

TANTALUM

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

Domestic Production and Use: No significant U.S. tantalum mine production has 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, compounds, and metal from imported tantalum-containing materials, and metal and alloys were recovered from foreign and domestic scrap. Tantalum domestic consumption is not reported. Major end uses for tantalum capacitors include automotive electronics, mobile phones, and personal computers. Tantalum oxide (Ta₂O₅) is used in glass lenses to make lighter weight lenses that produce a brighter image. Tantalum carbide is used in cutting tools. The value of tantalum consumed in 2016 was estimated to exceed \$290 million as measured by the value of imports.

| Salient Statistics—United States: | 2012 | 2013 | 2014 | 2015 | 2016^e |
|---|-------------|-------------|-------------|-------------|-------------------------|
| Production: | | | | | |
| Mine | — | — | — | — | — |
| Secondary | NA | NA | NA | NA | NA |
| Imports for consumption ^{e, 1} | 1,010 | 1,110 | 1,230 | 1,220 | 1,250 |
| Exports ^{e, 1} | 577 | 844 | 725 | 657 | 594 |
| Government stockpile releases ^{e, 2} | (3) | (3) | (3) | (3) | — |
| Consumption, apparent | 434 | 261 | 508 | 560 | 661 |
| Price, tantalite, dollars per kilogram of Ta ₂ O ₅ content ⁴ | 239 | 260 | 221 | 193 | 193 |
| Net import reliance ⁵ 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.

Import Sources (2012–15): Tantalum minerals: Brazil, 38%; Rwanda, 25%; Australia, 8%; Canada, 8%; and other, 21%. Tantalum metal: China, 19%; Indonesia, 10%; Kazakhstan, 9%; Austria, 9%; and other, 53%. Tantalum waste and scrap: Indonesia, 19%; Austria, 17%; China, 14%; and other 50%. Total imports: China, 37%; Kazakhstan, 25%; Germany, 14%; Thailand, 12%; and other, 12%.

| Tariff: | Item | Number | Normal Trade Relations 12–31–16 |
|----------------|---|---------------|--|
| | Synthetic tantalum-niobium concentrates | 2615.90.3000 | Free. |
| | Tantalum ores and concentrates | 2615.90.6060 | Free. |
| | Tantalum oxide ⁶ | 2825.90.9000 | 3.7% ad val. |
| | Potassium fluorotantalate ⁶ | 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: For FY 2017, the Defense Logistics Agency (DLA) Strategic Materials announced a maximum acquisition limit for tantalum materials of about 15 tons of tantalum materials. DLA Strategic Materials planned to dispose of or upgrade 1.7 tons of tantalum carbide powder.

Stockpile Status—9–30–16⁷

| Material | Inventory | Disposal Plan FY 2016 | Disposals FY 2016 |
|-------------------------|------------------|----------------------------------|------------------------------|
| Tantalum carbide powder | 1.71 | — | — |
| Tantalum metal scrap | 0.09 | — | — |

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Events, Trends, and Issues: U.S. tantalum apparent consumption in 2016 was estimated to have increased by 40% from that of 2015. Decreased exports were the leading cause of this increase; slightly increased imports also contributed. Tantalum waste and scrap was the leading imported tantalum material, accounting for about 47% of tantalum imports. In 2016, the average monthly price of tantalum ore remained at about \$193 per kilogram of Ta₂O₅ content from January through September. This was unchanged from the average price in 2015. Rwanda accounted for about 37% of global tantalum production and Congo (Kinshasa) accounted for about 32% in 2015. Based on estimated production for 2016, it appears that the production portions have reversed.

The United States, through the enactment of Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) in 2010, made it a statutory obligation for all companies registered with the U.S. Securities and Exchange Commission (SEC) to perform due diligence to determine whether the products they manufacture, or the components of the products they manufacture, contain tantalum, tin, tungsten, and (or) gold (3TG) minerals and, if so, to determine whether these minerals were sourced from Congo (Kinshasa) and (or) its bordering countries. Under rules issued by the SEC, publicly traded companies were required to report the sources of 3TG materials used annually.

A Brazilian company's subsidiary produced niobium-tantalum alloy from its Pitinga Mine ore. Niobium and tantalum production declined and used costly electricity from diesel generators. The mine's hydroelectric plant's dike reconstruction was targeted for completion in 2016. A flotation plant expansion, designed to increase production capacity of niobium and tantalum alloy at Pitinga to 4,400 tons per year, was also expected to be in operation by the end of 2016.

World Mine Production and Reserves:

| | Mine production | | Reserves ⁸ |
|-----------------------|-----------------|-------------------|-----------------------|
| | 2015 | 2016 ^e | |
| United States | — | — | — |
| Australia | NA | NA | ⁹ 69,000 |
| Brazil | 115 | 115 | 36,000 |
| China | 60 | 60 | NA |
| Congo (Kinshasa) | 350 | 450 | NA |
| Rwanda | 410 | 300 | NA |
| Other | 117 | 140 | NA |
| World total (rounded) | 1,100 | 1,100 | >100,000 |

World Resources: Identified resources of tantalum, most of which are in Australia, Brazil, and Canada, are considered adequate to meet projected needs. The United States has about 1,500 tons of tantalum resources in identified deposits, most of which are considered uneconomic at 2016 prices.

Substitutes: The following materials can be substituted for tantalum, but usually with less effectiveness: niobium in carbides; aluminum and ceramics in electronic capacitors; glass, niobium, platinum, 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 ore and concentrate was assumed to contain 32% Ta₂O₅. Niobium ore and concentrate was assumed to contain 32% Ta₂O₅. Tantalum ore and concentrate was assumed to contain 37% Ta₂O₅. Ta₂O₅ is about 81.9% Ta.

²Government stockpile inventory reported by DLA Strategic Materials is the basis for estimating Government stockpile releases.

³Less than one-half unit.

⁴Price is annual average price reported in Consumer Research Unit Prices.

⁵Defined as imports – exports + adjustments for Government and industry stock changes.

⁶This category includes other than tantalum-containing material.

⁷See [Appendix B](#) for definitions.

⁸See [Appendix C](#) for resource and reserve definitions and information concerning data sources.

⁹For Australia, Joint Ore Reserves Committee-compliant reserves were 29,100 tons.