

# Cobalt Top Hat Single Crystal

**Formula:** Co

**Percentage Purity:** 99.99%

**Top Section Thickness:** 1mm

**Bottom Section Thickness:** 1mm

**Outside Diameter:** 10mm

**Inside Diameter:** 8mm

**Orientation:** (10-10)

**Orientation Accuracy:** = 1°

**Polish:** Polished

**Surface Finish:** = 0.03µm Ra

**CAS Number:** 7440-48-4

**UOM Code:** 146-130-20

**SKU:** 1000048005-group

**Product Code:** CO00-SC-000230

## Material Properties for Metals

### Atomic Properties

Element	Value
Atomic number	27
Crystal structure	Hexagonal close packed
Electronic structure	Ar 3d <sup>7</sup> 4s <sup>2</sup>
Valences shown	2, 3
Atomic weight( amu )	58.9332
Thermal neutron absorption cross-section( Barns )	37.5
Photo-electric work function( eV )	5
Atomic radius - Goldschmidt( nm )	0.125
Ionisation potential( No./eV )	2/ 17.06
Ionisation potential( No./eV )	4/ 51.3
Ionisation potential( No./eV )	3/ 33.5
Ionisation potential( No./eV )	1/ 79.5
Ionisation potential( No./eV )	1/ 79.5
Ionisation potential( No./eV )	6/ 102

### Mechanical Properties

<b>Element</b>	<b>Value</b>
Material condition	Hard
Material condition	Soft
Poisson's ratio	0.32
Poisson's ratio	0.32
Bulk modulus( GPa )	181.5
Bulk modulus( GPa )	181.5
Tensile modulus( GPa )	211
Tensile modulus( GPa )	211
Hardness - Vickers( kgf mm <sup>2</sup> )	320
Hardness - Vickers( kgf mm <sup>2</sup> )	170
Tensile strength( MPa )	1135
Tensile strength( MPa )	760
Yield strength( MPa )	345-485

## **Electrical Properties**

<b>Element</b>	<b>Value</b>
Electrical resistivity( $\mu\text{Ohmcm}$ )	6.34@20@20°C
Temperature coefficient( K <sup>-1</sup> )	0.0066@0-100°C
Thermal emf against Pt (cold 0C - hot 100C)( mV )	-1.33

## **Physical Properties**

<b>Element</b>	<b>Value</b>
Boiling point( C )	2870
Density( gcm <sup>3</sup> )	8.9@20°C

## **Thermal Properties**

<b>Element</b>	<b>Value</b>
Melting point( C )	1495
Latent heat of evaporation( J g <sup>-1</sup> )	6490
Latent heat of fusion( J g <sup>-1</sup> )	263
Specific heat( J K <sup>-1</sup> kg <sup>-1</sup> )	456@25°C
Thermal conductivity( W m <sup>-1</sup> K <sup>-1</sup> )	100@0-100°C
Coefficient of thermal expansion( $\times 10^{-6}$ K <sup>-1</sup> )	12.5@0-100°C