

Special Metals NILO[®] Alloy 36 Low-Expansion Alloy

Category : Metal , Superalloy , Iron Base

Material Notes:

Inflection point 220[°]C. A nickel-iron low-expansion alloy containing 36% nickel. It maintains nearly constant dimensions over the range of normal atmospheric temperatures, and has a low coefficient of expansion from cryogenic temperatures to about 500[°]F (260[°]C). The alloy also retains good strength and toughness at cryogenic temperatures. Used for standards of length, measuring devices, laser components, bi-metal thermostat strip, thermostat rods, and tanks and piping for storing and transporting liquefied gases. Standard product forms are round, extruded section, plate, sheet, strip, tube, pipe, 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-36-Low-Expansion-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.11 g/cc	0.293 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	490 MPa	71100 psi	Annealed prior to test
	430 MPa @Temperature 300 [°] C	62400 psi @Temperature 572 [°] F	Annealed prior to test
Tensile Strength, Yield	240 MPa @Strain 0.200 %	34800 psi @Strain 0.200 %	Annealed prior to test
	110 MPa @Strain 0.200 %, Temperature 300 [°] C	16000 psi @Strain 0.200 %, Temperature 572 [°] F	Annealed prior to test
Elongation at Break	42 %	42 %	Annealed prior to test.
	50 % @Temperature 300 [°] C	50 % @Temperature 572 [°] F	Annealed prior to test.

Thermal Properties	Metric	English	Comments
CTE, linear	1.50 ^μ m/m- [°] C @Temperature 20.0 - 100 [°] C	0.833 ^μ in/in- [°] F @Temperature 68.0 - 212 [°] F	
	2.60 ^μ m/m- [°] C @Temperature 20.0 - 200 [°] C	1.44 ^μ in/in- [°] F @Temperature 68.0 - 392 [°] F	
Thermal Conductivity	10.0 W/m-K	69.4 BTU-in/hr-ft ² - [°] F	

Thermal Properties	Metric	English	Comments
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Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.10 %	<= 0.10 %	
Chromium, Cr	<= 0.50 %	<= 0.50 %	
Cobalt, Co	<= 1.0 %	<= 1.0 %	
Iron, Fe	60 %	60 %	As remainder
Manganese, Mn	<= 0.60 %	<= 0.60 %	
Molybdenum, Mo	<= 0.50 %	<= 0.50 %	
Nickel, Ni	35 - 38 %	35 - 38 %	
Phosphorous, P	<= 0.025 %	<= 0.025 %	
Silicon, Si	<= 0.35 %	<= 0.35 %	
Sulfur, S	<= 0.025 %	<= 0.025 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000800 ohm-cm	0.0000800 ohm-cm	

Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com

Email : sales@lookpolymers.com

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China