

TITANIUM AND TITANIUM DIOXIDE¹

(Data in metric tons, unless noted)

Domestic Production and Use: Titanium sponge metal was produced by two firms in Nevada and Oregon. Ingot was made by the two sponge producers and by nine other firms in seven States. About 30 companies produced titanium forgings, mill products, and castings. In 1995, an estimated 65% of the titanium metal was used in aerospace applications. The remaining 35% was used in the chemical process industry, power generation, marine, ordnance, medical, and other nonaerospace applications. The value of sponge metal consumed was about \$180 million, assuming an average selling price of \$4.00 per pound.

In 1995, titanium dioxide (TiO₂) pigment, valued at about \$2.6 billion, was produced by 5 companies at 11 plants in 9 States. In 1995, TiO₂ was used in paint, varnishes, and lacquers, 47%; paper, 24%; plastics, 18%; and other, 11%. Other uses of TiO₂ included catalysts, ceramics, coated fabrics and textiles, floor coverings, printing ink, roofing granules and other.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Production, sponge	13,366	W	W	W	W
Imports for consumption, sponge	612	684	2,163	6,470	8,980
Exports, all metal forms	12,130	8,019	7,894	9,660	10,700
Shipments from Government stockpile excesses	—	—	—	—	—
Consumption of sponge metal, reported	13,594	14,165	15,140	17,200	21,000
Price, sponge, reported sales, dollars per pound, yearend	4.75	3.75	3.75	4.00	4.00
Stocks, sponge, industry yearend ^e	2,852	1,929	2,905	5,570	5,600
Employment, reduction plants ^e	850	350	350	300	300
Net import reliance, ² sponge only, as a percent of apparent consumption	4	W	W	W	W
Titanium dioxide:					
Production	991,976	1,137,038	1,161,561	1,250,000	1,280,000
Imports for consumption	166,094	169,260	171,939	176,000	194,000
Exports	211,854	270,422	290,191	352,000	381,000
Consumption, apparent	936,000	1,000,000	1,030,000	1,100,000	1,090,000
Price, rutile, list, dollars per pound, yearend	0.99	0.94	0.94	0.93	0.96
Stocks, producer, yearend	72,108	108,173	123,079	106,000	111,000
Employment ^e	4,500	4,500	4,600	4,600	4,600
Net import reliance ² as a percent of apparent consumption	E	E	E	E	E

Recycling: New scrap metal recycled by the titanium industry was about 20,000 tons in 1995. In addition, estimated use of titanium as scrap and in the form of ferrotitanium made from scrap by the steel industry was 4,700 tons; by the superalloy industry, 610 tons; and in other industries, 760 tons. Old scrap reclaimed was about 200 to 400 tons. Minor amounts of TiO₂ were recycled.

Import Sources (1991-94): Sponge metal: Russia, 67%; Japan, 18%; China, 6%; United Kingdom, 3%; Ukraine 3%; Former Soviet Union, 2%; and other, 1%. Titanium dioxide pigment: Canada, 32%; Germany, 14%; United Kingdom, 12%; France, 12%; and other, 30%.

Tariff:	Item	Number	Most favored nation (MFN) 12/31/95	Non-MFN³ 12/31/95
	Waste and scrap metal	8108.10.1000	Free	Free.
	Unwrought metal	8108.10.5000	15.0% ad val.	25.0% ad val.
	Wrought metal	8108.90.6000	15.0% ad val.	45.0% ad val.
	Titanium dioxide pigments	3206.10.0000	6.0% ad val.	30.0% ad val.
	Titanium oxides	2823.00.0000	6.0% ad val.	30.0% ad val.

Depletion Allowance: Not applicable.

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Government Stockpile: In addition to the quantities shown below, the stockpile contained 9,860 tons of nonstockpile-grade sponge metal.

Stockpile Status—9-30-95

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposals Jan.-Sept. 95
Titanium sponge metal	23,600	—	—	—

Events, Trends, and Issues: Domestic production of titanium pigments was at a record level in 1995 and demand decreased slightly. A shift in the global supply demand scenario pushed demand closer to the available capacity resulting in moderate price increases. All of the major producers were in the process of expanding capacity.

Restocking of inventories by the aerospace industry and moderate growth in nonaerospace markets caused a significant increase in the reported consumption of titanium sponge in 1995. As in 1994, imports of sponge from Russia constituted a substantial portion of total imports. Ingot production from titanium sponge and scrap also increased significantly.

World Sponge Metal Production and Sponge and Pigment Capacity:

	Sponge production		Capacity 1995	
	1994	1995 ^e	Sponge	Pigment
United States	W	W	29,500	1,330,000
Australia	—	—	—	150,000
Belgium	—	—	—	80,000
Canada	—	—	—	74,000
China ^e	2,000	2,000	7,000	40,000
Finland	—	—	—	80,000
France	—	—	—	230,000
Germany	—	—	—	350,000
Italy	—	—	—	80,000
Japan	14,400	16,000	25,800	320,000
Kazakstan ^e	5,000	5,000	35,000	1,000
Russia ^e	12,000	12,000	35,000	20,000
Spain	—	—	—	65,000
Ukraine ^e	—	—	—	120,000
United Kingdom ^e	—	—	—	275,000
Other countries	—	—	—	585,000
World total (may be rounded)	⁴ 33,000	⁴ 35,000	130,000	3,800,000

World Resources: Resources of titanium minerals are discussed in the sections on ilmenite and rutile. Most titanium for domestic sponge production was obtained from rutile or rutile substitutes. The sources for pigment production were ilmenite, slag, and rutile.

Substitutes: There are few substitutes for titanium in aircraft and space use without some sacrifice of performance. For industrial uses, high-nickel steel, zirconium, and, to a limited extent, the superalloy metals may be substituted. There is no cost-effective substitute for TiO₂ pigment.

^eEstimated. E Net exporter. W Withheld to avoid disclosing company proprietary data.

¹See also Ilmenite and Rutile.

²Defined as imports - exports + adjustments for Government and industry stock changes.

³See Appendix B.

⁴Excludes U.S. production.