

Special Metals INCONEL® 690 Nickel Superalloy, Hot Rolled Flat, 2.0 inch (51 mm) Diameter

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

Composition adjustments for nuclear applications: 28-31 Cr; 0.04 max C; 0.10 max Co. Tensile strength (ultimate and yield) and elongation values reported here are typical for Hot Rolled Flat, 2.0 inch (51 mm) Diameter. Other property values are typical of INCONEL® alloy 690. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-INCONEL-690-Nickel-Superalloy-Hot-Rolled-Flat-20-inch-51-mm-Diameter.php

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

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	689 MPa	100000 psi	
Tensile Strength, Yield	334 MPa @Strain 0.200 %	48500 psi @Strain 0.200 %	
Elongation at Break	50 %	50 %	
Modulus of Elasticity	211 GPa	30600 ksi	
Poissons Ratio	0.289	0.289	
Shear Modulus	81.8 GPa	11900 ksi	Calculated

Thermal Properties	Metric	English	Comments
CTE, linear	14.06 $\mu\text{m/m-}^{\circ}\text{C}$	7.811 $\mu\text{in/in-}^{\circ}\text{F}$	Mean
	@Temperature 24.0 - 100 $^{\circ}\text{C}$	@Temperature 75.2 - 212 $^{\circ}\text{F}$	
	14.53 $\mu\text{m/m-}^{\circ}\text{C}$	8.072 $\mu\text{in/in-}^{\circ}\text{F}$	Mean
	@Temperature 24.0 - 300 $^{\circ}\text{C}$	@Temperature 75.2 - 572 $^{\circ}\text{F}$	
	15.19 $\mu\text{m/m-}^{\circ}\text{C}$	8.439 $\mu\text{in/in-}^{\circ}\text{F}$	Mean
	@Temperature 24.0 - 500 $^{\circ}\text{C}$	@Temperature 75.2 - 932 $^{\circ}\text{F}$	
	17.41 $\mu\text{m/m-}^{\circ}\text{C}$	9.672 $\mu\text{in/in-}^{\circ}\text{F}$	Mean, extrapolated
	@Temperature 20.0 - 1000 $^{\circ}\text{C}$	@Temperature 68.0 - 1830 $^{\circ}\text{F}$	

Specific Heat Capacity Thermal Properties	0.450 J/g-Â°C Metric	0.108 BTU/lb-Â°F English	Comments
Thermal Conductivity	13.5 W/m-K	93.7 BTU-in/hr-ftÂ²- Â°F	
Melting Point	1343 - 1377 Â°C	2449 - 2511 Â°F	
Solidus	1343 Â°C	2449 Â°F	
Liquidus	1377 Â°C	2511 Â°F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.050 %	<= 0.050 %	
Chromium, Cr	27 - 31 %	27 - 31 %	
Copper, Cu	0.50 %	0.50 %	
Iron, Fe	7.0 - 11 %	7.0 - 11 %	
Manganese, Mn	<= 0.50 %	<= 0.50 %	
Nickel, Ni	>= 58 %	>= 58 %	
Silicon, Si	<= 0.50 %	<= 0.50 %	
Sulfur, S	<= 0.15 %	<= 0.15 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0001148 ohm-cm	0.0001148 ohm-cm	
Magnetic Permeability	1.001	1.001	at 200 Oersted (15.9 kA/m)

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