

TANTALUM

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

Domestic Production and Use: There has been no significant domestic tantalum mining 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 three 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, more than 60% of use, mainly in tantalum capacitors. Major end uses for tantalum capacitors include automotive electronics, pagers, personal computers, and portable telephones. The value of tantalum consumed in 2003 was estimated at about \$170 million.

Salient Statistics—United States:	1999	2000	2001	2002	2003^e
Production, mine	—	—	—	—	—
Imports for consumption:					
Mineral concentrates ^e	320	650	690	710	550
Tantalum metal and tantalum-bearing alloys ^e	244	251	316	266	210
Exports, concentrate, metal, alloys, waste, scrap ^e	480	530	600	490	540
Government stockpile releases ^{e, 1}	5	242	(53)	16	216
Consumption, apparent	555	650	550	500	500
Price, tantalite, dollars per pound ²	34.00	220.00	37.00	31.00	27.50
Net import reliance ³ as a percentage of apparent consumption	80	80	80	80	80

Recycling: Tantalum was recycled mostly from new scrap that was generated during the manufacture of tantalum-related electronic components and new and old scrap products of tantalum-containing cemented carbides and superalloys. Combined prompt industrial and obsolete scrap consumed represented about 20% of apparent consumption.

Import Sources (1999-2002): Australia, 54%; Canada, 8%; China, 8%; Kazakhstan, 8%; and other, 22%.

Tariff: Item	Number	Normal Trade Relations 12/31/03
Synthetic tantalum-columbium concentrates	2615.90.3000	Free.
Tantalum ores and concentrates	2615.90.6060	Free.
Tantalum oxide	2825.90.9000	3.7% ad val.
Potassium fluotantalate	2826.90.0000	3.1% ad val.
Tantalum, unwrought:		
Powders	8103.20.0030	2.5% ad val.
Alloys and metal	8103.20.0090	2.5% ad val.
Tantalum, waste and scrap	8103.30.0000	Free.
Tantalum, other	8103.90.0000	4.4% ad val.

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

Government Stockpile: For fiscal year 2003, the Defense National Stockpile Center (DNSC) sold about 1 ton of tantalum capacitor-grade metal powder valued at about \$107,000, about 18 tons of tantalum vacuum-grade metal ingots valued at about \$2.17 million, and about 196 tons of tantalum contained in tantalum-columbium minerals valued at about \$10.1 million and disposed of about 3 tons of tantalum contained in tantalum oxide from the National Defense Stockpile (NDS). There were no sales of tantalum carbide powder in fiscal year 2003. The DNSC announced maximum disposal limits in fiscal year 2004 of about 2 tons⁴ of tantalum contained in tantalum carbide powder, about 18 tons⁴ of tantalum contained in tantalum metal ingots, about 18 tons⁴ of tantalum contained in tantalum metal powder, about 227 tons of tantalum contained in tantalum minerals, and about 9 tons of tantalum contained in tantalum oxide. The NDS uncommitted inventories shown below include about 129 tons of tantalum contained in nonstockpile-grade tantalum minerals.

TANTALUM

Material	Stockpile Status—9-30-03 ⁵				
	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2003	Disposals FY 2003
Tantalum:					
Carbide powder	6	—	6	2	—
Metal:					
Powder	17	17	17	⁴ 23	1
Ingots	27	7	27	18	18
Minerals	670	175	670	227	196
Oxide	28	—	28	9	3

Events, Trends, and Issues: Total consumption of tantalum was about the same compared with that in 2002. Overall tantalum imports decreased. Imports for consumption of tantalum mineral concentrates were down by more than 20%, with Australia supplying about 85% of quantity and about 90% of value. Exports increased; Brazil, Germany, Israel, Japan, Mexico, and the United Kingdom were the major recipients of the tantalum materials. In October, quoted spot price ranges for tantalum ore (per pound tantalum pentoxide content), in three published sources, were \$20 to \$25, \$20 to \$30, and \$30 to \$40. The most recent published industry source (August 1999) on tantalum product prices indicated that the average selling prices per pound tantalum content for some tantalum products were as follows: capacitor-grade powder, \$135 to \$260; capacitor wire, \$180 to \$270; and vacuum-grade metal for superalloys, \$75 to \$100. Public information on current prices for these tantalum products was not available; pricing is normally established by negotiation between buyer and seller.

World Mine Production, Reserves, and Reserve Base: The reserves and reserve base estimates for Australia and the reserves base estimate for Brazil have been revised based on new information from those countries.

	Mine production ⁶		Reserves ⁷	Reserve base ⁷
	2002	2003 ^e		
United States	—	—	—	Negligible
Australia	940	820	40,000	80,000
Brazil	200	200	NA	73,000
Burundi	28	15	NA	NA
Canada	58	58	3,000	NA
Congo (Kinshasa)	60	30	NA	NA
Ethiopia	35	40	NA	NA
Mozambique	12	12	NA	NA
Nigeria	3	10	NA	NA
Rwanda	53	20	NA	NA
Uganda	5	5	NA	NA
Zimbabwe	144	17	NA	NA
Other countries ⁸	—	—	NA	NA
World total (rounded)	1,540	1,230	43,000	150,000

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, and Canada. The United States has about 1,500 tons of tantalum resources in identified deposits, all of which were considered uneconomic at 2003 prices.

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

^eEstimated. NA Not available. — Zero.

¹Net quantity (uncommitted inventory). Parentheses indicate negative number (increase in inventory).

²Yearend average value, contained pentoxides.

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

⁴Actual quantity limited to remaining sales authority or inventory.

⁵See Appendix B for definitions.

⁶Excludes production of tantalum contained in tin slags.

⁷See Appendix C for definitions.

⁸Bolivia, China, Russia, and Zambia also produce (or are believed to produce) tantalum mineral concentrates, but available information is inadequate to make reliable estimates of output levels.