

## Special Metals NILO® Alloy 48 Controlled-Expansion Alloy

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy , Iron Base

### Material Notes:

Inflection point 460°C. A nickel-iron controlled-expansion alloy containing 48% nickel. Its coefficient of thermal expansion is designed to match that of soft lead and soda-lime glasses. The alloy also has a high inflection point. Used for glass-to-metal seals in radio valves and incandescent electric light bulbs and for industrial thermostats that operate at temperatures up to 840°F (450°C). Standard product forms are round, flats, tube, strip, and wire. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Special-Metals-NILO-Alloy-48-Controlled-Expansion-Alloy.php](http://www.lookpolymers.com/polymer_Special-Metals-NILO-Alloy-48-Controlled-Expansion-Alloy.php)

Physical Properties	Metric	English	Comments
Density	8.20 g/cc	0.296 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	520 MPa	75400 psi	Annealed prior to test
	470 MPa @Temperature 300 °C	68200 psi @Temperature 572 °F	Annealed prior to test
Tensile Strength, Yield	260 MPa	37700 psi	Annealed prior to test
	@Strain 0.200 %	@Strain 0.200 %	
Elongation at Break	160 MPa	23200 psi	Annealed prior to test
	@Strain 0.200 %, Temperature 300 °C	@Strain 0.200 %, Temperature 572 °F	
Elongation at Break	42 %	42 %	Annealed prior to test.
	43 % @Temperature 300 °C	43 % @Temperature 572 °F	Annealed prior to test.

Thermal Properties	Metric	English	Comments
CTE, linear	8.50 µm/m-°C	4.72 µin/in-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
Thermal Conductivity	8.30 - 9.30 µm/m-°C	4.61 - 5.17 µin/in-°F	
	@Temperature 20.0 - 400 °C	@Temperature 68.0 - 752 °F	
Melting Point	1450 °C	2640 °F	

Thermal Properties	Metric	English	Comments
Component Elements Properties	Metric	English	Comments
Aluminum, Al	<= 0.10 %	<= 0.10 %	
Carbon, C	<= 0.050 %	<= 0.050 %	
Chromium, Cr	<= 0.25 %	<= 0.25 %	
Cobalt, Co	<= 1.0 %	<= 1.0 %	
Iron, Fe	49 %	49 %	As remainder
Manganese, Mn	<= 0.80 %	<= 0.80 %	
Nickel, Ni	48 %	48 %	nominal; adjustable to meet expansion requirements
Phosphorous, P	<= 0.025 %	<= 0.025 %	
Silicon, Si	<= 0.30 %	<= 0.30 %	
Sulfur, S	<= 0.025 %	<= 0.025 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000470 ohm-cm	0.0000470 ohm-cm	

## Contact Songhan Plastic Technology Co.,Ltd.

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