

Special Metals BRIGHTRAY[®] Alloy B Electrical Resistance Alloy

Category : Metal , Electronic/Magnetic Alloy , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

A nickel-iron-chromium electrical-resistance alloy for use at operating temperatures up to 2010[°]F (1100[°]C). It contains rare-earth additions for increased oxidation resistance, especially under conditions of frequent switching or wide temperature fluctuations. The alloy has a relatively high temperature coefficient of resistance. Used for heating elements in domestic appliances and industrial equipment. Standard product forms are sheet, strip, and wire. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-BRIGHTRAY-Alloy-B-Electrical-Resistance-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.35 g/cc	0.302 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	620 MPa	89900 psi	Annealed prior to test
	540 MPa @Temperature 550 [°] C	78300 psi @Temperature 1020 [°] F	Annealed prior to test
Tensile Strength, Yield	210 MPa	30500 psi	Annealed prior to test
	@Strain 0.200 %	@Strain 0.200 %	
	170 MPa	24700 psi	Annealed prior to test
	@Strain 0.200 %, Temperature 550 [°] C	@Strain 0.200 %, Temperature 1020 [°] F	

Thermal Properties	Metric	English	Comments
CTE, linear	12.5 [°] μm/m- [°] C	6.94 [°] μin/in- [°] F	
	@Temperature 20.0 - 100 [°] C	@Temperature 68.0 - 212 [°] F	
Specific Heat Capacity	0.461 J/g- [°] C	0.110 BTU/lb- [°] F	
Melting Point	1400 - 1420 [°] C	2550 - 2590 [°] F	
Solidus	1400 [°] C	2550 [°] F	
Liquidus	1420 [°] C	2590 [°] F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.15 %	<= 0.15 %	

Component Elements Properties	Metric	English	Comments
Iron, Fe	25 %	25 %	As remainder
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Nickel, Ni	>= 57 %	>= 57 %	Including Cobalt
Silicon, Si	0.75 - 1.75 %	0.75 - 1.75 %	
Sulfur, S	<= 0.010 %	<= 0.010 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000110 ohm-cm	0.000110 ohm-cm	Temperature coefficient of resistance is 180 $\mu\text{Ohm}/\text{Ohm}\cdot\text{Å}^\circ\text{C}$ in the range 25-500 $\text{Å}^\circ\text{C}$.
Magnetic Permeability	1.68	1.68	at 200 oersted (15.9 kA/m)

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