

## Special Metals BRIGHTRAY<sup>®</sup> Alloy C Electrical Resistance Alloy

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

### Material Notes:

A nickel-chromium electrical-resistance alloy for use at operating temperatures up to 2100<sup>°</sup>F (1150<sup>°</sup>C). It contains rare-earth additions for increased oxidation resistance, especially under conditions of frequent switching or wide temperature fluctuations. The alloy has a low temperature coefficient of resistance, making it suitable for control resistors. Used for heating elements in domestic appliances and industrial equipment. The standard product form is wire. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Special-Metals-BRIGHTRAY-Alloy-C-Electrical-Resistance-Alloy.php](http://www.lookpolymers.com/polymer_Special-Metals-BRIGHTRAY-Alloy-C-Electrical-Resistance-Alloy.php)

Physical Properties	Metric	English	Comments
Density	8.31 g/cc	0.300 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	760 MPa	110000 psi	Annealed prior to test
	580 MPa @Temperature 550 <sup>°</sup> C	84100 psi @Temperature 1020 <sup>°</sup> F	Annealed prior to test
Tensile Strength, Yield	330 MPa @Strain 0.200 %	47900 psi @Strain 0.200 %	Annealed prior to test
	210 MPa @Strain 0.200 %, Temperature 550 <sup>°</sup> C	30500 psi @Strain 0.200 %, Temperature 1020 <sup>°</sup> F	Annealed prior to test

Thermal Properties	Metric	English	Comments
CTE, linear	12.5 <sup>°</sup> μm/m- <sup>°</sup> C	6.94 <sup>°</sup> μin/in- <sup>°</sup> F	
	@Temperature 20.0 - 100 <sup>°</sup> C	@Temperature 68.0 - 212 <sup>°</sup> F	
Specific Heat Capacity	0.419 J/g- <sup>°</sup> C	0.100 BTU/lb- <sup>°</sup> F	
Melting Point	1380 - 1400 <sup>°</sup> C	2520 - 2550 <sup>°</sup> F	
Solidus	1380 <sup>°</sup> C	2520 <sup>°</sup> F	
Liquidus	1400 <sup>°</sup> C	2550 <sup>°</sup> F	

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

Component Elements Properties	Metric	English	Comments
Iron, Fe	<= 1.0 %	<= 1.0 %	
Manganese, Mn	<= 2.5 %	<= 2.5 %	
Nickel, Ni	75 %	75 %	Including Cobalt, calculated as remainder
Silicon, Si	0.75 - 1.75 %	0.75 - 1.75 %	
Sulfur, S	<= 0.010 %	<= 0.010 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000108 ohm-cm	0.000108 ohm-cm	Temperature coefficient of resistance is 140 $\mu\text{Ohm}/\text{Ohm}\cdot\text{Å}^\circ\text{C}$ in the range 25-500 $\text{Å}^\circ\text{C}$ .
Magnetic Permeability	1.0005	1.0005	at 200 oersted (15.9 kA/m)

## Contact Songhan Plastic Technology Co.,Ltd.

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