

Tungsten

Refractory Metals and Alloys



EFINEA

Capabilities Beyond Infinity

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74

W

183.84

Tungsten

Tungsten is a chemical element identified by the atomic number 74 and the symbol W. Tungsten is a refractory metal and most remarkable for its characteristic of having the highest melting point of all metals at 3420°C. In its pure form Tungsten's density is 19.25 g/cm³ which is 1.7 times that of lead. Also, the element has the highest boiling point at 5555°C. Tungsten's excellent high-temperature stability and high modulus of elasticity provide it with a high creep resistance. Additional material characteristics are low coefficient of thermal expansion and low vapor pressure.

Tungsten has a body-centered cubic lattice. To improve the overall ductility of pure Tungsten, additives such as Rhenium, Nickel, Copper, or Iron are added to create Tungsten Heavy Alloys or Tungsten Alloys. These alloys enhance the mechanical properties and ability to machine the material.

APPLICATIONS

High-temperature furnace components; glass-to-metal seals; electronics; medical devices; welding electrodes.

Typical Physical Properties

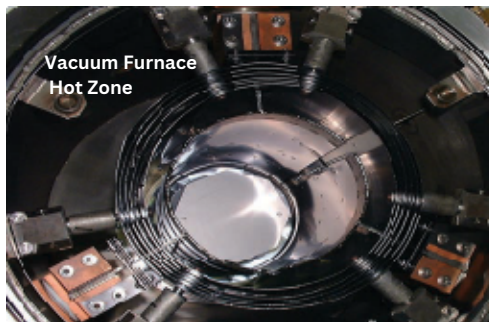
Density		19.25
Melting Point	°F	61800
	°C	3420
Electrical Conductivity @20°C	S/m	18.2
Electrical Resistivity @20°C	(Ω-mm ²)/m	0.055
Thermal Conductivity @20°C	W/(m·K)	164
Specific Heat @20°C	J/(g·K)	0.13
Coefficient of Linear Thermal Expansion @20°C	m/(m·K)	4.4

Typical Mechanical Properties

Yield Strength	MPa	750
Typical Hardness @20°C -Stress-Relief Annealed -Recrystallized	HV 30 (Vickers)	>
	HV 30 (Vickers)	-360
Modulus of Elasticity	ksi (GPa)	58 (405)
Poisson's Ratio		0.28

Source: Plansee, www.plansee.com

Typical Application



Forms Available

Plate	0.1875"- 1.000"
Precision Cut Wire	0.001"- 0.125"
Round Bar Rod	0.030"- 1.5748"
Sheet	0.002"- 0.750"

Listed above are our standard stock items. Our inventory fluctuates based on market demands. If you do not see the size you require listed above, please call us

CHEMISTRY

99.95 Tungsten (W) Minimum | Source: ASTM B760



Specifications

AAMS 7898/7899; ASTM B 760, ASTM F2 88 Type 1B; CAS 7440-33-7; UNS R07005

EFINEA METALS | www.efineametals.com | sales@efineametals.com

Special Purpose Alloys & Metal From Stock

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EFINEA Services

Slitting, Shearing, Grinding, Water Jet Cutting, Laser Cutting, Saw Cutting, Custom Stocking and Consignment Programs

Just-In-Time-Delivery

All of our standard stock items can be shipped within 24-hours of your order confirmation and most are shipped the same day. All materials certified with shipment. For special orders and non-stock materials, contact our sales team for our competitive pricing and delivery lead times

Controlled Expansion | Glass Sealing

EFINEA Supplies the highest quality metals and alloys including materials from Carpenter Technology Corp.

Kovar® | ASTM F15® Alloy

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil

Trade Names: Kovar, Pernifer®, 2918, NILO K®, DilverP1®

Alloy 42 / 46 / 48 / 52

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil

Trade Names: Pernifer®40, 46, 48, 50, NILO®42, 46, 48; Glass Sealing 42, 46, 48, 52

Free-Cut Invar "36"® Alloy

Forms: Round Bar/Rod

Invar "36" Alloy

Forms: Plate Sheet

Trade Names: Pernifer® 36, NILO®36, Invar

Super Invar 32-5®

Forms: Plate, Round Bar/Rod, Sheet

Refractory Metals & Alloys

EFINEA is your leading source for quality refractory metals & alloys. We stock DFARS Molybdenum, ML/MLS/MLR, Molybdenum TZM Tantalum & Tungsten manufactured from Plansee

Molybdenum

Forms: Plate, Round Bar/Rod, Sheet/Coiled Sheet, Threaded Rod/Nuts, Wire

Molybdenum Lanthanum Oxide (ML)

Forms: Sheet-Stress Relieved, Recrystallized

Molybdenum TZM

Forms: Plate, Round Bar/Rod, Sheet

Niobium

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil

Rhenium

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil

Tantalum

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil, Wire

Tungsten

Forms: Plate, Precision Cut wire, Round Bar/Rod, Sheet

Tungsten Alloys

Forms: Blanks, Flats, Parts, Plate/Sheet, Rod, Shapes

Soft Magnetic Alloys | EMI Shielding & Laminations

EFINEA is a distributor of "EMI shielding alloys" for VDM Metals GmbH the world's leading producer of these alloys.

EFINEA Alloy 50

Forms: Round Bar/Rod, Square Bar, Strip/Coil, Wire Rod

Trade Names: High Permeability 49®, Manganifer®50

EFINEA Alloy 79

Forms: Rectangular Bar, Round Bar/Rod, Sheet, Strip/Coil

Trade Names: Hipernom, HyMu80 Magnifer®7904, Molypermalloy, Permalloy 80®

Hiperco®50

Forms: Strip/Coil

Hiperco®50A

Forms: Plate, Round Bar/Rod, Strip/Coil

Hiperco®50 HS

Forms: Strip/Coil

Core Iron (Pure Iron)

Forms: Round Bar/Rod, Plate

Trade Names: Electrical Iron®, Alliedpureiron®

Electrical & Electronic Nickels

EFINEA supplies select, Commercially pure grades of Nickel in various forms and sizes.

Electronic Nickels

200/201/205/233/270

Forms: Plate, Round Bar/Rod, Sheet, Strip/Coil, Wire

Copper Metals

EFINEA supplies select, Commercially pure grades of Copper in Coil Form

Copper OFHC 101/102

Nickel-Silver 770

Cupro-Nickel 715 (CuNi 70/30)

Forms: Coil

Stainless Steels & Other Alloys

EFINEA supplies select aircraft quality grades of Stainless Steel available in various forms and sizes.

17-4PH (Type 630)

15-5PH Vac Melt

300 Grade Stainless Steel Coils

Forms: Round Bar/Coils