

Special Metals NIMONIC® Alloy 90

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

A precipitation-hardenable nickel-chromium-cobalt alloy having high stress-rupture strength and creep resistance at temperatures to about 1700°F (920°C). The alloy also has good resistance to high-temperature corrosion and oxidation. Used for blades and discs in gas turbines, hot-working tools, and springs. Standard product forms are round, flats, extruded section, plate, sheet, strip, tube, and wire. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-NIMONIC-Alloy-90.php

Physical Properties	Metric	English	Comments
Density	8.18 g/cc	0.296 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1030 MPa	149000 psi	Precipitation Hardened prior to test
	@Temperature 550 °C	@Temperature 1020 °F	
Tensile Strength, Yield	1150 MPa	167000 psi	Precipitation Hardened. Value at room temperature
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Tensile Strength, Yield	725 MPa	105000 psi	Precipitation Hardened. Value at room temperature
	@Strain 0.200 %	@Strain 0.200 %	
Elongation at Break	690 MPa	100000 psi	Precipitation Hardened prior to test
	@Strain 0.200 %, Temperature 550 °C	@Strain 0.200 %, Temperature 1020 °F	
Elongation at Break	30 %	30 %	Precipitation Hardened
	25 %	25 %	
	@Temperature 550 °C	@Temperature 1020 °F	Precipitation Hardened prior to test.

Thermal Properties	Metric	English	Comments
CTE, linear	12.7 µm/m-°C	7.06 µin/in-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
Specific Heat Capacity	0.446 J/g-°C	0.107 BTU/lb-°F	
Thermal Conductivity	11.5 W/m-K	79.8 BTU-in/hr-ft ² -°F	

Thermal Properties	Metric	English	Comments
Melting Point	1310 - 1370 Å°C	2390 - 2500 Å°F	
Solidus	1310 Å°C	2390 Å°F	
Liquidus	1370 Å°C	2500 Å°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	1.0 - 2.0 %	1.0 - 2.0 %	
Boron, B	<= 0.020 %	<= 0.020 %	
Carbon, C	<= 0.13 %	<= 0.13 %	
Chromium, Cr	18 - 21 %	18 - 21 %	
Cobalt, Co	15 - 21 %	15 - 21 %	
Copper, Cu	<= 0.20 %	<= 0.20 %	
Iron, Fe	<= 1.5 %	<= 1.5 %	
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Nickel, Ni	55 %	55 %	As remainder
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.015 %	<= 0.015 %	
Titanium, Ti	2.0 - 3.0 %	2.0 - 3.0 %	
Zirconium, Zr	<= 0.15 %	<= 0.15 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000118 ohm-cm	0.000118 ohm-cm	

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