

# Copper Rod

**Formula:** Cu

**Percentage Purity:** 99.9%

**Diameter:** 9.5mm

**Length:** 100mm

**Temper:** Hard

**CAS Number:** 7440-50-8

**UOM Code:** 009-208-98

**SKU:** 1000001278-group

**Product Code:** CU00-RD-000150

## Material Properties for Metals

### Atomic Properties

Element	Value
Atomic number	29
Crystal structure	Face centred cubic
Electronic structure	Ar 3d <sup>10</sup> 4s <sup>1</sup>
Valences shown	1, 2
Atomic weight( amu )	63.546
Thermal neutron absorption cross-section( Barns )	3.8
Photo-electric work function( eV )	4.5
Natural isotope distribution( Mass No./% )	65/ 30.8
Natural isotope distribution( Mass No./% )	63/ 69.2
Atomic radius - Goldschmidt( nm )	0.128
Ionisation potential( No./eV )	4/ 55.2
Ionisation potential( No./eV )	6/ 103
Ionisation potential( No./eV )	1/ 7.73
Ionisation potential( No./eV )	5/ 79.9
Ionisation potential( No./eV )	3/ 36.8
Ionisation potential( No./eV )	2/ 20.29

### Mechanical Properties

Element	Value
Material condition	Soft

<b>Element</b>	<b>Value</b>
Material condition	Hard
Poisson's ratio	0.343
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Bulk modulus( GPa )	137.8
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Tensile modulus( GPa )	129.8
Tensile modulus( GPa )	129.8
Izod toughness( J m <sup>2</sup> )	68
Izod toughness( J m <sup>2</sup> )	58
Hardness - Vickers( kgf mm <sup>2</sup> )	87
Hardness - Vickers( kgf mm <sup>2</sup> )	49
Tensile strength( MPa )	314
Tensile strength( MPa )	224
Yield strength( MPa )	270
Yield strength( MPa )	54

## **Electrical Properties**

<b>Element</b>	<b>Value</b>
Electrical resistivity( $\mu\text{Ohmcm}$ )	1.69@20@20°C
Temperature coefficient( K <sup>-1</sup> )	0.0043@0-100°C
Thermal emf against Pt (cold 0C - hot 100C)( mV )	0.76

## **Physical Properties**

<b>Element</b>	<b>Value</b>
Boiling point( C )	2567
Density( gcm <sup>3</sup> )	8.96@20°C

## **Thermal Properties**

<b>Element</b>	<b>Value</b>
Melting point( C )	1083
Latent heat of evaporation( J g <sup>-1</sup> )	4796
Latent heat of fusion( J g <sup>-1</sup> )	205
Specific heat( J K <sup>-1</sup> kg <sup>-1</sup> )	385@25°C
Thermal conductivity( W m <sup>-1</sup> K <sup>-1</sup> )	401@0-100°C
Coefficient of thermal expansion( $\times 10^{-6}$ K <sup>-1</sup> )	17@0-100°C