deposits exist principally along the Atlantic coast and (2) the potential for water pollution from pigment-producing processes. Solutions to the latter problem include the development of economic, environmentally acceptable processes for making synthetic rutile or titanium tetrachloride from lower grade ilmenites and the development of methods to recover and recycle spent sulfuric acid as well as to neutralize and control the effluents produced. The two U.S. producers using the sulfate process treated their spent acid effluent with calcium carbonate and lime, producing a gypsum byproduct.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁶	Reserve base ⁶
	1994	1995 ^e		
United States	W	W	8,000	59,000
Australia	1,010	1,030	33,000	88,000
Brazil	50	50	18,000	18,000
Canada (slag)	611	610	31,000	36,000
China	78	80	30,000	41,000
Egypt	—	—	—	1,700
Finland	—	—	1,400	1,400
India	162	170	30,000	38,000
Italy	—	—	—	2,200
Madagascar	—	—	—	19,000
Malaysia	159	160	—	1,000
Norway (ilmenite and slag)	315	320	40,000	40,000
South Africa (slag)	632	750	63,000	63,000
Sri Lanka	32	30	13,000	13,000
Ukraine	75	100	5,900	13,000
Other countries	32	8	1,000	1,000
World total (rounded)	<u>73,160</u>	<u>73,310</u>	<u>270,000</u>	<u>440,000</u>

World Resources: Ilmenite supplies about 90% of the world's demand for titaniferous material. World ilmenite resources total about 1 billion tons of titanium dioxide. Major resources occur in Australia, Canada, China, India, New Zealand, Norway, South Africa, Ukraine, and the United States.

Substitutes: Rutile and synthetic rutile were extensively used to produce titanium dioxide pigment.

^eEstimated. W Withheld to avoid disclosing company proprietary data.

¹See also Rutile and Titanium and Titanium Dioxide.

²Includes titanium slag from Canada, Norway, and South Africa and leucogene from Australia.

³Includes operating employees shown under Rutile, subject to the same footnoted comments.

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

⁵See Appendix B.

⁶See Appendix C for definitions.

⁷Excludes U.S. production.