

TUNGSTEN

(Data in metric tons, tungsten content, unless otherwise specified)

Domestic Production and Use: Tungsten has not been mined commercially in the United States since 2015. There were seven U.S. companies that have the capability to convert tungsten concentrates, ammonium paratungstate (APT), tungsten oxide, and (or) scrap to tungsten metal powder, tungsten carbide powder, and (or) tungsten chemicals. An estimated 60% of the tungsten consumed 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 remainder 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.

| <u>Salient Statistics—United States:</u> | <u>2020</u> | <u>2021</u> | <u>2022</u> | <u>2023</u> | <u>2024^e</u> |
|--|--------------------|--------------------|--------------------|--------------------|--------------------------------|
| Production: | | | | | |
| Mine | — | — | — | — | — |
| Secondary | W | W | W | W | W |
| Imports for consumption: | | | | | |
| Ores and concentrates | 2,020 | 1,600 | 2,130 | 1,640 | 1,500 |
| Other forms ¹ | 8,660 | 10,500 | 12,300 | 10,000 | 8,900 |
| Exports: | | | | | |
| Ores and concentrates | 480 | 441 | 614 | 1,510 | 2,000 |
| Other forms ² | 2,470 | 2,970 | 3,680 | 3,180 | 3,700 |
| Shipments from Government stockpile: ³ | | | | | |
| Concentrate | 728 | 1,030 | 689 | NA | NA |
| Other forms | 34 | 93 | — | NA | NA |
| Consumption: | | | | | |
| Reported, concentrate | W | W | W | W | W |
| Apparent, ⁴ all forms | W | W | W | W | W |
| Price, ⁵ concentrate, average in-warehouse Rotterdam, dollars per dry metric ton unit of tungsten trioxide ⁶ | 172 | 225 | 275 | 258 | 250 |
| Stocks, industry, concentrate and other forms, yearend | W | W | W | W | W |
| Net import reliance ⁷ as a percentage of apparent consumption | >50 | >50 | >50 | >50 | >50 |

Recycling: The estimated quantity of secondary tungsten produced and the amount consumed from secondary sources by processors and end users in 2024 were withheld to avoid disclosing company proprietary data.

Import Sources (2020–23): Ores, concentrates, and other forms:¹ China,⁸ 27%; Germany, 14%; Bolivia, 8%; Vietnam, 8%; and other, 43%.

| <u>Tariff:</u> | <u>Item</u> | <u>Number</u> | <u>Normal Trade Relations</u> <u>12–31–24</u> |
|-----------------------|---|----------------------|--|
| | Ores | 2611.00.3000 | Free. |
| | Concentrates | 2611.00.6000 | 37.5¢/kg on tungsten content. |
| | Tungsten oxides | 2825.90.3000 | 5.5% ad valorem. |
| | Ammonium tungstates | 2841.80.0010 | 5.5% ad valorem. |
| | Tungsten carbides | 2849.90.3000 | 5.5% ad valorem. |
| | Ferrotungsten and ferrosilicon tungsten | 7202.80.0000 | 5.6% ad valorem. |
| | Tungsten powders | 8101.10.0000 | 7% ad valorem. |
| | Tungsten waste and scrap | 8101.97.0000 | 2.8% ad valorem. |

Depletion Allowance: 22% (domestic), 14% (foreign).

Government Stockpile:⁹

| <u>Material</u> | <u>FY 2024</u> | | <u>FY 2025</u> | |
|------------------------|--------------------------------------|-----------------------------------|--------------------------------------|-----------------------------------|
| | <u>Potential acquisitions</u> | <u>Potential disposals</u> | <u>Potential acquisitions</u> | <u>Potential disposals</u> |
| Ores and concentrates | — | 907 | — | 499 |
| Tungsten | 266 | — | 2,041 | — |

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Events, Trends, and Issues: World tungsten supply was dominated by Chinese production and exports. Tungsten concentrate production outside China was estimated to have increased in 2024 but remained around 20% of total world production, owing in part to the addition of two new operations in Australia. A project in the Republic of Korea was nearing production; additional projects outside of China were awaiting funding for further development. Scrap continued to be an important source of raw material for the tungsten industry. Tungsten consumption is strongly influenced by economic conditions and industrial activity. China continued to be the world's leading tungsten consumer. In September, the United States Trade Representative announced a section 301 tariff increase of 25% on imports of tungsten carbides, concentrates, oxides, powders, and tungstates from China. According to Argus Media Group, global tungsten consumption was estimated to have increased slightly from that in 2023.

World Mine Production and Reserves: Reserves for China, Portugal, and Vietnam were revised based on Government reports.

| | Mine production ^e | | Reserves ¹⁰ |
|-----------------------|------------------------------|--------------|------------------------|
| | <u>2023</u> | <u>2024</u> | |
| United States | — | — | NA |
| Australia | 430 | 1,000 | ¹¹ 570,000 |
| Austria | 850 | 800 | 10,000 |
| Bolivia | 1,500 | 1,600 | NA |
| China | 66,000 | 67,000 | 2,400,000 |
| Korea, North | 1,600 | 1,700 | 29,000 |
| Portugal | 450 | 500 | 3,400 |
| Russia | 2,000 | 2,000 | 400,000 |
| Rwanda | 1,200 | 1,200 | NA |
| Spain | 650 | 700 | 66,000 |
| Vietnam | 3,500 | 3,400 | 140,000 |
| Other countries | <u>1,320</u> | <u>1,500</u> | <u>950,000</u> |
| World total (rounded) | 79,500 | 81,000 | >4,600,000 |

World Resources:¹⁰ World tungsten resources are geographically widespread. China ranked first in the world in terms of tungsten resources and reserves and had some of the largest deposits. Significant tungsten resources have been identified on every continent except Antarctica.

Substitutes: Potential substitutes for cemented tungsten carbides include cemented carbides based on molybdenum carbide, niobium carbide, or titanium carbide; ceramics; ceramic-metallic composites (cermets); and tool steels. Most of these options reduce rather than replace the amount of tungsten used. Potential substitutes for other applications are as follows: molybdenum for certain tungsten mill products; molybdenum steels for tungsten steels, although most molybdenum steels still contain tungsten; 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.

¹Includes ammonium and other tungstates; ferrotungsten; tungsten carbide powders; tungsten metal powders; tungsten oxides, chlorides, and other tungsten compounds; unwrought tungsten; wrought tungsten forms; and tungsten waste and scrap.

²Includes ammonium and other tungstates, ferrotungsten, tungsten carbide powders, tungsten metal powders, unwrought tungsten, wrought tungsten forms, and tungsten waste and scrap.

³Defined as change in total inventory from prior yearend inventory. If negative, increase in inventory. Beginning in 2023, Government stock changes no longer available.

⁴Defined for 2020–22 as mine production + secondary production + imports – exports ± adjustments for Government and industry stock changes. Beginning in 2023, Government stock changes no longer included.

⁵Source: Argus Media Group, Argus Tungsten Analytics.

⁶A metric ton unit of tungsten trioxide contains 7.93 kilograms of tungsten.

⁷Defined for 2020–22 as imports – exports ± adjustments for Government and industry stock changes. Beginning in 2023, Government stock changes no longer included.

⁸Includes Hong Kong.

⁹See Appendix B for definitions.

¹⁰See Appendix C for resource and reserve definitions and information concerning data sources.

¹¹For Australia, Joint Ore Reserves Committee-compliant or equivalent reserves were 220,000 tons.