

Special Metals NIMONIC® Alloy PK33

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

A nickel-chromium-cobalt alloy that is precipitation hardenable and also contains a relatively high (7%) level of molybdenum for solid-solution strengthening. It has an exceptional combination of high-temperature strength, creep resistance, and ductility when welded. The alloy is especially suitable for welded sheet structures. Used in gas turbines for flame tubes and other components. Standard product forms are round, extruded section, sheet, 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-PK33.php

Physical Properties	Metric	English	Comments
Density	8.21 g/cc	0.297 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1020 MPa	148000 psi	Precipitation Hardened prior to test
	@Temperature 650 Å°C	@Temperature 1200 Å°F	
Tensile Strength, Yield	1150 MPa	167000 psi	Precipitation Hardened. Value at room temperature
	@Temperature 23.0 Å°C	@Temperature 73.4 Å°F	
Elongation at Break	750 MPa	109000 psi	Precipitation Hardened prior to test
	@Strain 0.200 %	@Strain 0.200 %	
Elongation at Break	720 MPa	104000 psi	Precipitation Hardened prior to test.
	@Strain 0.200 %, Temperature 650 Å°C	@Strain 0.200 %, Temperature 1200 Å°F	
Elongation at Break	30 %	30 %	Precipitation Hardened
	30 %	30 %	
Elongation at Break	30 %	30 %	Precipitation Hardened prior to test.
	@Temperature 650 Å°C	@Temperature 1200 Å°F	

Thermal Properties	Metric	English	Comments
CTE, linear	12.1 Åµm/m-Å°C	6.72 Åµin/in-Å°F	
	@Temperature 20.0 - 100 Å°C	@Temperature 68.0 - 212 Å°F	
Specific Heat Capacity	0.419 J/g-Å°C	0.100 BTU/lb-Å°F	
Thermal Conductivity	11.3 W/m-K	78.4 BTU-in/hr-ftÅ²-Å°F	

Thermal Properties	Metric	English	Comments
Melting Point	1300 - 1345 Å°C	2370 - 2453 Å°F	
Solidus	1300 Å°C	2370 Å°F	
Liquidus	1345 Å°C	2453 Å°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	1.7 - 2.5 %	1.7 - 2.5 %	
Boron, B	<= 0.0050 %	<= 0.0050 %	
Carbon, C	<= 0.070 %	<= 0.070 %	
Chromium, Cr	16 - 20 %	16 - 20 %	
Cobalt, Co	12 - 16 %	12 - 16 %	
Copper, Cu	<= 0.20 %	<= 0.20 %	
Iron, Fe	<= 1.0 %	<= 1.0 %	
Manganese, Mn	<= 0.50 %	<= 0.50 %	
Molybdenum, Mo	5.0 - 9.0 %	5.0 - 9.0 %	
Nickel, Ni	54 %	54 %	As remainder
Silicon, Si	<= 0.50 %	<= 0.50 %	
Sulfur, S	<= 0.015 %	<= 0.015 %	
Titanium, Ti	1.5 - 3.0 %	1.5 - 3.0 %	
Zirconium, Zr	<= 0.060 %	<= 0.060 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000126 ohm-cm	0.000126 ohm-cm	
Magnetic Permeability	1.0005	1.0005	at 200 oersted (15.9 kA/m)

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