

TUNGSTEN

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

Domestic Production and Use: Limited shipments of tungsten concentrates were made from a California mine in 2008. Approximately eight companies in the United States processed tungsten concentrates, ammonium paratungstate, tungsten oxide, and/or scrap to make tungsten powder, tungsten carbide powder, and/or tungsten chemicals. One of these companies announced that it planned to expand its tungsten processing plant in Pennsylvania. Nearly 60 industrial consumers were surveyed on a monthly or annual basis. Data reported by these consumers indicate that more than one-half of the tungsten consumed in the United States was used in cemented carbide parts for cutting and wear-resistant materials, primarily in the construction, metalworking, mining, and oil- and gas-drilling industries. The remaining tungsten was consumed to make tungsten heavy alloys for applications requiring high density; electrodes, filaments, wires, and other components for electrical, electronic, heating, lighting, and welding applications; steels, superalloys, and wear-resistant alloys; and chemicals for various applications. The estimated value of apparent consumption in 2008 was \$560 million.

Salient Statistics—United States:	2004	2005	2006	2007	2008^e
Production:					
Mine	—	—	—	W	W
Secondary	4,000	4,650	4,450	4,310	5,000
Imports for consumption:					
Concentrate	2,310	2,080	2,290	3,880	3,800
Other forms	8,240	9,070	9,700	9,050	8,900
Exports:					
Concentrate	43	52	130	109	75
Other forms	3,730	5,890	6,310	5,950	5,600
Government stockpile shipments:					
Concentrate	979	2,310	3,120	1,740	1,600
Other forms	80	404	16	31	51
Consumption:					
Reported, concentrate	W	W	W	W	W
Apparent, ¹ all forms	12,600	11,600	13,200	13,300	14,200
Price, concentrate, dollars per mtu WO ₃ , ² average:					
U.S. spot market, Platts Metals Week	49	146	200	189	185
European market, Metal Bulletin	55	123	166	165	165
Stocks, industry, yearend:					
Concentrate	W	W	W	W	W
Other forms	1,780	2,300	2,130	1,980	1,980
Net import reliance ³ as a percentage of apparent consumption	73	68	68	68	61

Recycling: In 2008, the tungsten contained in scrap consumed by processors and end users represented approximately 35% of apparent consumption of tungsten in all forms.

Import Sources (2004-07): Tungsten contained in ores and concentrates, intermediate and primary products, wrought and unwrought tungsten, and waste and scrap: China, 43%; Germany, 11%; Canada, 10%; Bolivia, 7%; and other, 29%.

Tariff: Item	Number	Normal Trade Relations⁴ 12-31-08
Ore	2611.00.3000	Free.
Concentrate	2611.00.6000	37.5¢/kg tungsten content.
Tungsten oxide	2825.90.3000	5.5% ad val.
Ammonium tungstate	2841.80.0010	5.5% ad val.
Tungsten carbide	2849.90.3000	5.5% ad val.
Ferrotungsten	7202.80.0000	5.6% ad val.
Tungsten powders	8101.10.0000	7.0% ad val.

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

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Government Stockpile:

Material	Stockpile Status—9-30-08 ⁵			
	Uncommitted inventory	Authorized for disposal	Disposal plan FY 2008	Disposals FY 2008
Metal powder	183	183	136	51
Ores and concentrates	19,800	19,800	3,630	1,450

Events, Trends, and Issues: World tungsten supply was dominated by Chinese production and exports. China's Government restricted the amounts of tungsten that could be produced and exported, imposed constraints on mining and processing tungsten ores, continued to shift the balance of export quotas towards value-added downstream tungsten materials and products, and imposed or increased export duties on many tungsten materials. The growth in China's economy during the past decade has resulted in China becoming the world's largest tungsten consumer. To conserve its resources and meet increasing domestic demand, the Chinese Government was expected to continue to limit tungsten production and exports and to increase imports of tungsten. In addition, the Chinese tungsten industry was investing in mine development projects outside China and developing technologies to increase the use of tungsten scrap and the processing of both low-grade ores and mixed scheelite-wolframite concentrates.

Numerous companies worked towards developing tungsten deposits or reopening inactive tungsten mines in Asia, Australia, Europe, and North America. In 2007-08, new production of tungsten concentrates began in Australia, China, Peru, Spain, the United States, and Uzbekistan. The serious downturn in the global financial markets in late 2008 could delay the startup of additional proposed production, however.

Health, safety, and environmental issues have been significant to the production and use of tungsten in recent years.

World Mine Production, Reserves, and Reserve Base: Production estimates for China were revised downward to represent tungsten content of concentrates; production estimates for Russia were revised downward based on new information from that country.

	Mine production		Reserves ⁶	Reserve base ⁶
	2007	2008 ^e		
United States	W	W	140,000	200,000
Austria	1,200	1,200	10,000	15,000
Bolivia	1,100	1,100	53,000	100,000
Canada	2,700	2,600	260,000	490,000
China	41,000	41,000	1,800,000	4,200,000
Korea, North	600	600	NA	35,000
Portugal	850	900	4,700	62,000
Russia	3,200	3,200	250,000	420,000
Other countries	3,880	4,000	440,000	750,000
World total (rounded)	54,500	54,600	3,000,000	6,300,000

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), diamond tools, 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 (LEDs) for lighting based on tungsten electrodes or filaments; depleted uranium for tungsten alloys or unalloyed tungsten in weights and counterweights; and depleted uranium alloys 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.

¹The sum of U.S. net import reliance and secondary production, as estimated from scrap consumption.

²A metric ton unit (mtu) of tungsten trioxide (WO₃) contains 7.93 kilograms of tungsten.

³Defined as imports – exports + adjustments for Government and industry stock changes.

⁴No tariff for Canada and Mexico. Tariffs for other countries for some items may be eliminated under special trade agreements.

⁵See Appendix B for definitions.

⁶See Appendix C for definitions.