

## Special Metals BRIGHTRAY® Alloy F Electrical Resistance Alloy

Category : Metal , Electronic/Magnetic Alloy , Superalloy , Iron Base

### Material Notes:

A nickel-iron-chromium electrical-resistance alloy for use at temperatures up to 1920°F (1050°C) under continuous operating conditions. Its high iron content and relatively low level of nickel make it particularly resistant to internal oxidation in atmospheres that alternate between oxidizing and reducing or carburizing. The alloy has a high temperature coefficient of resistance. Used for heating elements in industrial furnaces. Standard product forms are sheet and strip. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

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

Physical Properties	Metric	English	Comments
Density	7.86 g/cc	0.284 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	690 MPa	100000 psi	Annealed prior to test
	540 MPa @Temperature 550 °C	78300 psi @Temperature 1020 °F	Annealed prior to test
Tensile Strength, Yield	370 MPa	53700 psi	Annealed prior to test
	@Strain 0.200 %	@Strain 0.200 %	
	270 MPa	39200 psi	Annealed prior to test
	@Strain 0.200 %, Temperature 550 °C	@Strain 0.200 %, Temperature 1020 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	15.0 µm/m-°C	8.33 µin/in-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
Specific Heat Capacity	0.450 J/g-°C	0.108 BTU/lb-°F	
Melting Point	1330 - 1400 °C	2430 - 2550 °F	
Solidus	1330 °C	2430 °F	
Liquidus	1400 °C	2550 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.050 %	0.050 %	

Component Elements Properties	Metric	English	Comments
Iron, Fe	42 %	42 %	
Manganese, Mn	1.2 %	1.2 %	
Nickel, Ni	37 %	37 %	
Silicon, Si	2.3 %	2.3 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000108 ohm-cm	0.000108 ohm-cm	Temperature coefficient of resistance is 290 $\mu\text{Ohm}/\text{Ohm}\cdot\text{Å}^\circ\text{C}$ in the range 25-500 $\text{Å}^\circ\text{C}$ .
Magnetic Permeability	1.038	1.038	at 200 oersted (15.9 kA/m)

## Contact Songhan Plastic Technology Co.,Ltd.

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