

# Vanadium Thin Film Disk

**Formula:** V

**Percentage Purity:** 99.8%

**Thickness:** 0.1 $\mu$ m

**Diameter:** 25mm

**Area Density:** 60.8 $\mu$ g/cm<sup>2</sup>

**Support:** Permanent Mylar® 3.5 $\mu$ m

**CAS Number:** 7440-62-2

**UOM Code:** 216-971-06

**SKU:** 1000089791-group

**Product Code:** V-00-MF-000100

## Material Properties for Metals

### Atomic Properties

Element	Value
Atomic number	23
Crystal structure	Body centred cubic
Electronic structure	Ar 3d <sup>3</sup> 4s <sup>2</sup>
Valences shown	2,3,4,5
Atomic weight( amu )	50.9415
Thermal neutron absorption cross-section( Barns )	5.06
Photo-electric work function( eV )	4.3
Natural isotope distribution( Mass No./% )	51/ 99.75
Natural isotope distribution( Mass No./% )	50/ 0.25
Atomic radius - Goldschmidt( nm )	0.136
Ionisation potential( No./eV )	3/ 29.3
Ionisation potential( No./eV )	2/ 14.6
Ionisation potential( No./eV )	5/ 65.2
Ionisation potential( No./eV )	6/ 128
Ionisation potential( No./eV )	1/ 6.74
Ionisation potential( No./eV )	4/ 46.7

### Mechanical Properties

Element	Value
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Material condition	Hard
Material condition	Soft
Poisson's ratio	0.365
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Bulk modulus( GPa )	158
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Tensile modulus( GPa )	127.6
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Izod toughness( J m <sup>2</sup> )	10-136
Hardness - Vickers( kgf mm <sup>2</sup> )	80
Hardness - Vickers( kgf mm <sup>2</sup> )	150
Tensile strength( MPa )	260-585
Tensile strength( MPa )	530-730
Yield strength( MPa )	170-450
Yield strength( MPa )	515-690

## Electrical Properties

Element	Value
Electrical resistivity( $\mu\text{Ohmcm}$ )	19.6@20@20°C
Superconductivity critical temperature( K )	5.4
Temperature coefficient( K <sup>-1</sup> )	0.0039@0-100°C
Thermal emf against Pt (cold 0C - hot 100C)( mV )	0.63

## Physical Properties

Element	Value
Boiling point( C )	3380
Density( gcm <sup>3</sup> )	6.1@20°C

## Thermal Properties

Element	Value
Melting point( C )	1890
Latent heat of evaporation( J g <sup>-1</sup> )	8975
Latent heat of fusion( J g <sup>-1</sup> )	345
Specific heat( J K <sup>-1</sup> kg <sup>-1</sup> )	486@25°C
Thermal conductivity( W m <sup>-1</sup> K <sup>-1</sup> )	30.7@0-100°C
Coefficient of thermal expansion( $\times 10^{-6}$ K <sup>-1</sup> )	8.3@0-100°C