

THALLIUM

(Data in kilograms of thallium content, unless otherwise noted)

Domestic Production and Use: Thallium is a byproduct metal recovered in some countries from flue dusts and residues collected in the smelting of copper, zinc, and lead ores. Although thallium was contained in ores mined or processed in the United States, it was not recovered domestically in 1996. The estimated value of thallium consumed in 1996 was \$360,000. Research and development in the use of thallium-base superconductor materials accounted for a significant portion of domestic consumption in 1996. Thallium also was used in electronics, alloys, glass manufacturing, and pharmaceuticals.

Salient Statistics—United States:	1992	1993	1994	1995	1996^e
Imports for consumption ¹	838	273	630	1,179	200
Exports	NA	NA	NA	NA	NA
Consumption ^e	800	300	630	700	300
Price, metal, dollars per kilogram ²	750	800	950	1,100	1,200
Net import reliance ³ as a percent of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (1992-95): Belgium, 52%; Canada, 24%; and Mexico, 24%.

Tariff: Item	Number	Most favored nation (MFN)⁴	Non-MFN⁵
		12/31/96	12/31/96
Unwrought; waste and scrap; powders	8112.91.6000	4.9% ad val.	25% ad val.

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

Government Stockpile: None.

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Events, Trends, and Issues: Research and development activities of both a basic and applied nature were conducted during 1996 to improve and expand the use of thallium. These experimental activities concerned essentially all existing uses of thallium as well as its potential use in superconductor alloys.

Thallium metal and its compounds are highly toxic materials and are strictly controlled to prevent a threat to humans and the environment. Thallium and its compounds can be absorbed into the human body by skin contact, ingestion, or inhalation of dust or fumes. The United Nations Environment Program's Basel Convention, instituted to control the export of "hazardous wastes" from developed to developing nations, currently includes thallium, thallium compounds, and metal waste consisting of alloys of thallium among its list of hazardous materials to be banned from export. It is expected that, in accordance with the Basel Convention, export restrictions on thallium-containing materials will be in place by January 1, 1998.

World Mine Production, Reserves, and Reserve Base:⁶

	Mine production		Reserves ⁷	Reserve base ⁷
	1995	1996		
United States	(8)	(8)	32,000	120,000
Other countries	15,000	15,000	350,000	530,000
World total (may be rounded)	15,000	15,000	380,000	650,000

World Resources: World resources of thallium contained in zinc resources are about 17 million kilograms; most are located in Europe, Canada, and the United States. An additional 630 million kilograms is in the world's coal resources. The average thallium content of the Earth's crust has been estimated at 0.7 parts per million.

Substitutes: While other light-sensitive materials can substitute for thallium and its compounds in specific electronic applications, ample supplies of thallium discourage development of substitute materials.

⁶Estimated. NA Not available.

¹Unwrought; waste and scrap; powders, including thallium contained in compounds.

²Estimated price of 99.999%-pure granules in 100-gram lots.

³Defined as imports - exports + adjustments for Government and industry stock changes.

⁴No tariff for Canada and Mexico according to the North American Free Trade Agreement.

⁵See Appendix B.

⁶Estimates, based on thallium content of zinc ores.

⁷See Appendix C for definitions.

⁸Thallium contained in mined base metal ores, estimated at 450 to 500 kilograms per year, is separated from the base metals but not extracted for commercial use.