

Special Metals NIMONIC® Alloy 115

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

A precipitation-hardenable nickel-chromium-cobalt alloy with an addition of molybdenum for solid-solution strengthening. It is similar to NIMONIC alloy 105 but has higher levels of aluminum and titanium for increased strengthening by precipitation hardening. The alloy has high strength and creep resistance at temperatures to about 1850°F (1010°C). Used for turbine blades in aircraft gas turbines. The standard product forms are round and extruded section. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-NIMONIC-Alloy-115.php

Physical Properties	Metric	English	Comments
Density	7.85 g/cc	0.284 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1140 MPa	165000 psi	Precipitation Hardened prior to test
	@Temperature 550 °C	@Temperature 1020 °F	
	1300 MPa	189000 psi	
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Tensile Strength, Yield	850 MPa	123000 psi	Precipitation Hardened. Value at room temperature
	@Strain 0.200 %	@Strain 0.200 %	
	720 MPa	104000 psi	Precipitation Hardened prior to test
	@Strain 0.200 %, Temperature 550 °C	@Strain 0.200 %, Temperature 1020 °F	
Elongation at Break	25 %	25 %	Precipitation Hardened
	20 %	20 %	
	@Temperature 550 °C	@Temperature 1020 °F	Precipitation Hardened prior to test.

Thermal Properties	Metric	English	Comments
CTE, linear	12.0 µm/m-°C	6.67 µin/in-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
Specific Heat Capacity	0.444 J/g-°C	0.106 BTU/lb-°F	
Thermal Conductivity	10.6 W/m-K	73.6 BTU-in/hr-ft ² -°F	

Thermal Properties	Metric	English	Comments
Melting Point	1290 - 1345 Â°C	2350 - 2453 Â°F	
Solidus	1290 Â°C	2350 Â°F	
Liquidus	1345 Â°C	2453 Â°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	4.5 - 5.5 %	4.5 - 5.5 %	
Boron, B	0.010 - 0.025 %	0.010 - 0.025 %	
Carbon, C	0.12 - 0.20 %	0.12 - 0.20 %	
Chromium, Cr	14 - 16 %	14 - 16 %	
Cobalt, Co	13 - 15.5 %	13 - 15.5 %	
Copper, Cu	<= 0.20 %	<= 0.20 %	
Iron, Fe	<= 1.0 %	<= 1.0 %	
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Molybdenum, Mo	3.0 - 5.0 %	3.0 - 5.0 %	
Nickel, Ni	54 %	54 %	As remainder
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.015 %	<= 0.015 %	
Titanium, Ti	3.5 - 4.5 %	3.5 - 4.5 %	
Zirconium, Zr	<= 0.15 %	<= 0.15 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000139 ohm-cm	0.000139 ohm-cm	

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