

Special Metals NILO[®] Alloy K Controlled-Expansion Alloy

Category : Metal , Superalloy , Iron Base

Material Notes:

Inflection point 450°C. A nickel-iron-cobalt controlled-expansion alloy containing 29% nickel. Its coefficient of expansion, which decreases with rising temperature to the inflection point, matches the expansion rate of borosilicate glasses and alumina ceramics. Used for glass-to-metal seals in applications requiring high reliability or resistance to thermal shock. Examples are high-power transmitting valves, transistor leads and headers, integrated-circuit lead frames, and photography flash bulbs. Standard product forms are round, tube, 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-NILO-Alloy-K-Controlled-Expansion-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.16 g/cc	0.295 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	520 MPa	75400 psi	Annealed prior to test
	400 MPa @Temperature 300 °C	58000 psi @Temperature 572 °F	Annealed prior to test
Tensile Strength, Yield	340 MPa @Strain 0.200 %	49300 psi @Strain 0.200 %	Annealed prior to test
	140 MPa @Strain 0.200 %, Temperature 300 °C	20300 psi @Strain 0.200 %, Temperature 572 °F	Annealed prior to test
Elongation at Break	42 %	42 %	Annealed prior to test.
	45 % @Temperature 300 °C	45 % @Temperature 572 °F	Annealed prior to test.

Thermal Properties	Metric	English	Comments
CTE, linear	4.60 - 5.20 µm/m-°C @Temperature 20.0 - 400 °C	2.56 - 2.89 µin/in-°F @Temperature 68.0 - 752 °F	
	6.00 µm/m-°C @Temperature 20.0 - 100 °C	3.33 µin/in-°F @Temperature 68.0 - 212 °F	
Thermal Conductivity	16.7 W/m-K	116 BTU-in/hr-ft ² -°F	

Melting Point Thermal Properties	1450 Å°C Metric	2640 Å°F English	Comments
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Component Elements Properties	Metric	English	Comments
Aluminum, Al	<= 0.10 %	<= 0.10 %	
Carbon, C	<= 0.040 %	<= 0.040 %	
Chromium, Cr	<= 0.20 %	<= 0.20 %	
Cobalt, Co	17 %	17 %	
Copper, Cu	<= 0.20 %	<= 0.20 %	
Iron, Fe	53 %	53 %	
Magnesium, Mg	<= 0.10 %	<= 0.10 %	
Manganese, Mn	<= 0.50 %	<= 0.50 %	
Molybdenum, Mo	<= 0.20 %	<= 0.20 %	
Nickel, Ni	29 %	29 %	
Silicon, Si	<= 0.20 %	<= 0.20 %	
Titanium, Ti	<= 0.10 %	<= 0.10 %	
Zirconium, Zr	<= 0.10 %	<= 0.10 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000430 ohm-cm	0.0000430 ohm-cm	

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