

RUTILE¹(Data in thousand metric tons of contained TiO₂, unless noted)

Domestic Production and Use: Rutile was produced at one mine in Florida. At two other mines in Florida, rutile was included in a bulk concentrate containing mostly ilmenite and leucoxene. The major coproduct of these mines is zircon. Synthetic rutile was produced at one plant in Alabama. The value of U.S. rutile consumption in 1995, including synthetic rutile, was about \$240 million. Two firms, with facilities in Nevada and Oregon, used titanium tetrachloride primarily made from rutile to manufacture titanium. Of 16 consuming firms, mainly in the Eastern United States, 5 companies used 96% of the rutile consumed to produce titanium dioxide (TiO₂) pigment. Welding-rod coatings and miscellaneous applications, which include fiberglass and titanium metal, consumed 4%.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Production	W	W	W	W	W
Imports for consumption ²	226	299	349	311	300
Exports ^e	4	7	3	4	9
Shipments from Government stockpile excesses	—	—	1	18	17
Consumption: Reported ²	336	438	436	478	490
Apparent	W	W	W	W	W
Price, dollars per ton of rutile, yearend:					
Bulk, f.o.b. Australian ports	545	405	378	420	600
Bulk, f.o.b. U.S. east coast	628	NA	NA	NA	NA
Stocks, mine, distributor and consumer, yearend	197	140	179	141	130
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):** Australia, 50%; South Africa, 26%; Sierra Leone, 22%; and other, 2%.

Tariff:	Item	Number	Most favored nation (MFN) 12/31/95	Non-MFN⁵ 12/31/95
	Rutile concentrate	2614.00.6040	Free	Free.
	Synthetic rutile	2614.00.3000	5% ad val.	30% ad val.

Depletion Allowance: 22% (Domestic), 14% (Foreign).**Government Stockpile:****Stockpile Status—9-30-95**

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposals Jan.-Sept. 95
Stockpile-grade rutile (gross weight)	0.27	12.3	0.03	16.9

RUTILE

Events, Trends, and Issues: Another record year of titanium pigment production resulted in a slight increase in the domestic consumption of natural and synthetic rutile. Total imports of the two forms of rutile decreased about 4%. Australia and South Africa supplied about 95% of total imports.

Early in 1995, rebel forces took control of mining operations at Sierra Leone's sole producer of natural rutile. Although control of the mine was later regained by Government forces, the mine was not believed to be operating at yearend. The operation was the largest natural rutile operation in the world and supplied about one-third of the world's supply of natural rutile.

Prices for rutile and synthetic rutile concentrates increased significantly in 1995. Rising prices were driven by the loss of Sierra Leone as a major source of supply and an upswing in global demand for pigments.

The Defense Logistics Agency (DLA) continued its program to dispose of rutile held in the National Defense Stockpile (NDS). As of September, DLA had awarded almost all of the rutile held in the Government's NDS. Only 267 dry tons of rutile were left in the NDS as uncommitted inventory.

Fewer environmental pollution problems are encountered when pigment is produced from rutile rather than ilmenite. The chloride process, using a rutile feed, generates about 0.2 ton of waste per ton of TiO₂ product; the sulfate process, using ilmenite, generates about 3.5 tons of waste per ton of product. Producing synthetic rutile from ilmenite results in about 0.7 ton of waste, mainly iron oxide, per ton of product. Direct chlorination of ilmenite generates about 1.2 tons of waste, mainly ferric chloride, per ton of TiO₂.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁶	Reserve base ⁶
	1994	1995 ^e		
United States	W	W	500	1,800
Australia	212	220	4,300	43,000
Brazil	2	2	40	85,000
India	13	13	6,600	7,700
Italy	—	—	—	8,800
Sierra Leone	131	40	3,100	3,100
South Africa	73	80	8,300	8,300
Sri Lanka	2	2	4,800	4,800
Ukraine	3	3	2,500	2,500
World total (may be rounded)	7440	7360	30,000	160,000

World Resources: Identified world resources of rutile (including anatase) total about 230 million tons of contained TiO₂. Major rutile resources occur in Australia, India, Italy, Sierra Leone, South Africa, and the United States.

Substitutes: Ilmenite, titaniferous slag, and synthetic rutile made from ilmenite may be used instead of natural rutile for making pigment, metal, and welding-rod coatings.

^eEstimated. NA Not available. W Withheld to avoid disclosing company proprietary data.

¹See also Ilmenite and Titanium and Titanium Dioxide.

²Includes synthetic rutile.

³Employment at three sand deposit operations in Florida, which produced either rutile concentrate or a titanium mineral concentrate, where ilmenite and zircon were major coproducts and where employees were not assigned to specific commodities.

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

⁵See Appendix B.

⁶See Appendix C for definitions.

⁷Excludes U.S. production.