

TANTALUM

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

Domestic Production and Use: Significant U.S. tantalum mine production has not been reported since 1959. Domestic tantalum resources are of low grade, some are mineralogically complex, and most are not commercially recoverable. Companies in the United States produced tantalum alloys, capacitors, compounds, and tantalum metal from imported tantalum ores and concentrates and tantalum-containing materials. Tantalum metal and alloys were recovered from foreign and domestic scrap. Domestic tantalum consumption was not reported by consumers. Major end uses for tantalum capacitors included automotive electronics, mobile phones, and personal computers. Tantalum oxide (Ta₂O₅) was used in glass lenses to make lighter weight lenses that produce a brighter image. Tantalum carbide was used in cutting tools. The value of tantalum consumed in 2018 was estimated to exceed \$310 million as measured by the value of imports.

Salient Statistics—United States:	2014	2015	2016	2017	2018^e
Production:					
Mine	—	—	—	—	—
Secondary	NA	NA	NA	NA	NA
Imports for consumption ¹	1,230	1,240	1,060	1,460	1,820
Exports ¹	725	657	604	549	654
Shipments from Government stockpile	—	—	—	—	—
Consumption, apparent ²	508	587	460	907	1,170
Price, tantalite, dollars per kilogram of Ta ₂ O ₅ content ³	221	193	193	193	218
Net import reliance ⁴ as a percentage of apparent consumption	100	100	100	100	100

Recycling: Tantalum was recycled mostly from new scrap that was generated during the manufacture of tantalum-containing electronic components, and from tantalum-containing cemented carbide and superalloy scrap. The amount of tantalum recycled was not available, but it may be as much as 10% of apparent consumption.

Import Sources (2014–17): Tantalum ore and concentrate: Brazil, 35%; Rwanda, 31%; Australia, 15%; Congo (Kinshasa), 8%; and other, 11%. Tantalum metal and powder: China, 40%; Germany, 18%; Kazakhstan, 17%; Thailand, 11%; and other, 14%. Tantalum waste and scrap: Austria, 16%; Mexico, 14%; China, 11%; Indonesia, 10%; and other 49%.

Tariff:	Item	Number	Normal Trade Relations 12–31–18
	Synthetic tantalum-niobium concentrates	2615.90.3000	Free.
	Tantalum ores and concentrates	2615.90.6060	Free.
	Tantalum oxide ⁵	2825.90.9000	3.7% ad val.
	Potassium fluorotantalate ⁵	2826.90.9000	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:⁶

Material	Inventory As of 9–30–18	FY 2018		FY 2019	
		Potential Acquisitions	Potential Disposals⁷	Potential Acquisitions	Potential Disposals⁷
Tantalum carbide powder	1.71	—	1.71	—	1.71
Tantalum metal (gross weight)	0.084	15.4	0.09	15.4	0.09
Tantalum alloy (gross weight)	0.001	—	—	—	—

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Events, Trends, and Issues: U.S. tantalum apparent consumption (measured in contained tantalum) was estimated to have increased by 27% from that of 2017. U.S. imports for consumption increased by 24% from those of 2017. The increase was largely attributed to the increase in imports of tantalum wrought metal (40%) and tantalum unwrought metal (35%). U.S. exports increased by 19% from those of 2017. In 2018, the average monthly price of tantalum ore increased to about \$224 per kilogram of Ta₂O₅ content in September from about \$193 per kilogram of Ta₂O₅ content in January. This represented an increase of about 16% from the average price in 2017. Congo (Kinshasa) and Rwanda accounted for 66% of estimated global tantalum production in 2018.

Two companies in Western Australia began producing tantalite concentrates as byproducts of lithium operations in 2018. One company operated its Bald Hill lithium and tantalum mine and began production in April, and the other operated its Pilgangoora lithium tantalum project and completed its first shipment of concentrates in September.

The Government of Venezuela exported columbite-tantalite concentrates for the first time in the country's history in May 2018. Approximately 5 metric tons of columbite-tantalite concentrate from artisanal mining were exported to Italy.

In May 2018, the U.S. Department of the Interior, in coordination with other executive branch agencies, published a list of 35 critical minerals (83 FR 23295), including tantalum. This list was developed to serve as an initial focus, pursuant to Executive Order 13817, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals" (82 FR 60835).

In July 2018, a company from Japan acquired all shares of the niobium-tantalum business of a company from Germany. The business was headquartered in Munich, Germany, and included niobium-processing and niobium-manufacturing facilities in Baden-Württemberg and Lower Saxony States, Germany, as well as in Ibaraki Prefecture, Japan, and Rayong Province, Thailand.

World Mine Production and Reserves: Reserves for Australia and Brazil were revised based on Government and industry information.

	Mine production		Reserves ⁸
	2017	2018 ^e	
United States	—	—	—
Australia	83	90	⁹ 76,000
Brazil	110	100	34,000
China	110	120	NA
Congo (Kinshasa)	760	710	NA
Ethiopia	65	70	NA
Nigeria	153	150	NA
Rwanda	441	500	NA
Other	83	100	NA
World total (rounded)	1,810	1,800	>110,000

World Resources: Identified world resources of tantalum, most of which are in Australia, Brazil, and Canada, are considered adequate to supply projected needs. The United States has about 55,000 tons of tantalum resources in identified deposits, most of which were considered uneconomic at 2018 prices for tantalum.

Substitutes: The following materials can be substituted for tantalum, but a performance loss or higher costs may ensue: niobium and tungsten in carbides; aluminum, ceramics, and niobium in electronic capacitors; glass, molybdenum, nickel, niobium, platinum, stainless steel, titanium, and zirconium in corrosion-resistant applications; and hafnium, iridium, molybdenum, niobium, rhenium, and tungsten in high-temperature applications.

^eEstimated. NA Not available. — Zero.

¹Imports and exports include the estimated tantalum content of niobium and tantalum ores and concentrates, unwrought tantalum alloys and powder, tantalum waste and scrap, and other tantalum articles. Synthetic concentrates and niobium ores and concentrates were assumed to contain 32% Ta₂O₅. Tantalum ores and concentrates were assumed to contain 37% Ta₂O₅. Ta₂O₅ is 81.897% Ta.

²Defined as production + imports – exports + adjustments for Government stock changes.

³Price is annual average price reported by CRU Group. Estimate for 2018 includes data through September 2018.

⁴Defined as imports – exports + adjustments for Government stock changes.

⁵This category includes tantalum-containing material and other material.

⁶See Appendix B for definitions.

⁷Disposals are defined as any barter, rotation, sale, or upgrade of National Defense Stockpile stock.

⁸See Appendix C for resource and reserve definitions and information concerning data sources.

⁹For Australia, Joint Ore Reserves Committee-compliant reserves were 37,000 tons.