

# Niobium Square Single Crystal

**Formula:** Nb

**Percentage Purity:** 99.999%

**Thickness:** 1mm

**Size:** 7x7mm

**Orientation:** -100

**Orientation Accuracy:** = 0.4°

**Polish:** Polished

**Surface Finish:** = 0.03µm Ra

**CAS Number:** 7440-03-1

**UOM Code:** 107-951-69

**SKU:** 1000020770-group

**Product Code:** NB00-SC-000171

## Material Properties for Metals

### Atomic Properties

Element	Value
Atomic number	41
Crystal structure	Body centred cubic
Electronic structure	Kr 4d <sup>5</sup> 5s <sup>1</sup>
Valences shown	2, 3, 4, 5
Atomic weight( amu )	92.9064
Thermal neutron absorption cross-section( Barns )	1.15
Photo-electric work function( eV )	4.3
Atomic radius - Goldschmidt( nm )	0.147
Ionisation potential( No./eV )	3/ 25.0
Ionisation potential( No./eV )	2/ 14.3
Ionisation potential( No./eV )	6/ 103
Ionisation potential( No./eV )	1/ 6.88
Ionisation potential( No./eV )	4/ 38.3
Ionisation potential( No./eV )	5/ 50.5

### Mechanical Properties

Element	Value
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Material condition	Hard
Material condition	Soft
Poisson's ratio	0.397
Poisson's ratio	0.397
Bulk modulus( GPa )	170.3
Bulk modulus( GPa )	170.3
Tensile modulus( GPa )	104.9
Tensile modulus( GPa )	104.9
Izod toughness( J m <sup>2</sup> )	10-120
Hardness - Vickers( kgf mm <sup>2</sup> )	115
Hardness - Vickers( kgf mm <sup>2</sup> )	160
Tensile strength( MPa )	330
Tensile strength( MPa )	585
Yield strength( MPa )	550
Yield strength( MPa )	240

## Electrical Properties

Element	Value
Electrical resistivity( $\mu\text{Ohmcm}$ )	16@20@20°C
Superconductivity critical temperature( K )	9.25
Temperature coefficient( K <sup>-1</sup> )	0.0026@0-100°C

## Physical Properties

Element	Value
Boiling point( C )	4742
Density( gcm <sup>3</sup> )	8.57@20°C

## Thermal Properties

Element	Value
Melting point( C )	2468
Latent heat of evaporation( J g <sup>-1</sup> )	7360
Latent heat of fusion( J g <sup>-1</sup> )	290
Specific heat( J K <sup>-1</sup> kg <sup>-1</sup> )	268@25°C
Thermal conductivity( W m <sup>-1</sup> K <sup>-1</sup> )	53.7@0-100°C
Coefficient of thermal expansion( $\times 10^{-6}$ K <sup>-1</sup> )	7.2@0-100°C