

# wolfram

## Common Properties - Tungsten Oxide

Density (measured)	7.21 - 7.30 g/cm <sup>3</sup>
Density (X-ray)	7.27 g/cm <sup>3</sup>
Melting point	1472°C
	Significant sublimation starts already far below the melting point <750°C. The presence of water vapor enhances the volatility considerably.
Boiling point	1837°C
	At this temperature the sum of the volatile partial pressures corresponds to 1 bar. The volatile species are only polymeric molecules.
Micro Hardness	83-163 kg/mm <sup>2</sup> (50 g)
Color	Yellow (smallest diminution of oxygen changes the color to different types of green); at lower temperature (-27 to - 50 °C) it is bluish white and at temperatures <-50°C white. At elevated temperature the color changes to brownish yellow.
-D H° <sub>298</sub>	40.5 kJ/mol
Electrical resistivity	0.14 - 0.18 W cm
Homogeneity range	WO <sub>2.9873+0.003</sub>
Crystallography	Several allotropic modifications exist:
	Commercially available WO <sub>3</sub> consists almost entirely of monoclinic γ-WO <sub>3</sub> (+17°C - 330°C).

**Source:** E.Lassner and W.D.Schubert, TUNGSTEN: properties, chemistry, technology of the element, alloys and chemical compounds, ISBN 0-306-45053-4, Kluwer Academic / Plenum Publishers, New York (1990).