

Special Metals FERRY® Alloy

Category : Metal , Nonferrous Metal , Copper Alloy , Nickel Alloy , Superalloy

Material Notes:

A copper-nickel alloy used mainly for its electrical properties. It has medium-range electrical resistivity and a very low temperature coefficient of resistance (TCR). The low TCR makes the alloy useful for wire-wound precision resistors having operating temperatures up to 750°F (400°C). A reproducible electromotive force against copper makes the alloy suitable for thermocouples and thermocouple compensating leads. Standard product forms are round, 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-FERRY-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.89 g/cc	0.321 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	415 MPa	60200 psi	Annealed
Tensile Strength, Yield	145 MPa @Strain 0.200 %	21000 psi @Strain 0.200 %	Annealed
Elongation at Break	32 %	32 %	Annealed

Thermal Properties	Metric	English	Comments
CTE, linear	14.7 $\mu\text{m/m-}^\circ\text{C}$ @Temperature 20.0 - 100 $^\circ\text{C}$	8.17 $\mu\text{in/in-}^\circ\text{F}$ @Temperature 68.0 - 212 $^\circ\text{F}$	
Specific Heat Capacity	0.394 J/g- $^\circ\text{C}$	0.0942 BTU/lb- $^\circ\text{F}$	
Thermal Conductivity	22.4 W/m-K	155 BTU-in/hr-ft ² - $^\circ\text{F}$	
Melting Point	1220 - 1270 $^\circ\text{C}$	2230 - 2320 $^\circ\text{F}$	
Solidus	1220 $^\circ\text{C}$	2230 $^\circ\text{F}$	
Liquidus	1270 $^\circ\text{C}$	2320 $^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.10 %	<= 0.10 %	
Copper, Cu	55 %	55 %	
Iron, Fe	<= 1.0 %	<= 1.0 %	

Manganese Mn Component Elements Properties	$\leq 1.0\%$ Metric	$\leq 1.0\%$ English	Comments
Nickel, Ni	42 %	42 %	As remainder
Silicon, Si	$\leq 0.50\%$	$\leq 0.50\%$	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000490 ohm-cm	0.0000490 ohm-cm	Temperature coefficient of resistance is $30 \mu\text{Ohm/Ohm-}^\circ\text{C}$ in the range 25-100 $^\circ\text{C}$.

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