

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 2002 was estimated at about \$180 million.

Salient Statistics—United States:	1998	1999	2000	2001	2002^e
Production, mine	—	—	—	—	—
Imports for consumption:					
Mineral concentrates ^e	380	320	650	690	700
Tantalum metal and tantalum-bearing alloys ^e	208	244	251	316	300
Exports, concentrate, metal, alloys, waste, scrap ^e	440	480	530	700	600
Government stockpile releases ^{e 1}	213	5	242	(53)	13
Consumption, apparent	738	555	650	550	525
Price, tantalite, dollars per pound ²	34.00	34.00	220.00	37.00	30.00
Net import reliance ³ as a percentage of apparent consumption	80	80	80	80	80

Recycling: Tantalum was mostly recycled 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 (1998-2001): Australia, 49%; China, 10%; Japan, 8%; Thailand, 8%; and other, 25%.

Tariff: Item	Number	Normal Trade Relations 12/31/02
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 2002, the Defense National Stockpile Center (DNSC) sold about 18 tons of tantalum contained in tantalum metal ingots valued at about \$3.53 million from the National Defense Stockpile (NDS). There were no sales of tantalum carbide powder, tantalum metal powder, tantalum minerals, and tantalum oxide in fiscal year 2002. The DNSC proposed maximum disposal limits in fiscal year 2003 of about 2 tons of tantalum contained in tantalum carbide powder, about 18 tons of tantalum contained in tantalum metal ingots, about 23 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 a small quantity in nonstockpile-grade tantalum capacitor-grade metal powder and about 325 tons of tantalum contained in nonstockpile-grade tantalum minerals.

TANTALUM

Stockpile Status—9-30-02⁵

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2002	Disposals FY 2002
Tantalum:					
Carbide powder	6	—	6	2	—
Metal:					
Powder	18	16	18	⁴ 23	—
Ingots	46	6	46	18	18
Minerals	866	—	866	227	—
Oxide	31	3	31	9	—

Events, Trends, and Issues: Total consumption of tantalum decreased compared with that in 2001. Overall tantalum imports were basically unchanged. Imports for consumption of tantalum mineral concentrates increased slightly, with Australia supplying almost 80% of quantity and about 90% of value. Exports decreased; 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 \$40 to \$50, compared with the \$32 to \$39, \$25 to \$35, and \$40 to \$50, respectively, quoted in early January. 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. No domestic mine production is expected in 2003, and it is estimated that U.S. apparent consumption will be about 550 tons.

World Mine Production, Reserves, and Reserve Base:

	Mine production ⁶		Reserves ⁷	Reserve base ⁷
	2001	2002 ^e		
United States	—	—	—	Negligible
Australia	660	900	36,000	58,000
Brazil	340	340	NA	53,000
Burundi	7	7	NA	NA
Canada	77	80	3,000	NA
Congo (Kinshasa)	60	60	NA	NA
Ethiopia	47	40	NA	NA
Nigeria	3	3	NA	NA
Rwanda	95	90	NA	NA
Zimbabwe	9	7	NA	NA
Other countries ⁸	—	—	NA	NA
World total (may be rounded)	1,300	1,530	39,000	110,000

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 2002 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 thought to produce) tantalum, but available information is inadequate to make reliable estimates of output levels.