Tungsten Top Hat Single Crystal

Tungsten top hat single crystal combining purity, stability, and precise geometry for emitters, ion sources, thermionic devices, and high?temperature optics. **SKU:** 1000036656-group
Product Code: W-00-SC-000256

Material Properties for Metals

Atomic Properties

Element	Value
Atomic number	74
Crystal structure	Body centred cubic
Electronic structure	Xe $4f^{1}$? 5d? $6s^{2}$
Valences shown	2,3,4,5,6
Atomic weight(amu)	183.85
Thermal neutron absorption cross-section(Barns)	18.5
Photo-electric work function(eV)	4.55
Natural isotope distribution(Mass No./%)	183/ 14.3
Natural isotope distribution(Mass No./%)	182/ 26.3
Natural isotope distribution(Mass No./%)	186/ 28.6
Natural isotope distribution(Mass No./%)	180/ 0.1
Natural isotope distribution(Mass No./%)	184/ 30.7
Atomic radius - Goldschmidt(nm)	0.141
Ionisation potential(No./eV)	1/ 7.98
Ionisation potential(No./eV)	2/ 17.7

Mechanical Properties

Element	Value
Material condition	Soft
Material condition	Hard
Poisson's ratio	0.28
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Bulk modulus(GPa)	311
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Tensile modulus(GPa)	411

Element	Value
Tensile modulus(GPa)	411
Hardness - Vickers(kgf mm?²)	360
Hardness - Vickers(kgf mm?²)	500
Tensile strength(MPa)	550-620
Tensile strength(MPa)	1920
Yield strength(MPa)	550

Electrical Properties

Element	Value
Electrical resistivity(µOhmcm)	5.4@20°C
Superconductivity critical temperature(K)	0.0154
Temperature coefficient(K?¹)	0.0048@0-100°C
Thermal emf against Pt (cold 0C - hot 100C)(mV)	1.12

Physical Properties

Element	Value
Boiling point(C)	5660
Density(gcm?³)	19.3@20°C

Thermal Properties

Element	Value
Melting point(C)	3410
Latent heat of evaporation(J g?¹)	4009
Latent heat of fusion(J g?¹)	192
Specific heat(J K?¹ kg?¹)	133@25°C
Thermal conductivity(W m?¹ K?¹)	173@0-100°C
Coefficient of thermal expansion(x10?? K?¹)	4.5@0-100°C