

Special Metals INCONEL® 718SPF, Nickel Superalloy, Annealed

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

Typical annealing - continuous process anneal, 1700°F (927°C) at 15 ft (4.57 m) per minute. This produces ASTM No. 12 grain size. Heat capacity, melting range, moduli, and Poisson's ratio reported herein are typical of INCONEL® alloy 718SPF (not necessarily annealed samples). Data provided by the manufacturer, Special Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-INCONEL-718SPF-Nickel-Superalloy-Annealed.php

Physical Properties	Metric	English	Comments
Density	8.19 g/cc	0.296 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	24	24	
Tensile Strength, Ultimate	1120 MPa	162000 psi	
Tensile Strength, Yield	827 MPa @Strain 0.200 %	120000 psi @Strain 0.200 %	
Elongation at Break	31 %	31 %	
Modulus of Elasticity	205 GPa	29700 ksi	cold-rolled, heat treated sheet
Poissons Ratio	0.284	0.284	cold-rolled, heat treated sheet
Shear Modulus	80.0 GPa	11600 ksi	cold-rolled, heat treated sheet

Thermal Properties	Metric	English	Comments
CTE, linear	12.15 Åµm/m-Å°C @Temperature 21.0 - 93.0 Å°C	6.750 Åµin/in-Å°F @Temperature 69.8 - 199 Å°F	Mean; Annealed and Aged
	13.77 Åµm/m-Å°C @Temperature 21.0 - 316 Å°C	7.650 Åµin/in-Å°F @Temperature 69.8 - 601 Å°F	Mean; Annealed and Aged
	14.4 Åµm/m-Å°C @Temperature 21.0 - 538 Å°C	8.00 Åµin/in-Å°F @Temperature 69.8 - 1000 Å°F	Mean; Annealed and Aged
Specific Heat Capacity	0.435 J/g-Å°C	0.104 BTU/lb-Å°F	
Thermal Conductivity	11.1 W/m-K	77.0 BTU-in/hr-ftÅ²-Å°F	Annealed at 1800Å°F(982Å°C) for 1 h.

Thermal Properties	Metric	English	Comments
1260 - 1335 Â°C	2300 - 2435 Â°F		
Solidus	1260 Â°C	2300 Â°F	
Liquidus	1335 Â°C	2435 Â°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	0.20 - 0.80 %	0.20 - 0.80 %	
Boron, B	<= 0.0060 %	<= 0.0060 %	
Carbon, C	<= 0.050 %	<= 0.050 %	
Chromium, Cr	17 - 21 %	17 - 21 %	
Cobalt, Co	<= 1.0 %	<= 1.0 %	
Copper, Cu	<= 0.30 %	<= 0.30 %	
Iron, Fe	19 %	19 %	As remainder
Manganese, Mn	<= 0.35 %	<= 0.35 %	
Molybdenum, Mo	2.8 - 3.3 %	2.8 - 3.3 %	
Nickel, Ni	50 - 55 %	50 - 55 %	Including Cobalt
Niobium, Nb (Columbium, Cb)	4.75 - 5.25 %	4.75 - 5.25 %	Includes Ta
Nitrogen, N	<= 0.010 %	<= 0.010 %	
Phosphorous, P	<= 0.015 %	<= 0.015 %	
Silicon, Si	<= 0.35 %	<= 0.35 %	
Sulfur, S	<= 0.0020 %	<= 0.0020 %	
Titanium, Ti	0.65 - 1.15 %	0.65 - 1.15 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000125 ohm-cm	0.000125 ohm-cm	
Magnetic Permeability	1.0013	1.0013	at 200 Oersted (15.9 kA/m);Annealed
Curie Temperature	<= -197 Â°C	<= -323 Â°F	

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