TANTALUM

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

<u>Domestic Production and Use</u>: 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, more than 60% of use, mainly in tantalum capacitors. The value of tantalum consumed in 1997 was estimated at around \$145 million.

Salient Statistics—United States:	<u>1993</u>	<u>1994</u>	<u> 1995</u>	<u> 1996</u>	<u>1997°</u>
Production, mine	_				
Imports for consumption, concentrate,					
tin slags, and other ¹	NA	NA	NA	NA	NA
Exports, concentrate, metal, alloys,					
waste, and scrap ^e	170	190	220	290	300
Consumption: Reported, raw material	NA	NA	NA	NA	NA
Apparent	410	430	515	490	500
Price, tantalite, dollars per pound ²	26.41	26.24	26.98	27.75	28.80
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	85	80	80	80	80

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

Import Sources (1993-96): Australia, 28%; Thailand, 14%; Germany, 12% (majority of imports of unknown origin); Brazil, 9%; and other, 37%.

Tariff: Item	Number	Most favored nation (MFN) 12/31/97	Non-MFN⁴ <u>12/31/97</u>
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	3% ad val.	25% ad val.
Alloys and metal	8103.10.6090	3% ad val.	25% ad val.
Tantalum, wrought	8103.90.0000	4.8% ad val.	45% ad val.

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

Government Stockpile: For fiscal year (FY) 1997, ending September 30, 1997, the Defense Logistics Agency (DLA) sold about 1 ton of tantalum contained in tantalum carbide valued at about \$135,000 and about 9 tons of tantalum contained in tantalum oxide valued at about \$1.1 million. For FY 1998, in October 1997, the DLA sold an additional 1 ton of tantalum contained in tantalum carbide valued at about \$131,000 and 9 tons of tantalum contained in tantalum oxide valued at about \$1.3 million. The sales exhausted the Annual Materials Plan quantity for tantalum carbide and tantalum oxide disposals for each of fiscal years 1997 and 1998. Additionally, the Department of Defense planned to dispose of about 45 tons of tantalum contained in tantalum minerals from the National Defense Stockpile (NDS) in FY 1998. 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—9-30-975

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1997	Disposals FY 1997
Tantalum:					
Carbide powder	12	_	2	1	1
Metal:					
Capacitor-grade	73			_	_
Ingots	111	-	_	_	_
Minerals	1,130	_	340	_	_
Oxide	65	_	9	_	9

Events, Trends, and Issues: Overall consumption of tantalum improved in 1997, with continued strong demand for tantalum capacitor-grade powder in the electronics sector. U.S. sales of tantalum capacitors for the first one-half year increased by more than 15% compared with that of the similar period in 1996. For the same period, imports for consumption of tantalum mineral concentrates were down, with Australia supplying almost 50% of quantity and more than 60% of value. Exports continued to rise with increased shipments of tantalum concentrates to Brazil and China, and tantalum waste and scrap to China. In late October the published spot price for tantalite ore was quoted in the range of \$32 to \$34 per pound of contained pentoxide. The most recent industry source on tantalum prices indicated that the average selling prices for some tantalum products were as follows (per pound of contained tantalum): powder, \$100 to \$180; wire, \$170 to \$250; 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 1998 domestic mine production will be zero and U.S. apparent consumption will be around 500 tons.

World Mine Production, Reserves, and Reserve Base:

	Mine production ^{e 6}		Reserves ^{e 7}	Reserve base ^{e 7}
	1996 [.]	1997		
United States			_	Negligible
Australia	276	290	4,500	9,100
Brazil	55	50	900	1,400
Canada	48	50	1,800	2,300
Congo (Kinshasa) ⁸	_	_	1,800	4,500
Nigeria	2	2	3,200	4,500
Zimbabwe	2	2	NA	NA
Other countries ⁹	_ <u>_</u>	<u> </u>	_1,400	_1,800
World total (may be rounded)	383	395	14,000	24,000

<u>World Resources</u>: 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)⁸, and Nigeria. The United States has about 1,400 tons of tantalum resources in identified deposits, most of which were considered uneconomic at 1997 prices.

<u>Substitutes</u>: 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.

^eEstimated. 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.