

TANTALUM

(Data in metric tons of tantalum content, unless otherwise noted)

Domestic Production and Use: There has been no significant domestic tantalum-mining industry since 1959. Domestic tantalum resources are of low grade, some mineralogically complex, and most are not commercially recoverable. Most metal, alloys, and compounds were produced by four companies; tantalum units were obtained from imported concentrates and metal, and from foreign and domestic scrap. Tantalum was consumed mostly in the form of metal powder, ingot, fabricated forms, compounds, and alloys. The major end use for tantalum was in the production of electronic components, approximately 60% of use, mainly in tantalum capacitors. The value of tantalum consumed in 1998 was estimated at around \$160 million.

Salient Statistics—United States:	1994	1995	1996	1997	1998^e
Production, mine	—	—	—	—	—
Imports for consumption, concentrate, tin slags, and other ¹	NA	NA	NA	NA	NA
Exports, concentrate, metal, alloys, waste, and scrap ^e	190	220	290	340	370
Consumption: Reported, raw material	NA	NA	NA	NA	NA
Apparent	430	515	490	550	550
Price, tantalite, dollars per pound ²	26.24	26.98	27.75	28.76	33.80
Stocks, industry, processor, yearend	NA	NA	NA	NA	NA
Employment	NA	NA	NA	NA	NA
Net import reliance ³ as a percent of apparent consumption	80	80	80	80	80

Recycling: Combined prompt industrial and obsolete scrap consumed represented about 20% of apparent consumption.

Import Sources (1994-97): Australia, 31%; Thailand, 15%; China, 10%; Brazil, 7%; and other, 37%.

Tariff: Item	Number	Normal Trade Relations (NTR) 12/31/98	Non-NTR⁴ 12/31/98
Synthetic tantalum-columbium concentrates	2615.90.3000	Free	30% ad val.
Tantalum ores and concentrates	2615.90.6060	Free	Free.
Tantalum oxide	2825.90.9000	3.7% ad val.	25% ad val.
Potassium fluotantalate	2826.90.0000	3.1% ad val.	25% ad val.
Tantalum, unwrought:			
Waste and scrap	8103.10.3000	Free	Free.
Powders	8103.10.6030	2.7% ad val.	25% ad val.
Alloys and metal	8103.10.6090	2.7% ad val.	25% ad val.
Tantalum, wrought	8103.90.0000	4.6% ad val.	45% ad val.

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

Government Stockpile: For fiscal year (FY) 1998, ending September 30, 1998, the Defense Logistics Agency sold about 1 ton of tantalum contained in tantalum carbide valued at about \$131,000, about 9 tons of tantalum contained in tantalum oxide valued at about \$1.3 million, and about 45 tons of tantalum contained in tantalum minerals valued at about \$6.2 million from the National Defense Stockpile (NDS). The sales exhausted the Annual Materials Plan quantity of tantalum carbide, tantalum oxide, and tantalum minerals for disposal in FY 1998. For FY 1999, the Department of Defense proposed to dispose of about 2 tons of tantalum contained in tantalum carbide, about 23 tons of tantalum contained in tantalum metal powder, about 18 tons of tantalum contained in tantalum metal ingots, about 91 tons of tantalum contained in tantalum minerals, and about 9 tons of tantalum contained in tantalum oxide. The NDS uncommitted inventories shown below include a small quantity in nonstockpile-grade tantalum capacitor-grade metal powder and about 454 tons of tantalum contained in nonstockpile-grade minerals.

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Stockpile Status—9-30-98⁵

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1998	Disposals FY 1998
Tantalum:					
Carbide powder	11	—	1	1	1
Metal:					
Capacitor-grade	73	—	—	—	—
Ingots	111	—	—	—	—
Minerals	1,090	45	295	45	45
Oxide	56	—	—	9	9

Events, Trends, and Issues: Total consumption of tantalum in 1998 remained about the same as that in 1997, with somewhat of a slowdown in the second half of the year. The increase in tantalum consumption in 1997 was attributed to strong demand for tantalum capacitors in products such as portable telephones, pagers, video cameras, personal computers, and automotive electronics. U.S. sales of tantalum capacitors for the first one-half year increased by about 5% compared with that of the similar period in 1997. For the same period, imports for consumption of tantalum mineral concentrates were up, with Australia supplying almost 60% of quantity and about 70% of value. Exports continued to rise, with Hong Kong (mostly waste and scrap), Israel, Germany, and Brazil the major recipients of the tantalum materials. The published spot price for tantalite ore, which began the year at a range of \$32 to \$34 per pound of contained pentoxide, rose to \$33 to \$35 in March where it remained through early November. The most recent industry source on tantalum prices indicated the following (per pound of contained tantalum): capacitor-grade powder, \$135 to \$240; capacitor wire, \$180 to \$250; vacuum-grade metal, \$75 to \$95; and sheet, \$100 to \$150. Tantalum oxide was selling at an average of \$40 to \$90 per pound of oxide, and the average selling price for tantalum carbide was \$45 to \$60 per pound. It is estimated that in 1999 domestic mine production will be zero, and U.S. apparent consumption will be less than 600 tons.

World Mine Production, Reserves, and Reserve Base:

	Mine production ⁶		Reserves ⁷	Reserve base ⁷
	1997	1998		
United States	—	—	—	Negligible
Australia	302	300	11,000	NA
Brazil	55	55	900	1,400
Canada	54	55	1,800	2,300
Congo (Kinshasa) ⁸	—	—	1,800	4,500
Nigeria	2	2	3,200	4,500
Other countries ⁹	—	—	NA	NA
World total (may be rounded)	413	412	19,000	24,000

World Resources: Most of the world's resources of tantalum occur outside the United States. On a worldwide basis, identified resources of tantalum are considered adequate to meet projected needs. These resources are largely in Australia, Brazil, Canada, Congo (Kinshasa), and Nigeria. The United States has about 1,400 tons of tantalum resources in identified deposits, all of which were considered uneconomic at 1998 prices.

Substitutes: The following materials can be substituted for tantalum, but usually with less effectiveness: columbium in superalloys and carbides; aluminum and ceramics in electronic capacitors; glass, titanium, zirconium, columbium, and platinum in corrosion-resistant equipment; and tungsten, rhenium, molybdenum, iridium, hafnium, and columbium in high-temperature applications.

⁶Estimated. NA Not available.

¹Metal, alloys, and synthetic concentrates; exclusive of waste and scrap.

²Average value, contained tantalum pentoxides, 60% basis.

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

⁴See Appendix B.

⁵See Appendix C for definitions.

⁶Excludes production of tantalum contained in tin slags.

⁷See Appendix D for definitions.

⁸Formerly Zaire.

⁹Bolivia, China, Russia, and Zambia also produce, or are believed to produce tantalum, but available information is inadequate to make reliable estimates of output levels.