

Materion Beryllium Nickel M220C

Category : Metal , Nonferrous Metal , Beryllium Alloy , Nickel Alloy

Material Notes:

Information supplied by Brush Wellman Engineered Materials. Brush M220C is characterized by high levels of strength, hardness, and thermal conductivity combined with excellent resistance to wear, corrosion, thermal shock, and oxidation from room temperature to operating temperatures of 1000°F. This alloy is the most recent addition to the beryllium nickel alloys noted for steel-like hardness and strength levels surpassing many of the high strength steel and nickel base alloys. Brush M220C is machined 2 to 3 times faster and has approximately 90% of the mechanical and physical properties of the strongest beryllium nickels. The improved relative ease of fabrication provides beryllium nickel design benefits at reduced cost. More complex detail and improved surface finish can be produced, further expanding areas of application. As a casting alloy, easily cast-to-size by precision techniques and machined by conventional methods, Brush M220C is of interest to the tool designer and engineer, particularly in the glass industry. Brush Engineered Materials Inc. changed its name to Materion Corporation in March 2011.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Materion-Beryllium-Nickel-M220C.php

Physical Properties	Metric	English	Comments
Density	8.03 g/cc	0.290 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	48 - 52	48 - 52	
Tensile Strength, Ultimate	1170 - 1310 MPa	170000 - 190000 psi	Solution Annealed & Aged
Tensile Strength, Yield	1100 - 1250 MPa	160000 - 181000 psi	Solution Annealed & Aged
Elongation at Break	1.0 - 2.0 %	1.0 - 2.0 %	Solution Annealed & Aged
Modulus of Elasticity	180 - 193 GPa	26100 - 28000 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	14.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$ @Temperature 20.0 - 200 $\text{Å}^\circ\text{C}$	7.78 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$ @Temperature 68.0 - 392 $\text{Å}^\circ\text{F}$	
Thermal Conductivity	35.0 W/m-K	243 BTU-in/hr-ft ² - $\text{Å}^\circ\text{F}$	
Melting Point	1150 - 1315 $\text{Å}^\circ\text{C}$	2100 - 2399 $\text{Å}^\circ\text{F}$	
Solidus	1150 $\text{Å}^\circ\text{C}$	2100 $\text{Å}^\circ\text{F}$	
Liquidus	1315 $\text{Å}^\circ\text{C}$	2399 $\text{Å}^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Beryllium, Be	1.8 - 2.3 %	1.8 - 2.3 %	
Carbon, C	0.30 - 0.50 %	0.30 - 0.50 %	
Nickel, Ni	97.5 %	97.5 %	as balance

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000287 - 0.0000573 ohm-cm	0.0000287 - 0.0000573 ohm-cm	3-6% IACS Conductivity

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