

TUNGSTEN

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

Domestic Production and Use: There was no known domestic commercial production of tungsten concentrates during 2016 or 2017. Approximately seven companies in the United States processed tungsten concentrates, ammonium paratungstate, tungsten oxide, and (or) scrap to make tungsten metal powder, tungsten carbide powder, and (or) tungsten chemicals. About 55% of the tungsten used in the United States was used in cemented carbide parts for cutting and wear-resistant applications, primarily in the construction, metalworking, mining, and oil and gas drilling industries. The remaining tungsten was used to make various alloys and specialty steels; electrodes, filaments, wires, and other components for electrical, electronic, heating, lighting, and welding applications; and chemicals for various applications. The estimated value of apparent consumption in 2017 was approximately \$500 million.

Salient Statistics—United States:	2013	2014	2015	2016	2017^e
Production:					
Mine	NA	NA	NA	—	—
Secondary	8,600	W	W	W	W
Imports for consumption:					
Concentrate	3,690	4,080	3,970	3,580	3,900
Other forms	8,460	8,820	6,270	6,300	10,000
Exports:					
Concentrate	1,050	1,230	398	183	700
Other forms	6,660	5,490	3,360	3,200	3,100
Government stockpile shipments:					
Concentrate	2,100	282	—	—	1,400
Other forms	—	(1)	—	—	—
Consumption:					
Reported, concentrate	W	W	W	W	W
Apparent, all forms ²	14,600	W	W	W	W
Price, concentrate, dollars per mtu WO₃,³ average,					
U.S. spot market, Platts Metals Week	358	348	302	148	245
Stocks, industry, yearend, concentrate and other forms					
	W	W	W	W	W
Net import reliance⁴ as a percentage of					
apparent consumption	41	>25	>25	>25	>50

Recycling: The estimated quantity of tungsten consumed from secondary sources by processors and end users in 2017 was withheld to avoid disclosing company proprietary data.

Import Sources (2013–16): Tungsten contained in ores and concentrates, intermediate and primary products, wrought and unwrought tungsten, and waste and scrap: China, 34%; Canada, 10%; Bolivia, 9%; Germany, 8%; and other, 39%.

Tariff: Item	Number	Normal Trade Relations 12–31–17
Ores	2611.00.3000	Free.
Concentrates	2611.00.6000	37.5¢/kg tungsten content.
Tungsten oxides	2825.90.3000	5.5% ad val.
Ammonium tungstates	2841.80.0010	5.5% ad val.
Tungsten carbides	2849.90.3000	5.5% ad val.
Ferrotungsten	7202.80.0000	5.6% ad val.
Tungsten powders	8101.10.0000	7.0% ad val.
Tungsten waste and scrap	8101.97.0000	2.8% ad val.

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

Government Stockpile:

Material	Stockpile Status—9–30–17⁵		
	Inventory	Disposal Plan FY 2017	Disposals FY 2017
Metal powder	125	35	—
Ores and concentrates	10,400	1,360	1,240
Tungsten alloys, gross weight	1	—	—

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Events, Trends, and Issues: World tungsten supply was dominated by production in China and exports from China. China's Government regulated its tungsten industry by limiting the number of mining and export licenses, imposing quotas on concentrate production, and placing constraints on mining and processing. During 2016 and 2017, China's efforts to enforce production quotas, reduce illegal mining, and improve environmental conditions resulted in limited availability of tungsten concentrates in China. Environmental inspections also reduced China's production of downstream materials such as ammonium paratungstate. Total mine production outside China was expected to be slightly higher than that of 2016. The anticipated combined decrease in production from Mongolia, Rwanda, Spain, and elsewhere was less than the combined increase in production expected from the United Kingdom, where a newly started mine was ramping up production, and Vietnam, where the largest mine outside China improved its productivity.

China was the world's leading tungsten consumer. During the first 6 to 9 months of 2017, China's consumption of tungsten concentrates and its production and exports of downstream tungsten materials were higher than those of 2016, indicating an increase in global tungsten consumption. Prices of tungsten concentrates and downstream tungsten materials continued the upward trends that began in late 2015 or early 2016.

World Mine Production and Reserves: Reserves for China, Mongolia, Portugal, Russia, Spain, the United Kingdom, and "Other countries" were revised based on company or Government reports.

	Mine production		Reserves ⁶
	2016	2017 ^e	
United States	—	—	NA
Austria	954	950	10,000
Bolivia	1,110	1,100	NA
China	72,000	79,000	1,800,000
Mongolia	753	150	63,000
Portugal	549	680	3,100
Russia	3,100	3,100	160,000
Rwanda	820	650	NA
Spain	650	570	54,000
United Kingdom	736	1,100	43,000
Vietnam	6,500	7,200	95,000
Other countries	880	860	950,000
World total (rounded)	88,100	95,000	3,200,000

World Resources: World tungsten resources are geographically widespread. China ranks first in the world in terms of tungsten resources and reserves and has some of the largest deposits. Canada, Kazakhstan, Russia, and the United States also have significant tungsten resources.

Substitutes: Potential substitutes for cemented tungsten carbides include cemented carbides based on molybdenum carbide and titanium carbide, ceramics, ceramic-metallic composites (cermets), and tool steels. Potential substitutes for other applications are as follows: molybdenum for certain tungsten mill products; molybdenum steels for tungsten steels; lighting based on carbon nanotube filaments, induction technology, and light-emitting diodes for lighting based on tungsten electrodes or filaments; depleted uranium or lead for tungsten or tungsten alloys in applications requiring high-density or the ability to shield radiation; and depleted uranium alloys or hardened steel for cemented tungsten carbides or tungsten alloys in armor-piercing projectiles. In some applications, substitution would result in increased cost or a loss in product performance.

^eEstimated. NA Not available. W Withheld to avoid disclosing company proprietary data. — Zero.

¹Less than ½ unit.

²Defined as secondary production + net import reliance.

³A metric ton unit (mtu) of tungsten trioxide (WO₃) contains 7.93 kilograms of tungsten.

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

⁵See [Appendix B](#) for definitions.

⁶See [Appendix C](#) for resource and reserve definitions and information concerning data sources.