

H.C. Starck Pure Niobium (Columbium)

Category : Metal , Nonferrous Metal , Niobium Alloy , Refractory Metal , Pure Element

Material Notes:

Applications: NRC[®] niobium metal is produced from electron beam melted ingots. Grain Stabilized Niobium (GSNb) is made by EB and VAR melting. Both materials are malleable, weldable, machineable and formable. GSNb is used in applications where a consistently finer grain size is required. Niobium is used in the manufacture of synthetic diamonds; in sputtering targets for fiber optic applications or architectural glass; in nickel based superalloys; and alloyed with titanium or tin, in superconductors. In nuclear reactors it has low thermal neutron cross section and superior corrosion resistance, It is an excellent getter and finds use in high temperature vacuum furnaces, and is resistant to attack by the molten alkali metals found in sodium vapor lamps. **Forms Available:** Foil, Sheet, Plate, Welded Tubing, Rod, Wire and Bar. **Metallurgical Characteristics:** Material is single-phase niobium, stress relieve at 650[°]C, re-crystallize at 950[°]C. Crystal structure: bcc Information provided by H.C. Starck.

Order this product through the following link:

http://www.lookpolymers.com/polymer_HC-Starck-Pure-Niobium-Columbium.php

Physical Properties	Metric	English	Comments
Specific Gravity	8.47 g/cc	8.47 g/cc	

Mechanical Properties	Metric	English	Comments
Hardness, Vickers	50 - 80	50 - 80	annealed
Tensile Strength, Ultimate	>= 112 MPa	>= 16200 psi	re-crystallized
	>= 124 MPa	>= 18000 psi	
	@Temperature 20.0 [°] C	@Temperature 68.0 [°] F	
Tensile Strength, Yield	>= 84.8 MPa	>= 12300 psi	typical
	@Temperature 20.0 [°] C	@Temperature 68.0 [°] F	
Elongation at Break	>= 25 %	>= 25 %	
Modulus of Elasticity	103 GPa	15000 ksi	
Poissons Ratio	0.38	0.38	
Shear Modulus	37.3 GPa	5410 ksi	Calculated

Thermal Properties	Metric	English	Comments
CTE, linear	12.8 [°] µm/m- [°] C	7.10 [°] µin/in- [°] F	
	@Temperature 20.0 - 100 [°] C	@Temperature 68.0 - 212 [°] F	

Thermal Properties	Metric	English	Comments
Specific Heat Capacity	0.272 J/g-Â°C	0.0650 BTU/lb-Â°F	
	@Temperature 27.0 Â°C	@Temperature 80.6 Â°F	
Thermal Conductivity	52.3 W/m-K	363 BTU-in/hr-ftÂ²-Â°F	
Melting Point	2468 Â°C	4474 Â°F	

Component Elements Properties	Metric	English	Comments
Niobium, Nb (Columbium, Cb)	>= 99.8 %	>= 99.8 %	Type II - Commercial Grade
	>= 99.9 %	>= 99.9 %	Type I - Reactor Grade
Tantalum, Ta	<= 0.10 %	<= 0.10 %	Type I - Reactor Grade
	<= 0.20 %	<= 0.20 %	Type II - Commercial Grade

Electrical Properties	Metric	English	Comments
Volume Resistivity	0.0000145 ohm-cm	0.0000145 ohm-cm	
	@Temperature 0.000 - 100 Â°C	@Temperature 32.0 - 212 Â°F	
Critical Superconducting Temperature	9.20 K	9.20 K	

Chemical Properties	Metric	English	Comments
Atomic Mass	92.91	92.91	
Atomic Number	41	41	
Thermal Neutron Cross Section	1.1 barns/atom	1.1 barns/atom	

Descriptive Properties	Value	Comments
Thermal Resistivity	1	

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