

## 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 portable telephones, pagers, personal computers, and automotive electronics. The value of tantalum consumed in 2001 was estimated at about \$190 million.

<b>Salient Statistics—United States:</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001<sup>e</sup></b>
Production, mine	—	—	—	—	—
Imports for consumption:					
Concentrate, metal, alloys	467	588	564	901	1,000
Other <sup>1</sup>	NA	NA	NA	NA	NA
Exports, concentrate, metal, alloys, waste, and scrap <sup>e</sup>	340	440	480	530	700
Government stockpile releases <sup>e 2</sup>	20	213	5	242	(53)
Consumption:					
Reported, raw material	NA	NA	NA	NA	NA
Apparent	570	738	555	650	550
Price, tantalite, dollars per pound <sup>3</sup>	33.00	34.00	34.00	160.00	39.00
Stocks, industry, processor, yearend	NA	NA	NA	NA	NA
Employment	NA	NA	NA	NA	NA
Net import reliance <sup>4</sup> as a percentage of apparent consumption	80	80	80	80	80

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

**Import Sources (1997-2000):** Australia, 44%; China, 13%; Thailand, 10%; Japan, 9%; and other, 24%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations 12/31/01</b>
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 2001, ending September 30, 2001, the Defense National Stockpile Center (DNSC) sold about 2 tons of tantalum contained in tantalum carbide powder valued at about \$1.34 million, about 20 tons of tantalum capacitor-grade metal powder valued at about \$14.3 million, about 18 tons of tantalum vacuum-grade metal ingots valued at about \$16.1 million, about 5 tons of tantalum contained in tantalum minerals valued at about \$4.11 million, and about 9 tons of tantalum contained in tantalum oxide valued at about \$2.55 million from the National Defense Stockpile (NDS). The DNSC also proposed maximum disposal limits in fiscal year 2002 of about 2 tons of tantalum contained in tantalum carbide powder, about 23 tons<sup>5</sup> of tantalum capacitor-grade metal powder, about 18 tons of tantalum vacuum-grade metal ingots, 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 minerals.

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Material	Stockpile Status—9-30-01 <sup>6</sup>				
	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2001	Disposals FY 2001
Tantalum:					
Carbide powder	6	—	6	2	2
Metal:					
Capacitor-grade powder	18	16	2	23	20
Ingots	64	—	9	18	18
Minerals	866	—	866	227	5
Oxide	25	7	25	9	9

**Events, Trends, and Issues:** Total consumption of tantalum in 2001 decreased owing to a slowdown in the electronics sector. There was an apparent drawdown of excess tantalum inventories. Industry sources indicated that forecasts for electronic products in 2001 were overly optimistic. Overall tantalum imports increased. Imports for consumption of tantalum mineral concentrates rose by about 10%, with Australia supplying about 75% of quantity and about 60% of value. Exports increased; Brazil, China, Germany, Israel, Japan, and the Netherlands were the major recipients of the tantalum materials. In early November, quoted spot price ranges for tantalum ore (per pound tantalum pentoxide content), in three published sources, were \$30 to \$40, \$32 to \$42, and \$40 to \$50, substantially lower than the \$180 to \$240, \$250 to \$300, and \$145 to \$175 quoted in early January. Weak demand for tantalum products from the electronics sector, increased inventories, and a downturn in the global economy contributed to the price decrease. 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. Presumably these prices have increased owing to the tantalum ore price surge that occurred in 2000, 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 600 tons.

**World Mine Production, Reserves, and Reserve Base:**

	Mine production <sup>7</sup>		Reserves <sup>8</sup>	Reserve base <sup>8</sup>
	2000	2001 <sup>e</sup>		
United States	—	—	—	Negligible
Australia	485	640	36,000	58,000
Brazil	90	300	NA	53,000
Canada	57	50	3,000	5,000
Congo (Kinshasa)	130	60	NA	NA
Ethiopia	38	30	NA	NA
Nigeria	4	4	NA	7,000
Other countries <sup>9</sup>	32	30	NA	NA
World total (may be rounded)	836	1,100	39,000	120,000

**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 1,500 tons of tantalum resources in identified deposits, all of which were considered uneconomic at 2001 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.

<sup>e</sup>Estimated. NA Not available. — Zero.

<sup>1</sup>Synthetic concentrates, tin slags, tantalum oxide, potassium fluotantalate, and waste and scrap.

<sup>2</sup>Net quantity (uncommitted inventory). Parentheses indicate negative number (increase in inventory).

<sup>3</sup>Yearend average value, contained pentoxides.

<sup>4</sup>Defined as imports - exports + adjustments for Government and industry stock changes.

<sup>5</sup>Actual quantity limited to remaining sales authority or inventory.

<sup>6</sup>See Appendix B for definitions.

<sup>7</sup>Excludes production of tantalum contained in tin slags.

<sup>8</sup>See Appendix C for definitions.

<sup>9</sup>Bolivia, China, Russia, and Zambia also produce (or are thought to produce) tantalum, but available information is inadequate to make reliable estimates of output levels.