

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. The value of tantalum consumed in 2000 was estimated at about \$200 million.

Salient Statistics—United States:	1996	1997	1998	1999	2000^e
Production, mine	—	—	—	—	—
Imports for consumption:					
Concentrate, metal, alloys	563	467	588	564	700
Other ¹	NA	NA	NA	NA	NA
Exports, concentrate, metal, alloys, waste, and scrap ^e	290	340	440	480	540
Government stockpile releases ^{e,2}	34	20	213	5	133
Consumption: Reported, raw material	NA	NA	NA	NA	NA
Apparent	524	570	738	555	650
Price, tantalite, dollars per pound ³	27.75	28.76	33.79	34.00	68.00
Stocks, industry, processor, yearend	NA	NA	NA	NA	NA
Employment	NA	NA	NA	NA	NA
Net import reliance ⁴ 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 (1996-99): Australia, 38%; China, 14%; Thailand, 12%; Japan, 9%; and other, 27%.

Tariff: Item	Number	Normal Trade Relations 12/31/00
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:		
Waste and scrap	8103.10.3000	Free.
Powders	8103.10.6030	2.5% ad val.
Alloys and metal	8103.10.6090	2.5% ad val.
Tantalum, wrought	8103.90.0000	4.4% ad val.

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

Government Stockpile: For fiscal year 2000, ending September 30, 2000, the Defense National Stockpile Center (DNSC) sold about 2 tons of tantalum contained in tantalum carbide powder valued at about \$254,000, about 23 tons of tantalum capacitor-grade metal powder valued at about \$3.7 million, about 18 tons of tantalum vacuum-grade metal ingots valued at about \$3.84 million, about 134 tons of tantalum contained in tantalum minerals valued at about \$42.7 million, and about 9 tons of tantalum contained in tantalum oxide valued at about \$1.32 million from the National Defense Stockpile (NDS). The DNSC also proposed maximum disposal limits in fiscal year 2001 of about 2 tons of tantalum contained in tantalum carbide powder, about 23 tons of tantalum capacitor-grade metal powder, about 18 tons of tantalum vacuum-grade metal ingots, about 136 tons of tantalum contained in tantalum minerals, and about 9 tons of tantalum contained in tantalum oxide. In December, the DNSC sold about 2 tons of tantalum contained in tantalum carbide powder valued at about \$1.3 million and about 93 tons of tantalum contained in tantalum minerals valued at about \$91 million (about \$364 per pound tantalum pentoxide content). For calendar year 2000, total sales of tantalum minerals from the NDS averaged about \$219 per pound tantalum pentoxide content. The NDS uncommitted inventories shown below include a small quantity in nonstockpile-grade tantalum capacitor-grade metal powder and about 417 tons of tantalum contained in nonstockpile-grade minerals.

TANTALUM

Stockpile Status—9-30-00⁵

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2000	Disposals FY 2000
Tantalum:					
Carbide powder	7	—	7	2	2
Metal:					
Capacitor-grade powder	39	—	23	23	23
Ingots	81	—	27	18	18
Minerals	870	106	870	136	134
Oxide	37	—	37	9	9

Events, Trends, and Issues: Total consumption of tantalum in 2000 increased owing to continued strong demand for tantalum powder for the production of tantalum capacitors. Major end uses for tantalum capacitors include portable telephones, pagers, personal computers, and automotive electronics. Tantalum imports increased; imports for consumption of tantalum mineral concentrates rose significantly, with Australia supplying more than 60% of quantity and value. Exports increased; Israel, Hong Kong, Germany, Japan, and the United Kingdom were the major recipients of the tantalum materials. In early December, quoted spot price ranges for tantalum ore (per pound tantalum pentoxide content), in three published sources, were \$145 to \$175, \$140 to \$170, and \$200 to \$230, substantially higher than the \$33 to \$35, \$28 to \$31.50, and \$45 to \$48 quoted in early January. Strong global tantalum demand and an apparent shortage of tantalum source materials for processing contributed to the price increase. To address the tantalum source materials shortage, the world's largest producer, located in Australia, initiated a 3-year expansion program which is expected to more than double its annual production capacity to more than 1,000 tons of tantalum pentoxide contained in mineral concentrates. The most recent 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. Presumably these prices have increased, based on the escalating price for tantalum ore, but public information on current prices for these products was not available. No domestic mine production is expected in 2001, and it is estimated that U.S. apparent consumption will be about 700 tons.

World Mine Production, Reserves, and Reserve Base:

	Mine production ⁶		Reserves ⁷	Reserve base ⁷
	1999	2000 ^e		
United States	—	—	—	Negligible
Australia	350	370	25,000	45,000
Brazil	90	90	NA	3,000
Canada	52	50	3,000	5,000
Nigeria	3	3	NA	7,000
Other countries ⁸	—	—	NA	NA
World total	495	513	28,000	60,000

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, and Nigeria. The United States has about 1,500 tons of tantalum resources in identified deposits, all of which were considered uneconomic at 2000 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.

¹Synthetic concentrates, tin slags, tantalum oxide, potassium fluotantalate, and waste and scrap.

²Net quantity (uncommitted inventory).

³Average value, contained tantalum pentoxides, 60% basis.

⁴Defined as imports - exports + adjustments for Government and industry stock changes.

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.