

## Special Metals INCONEL® 690 Nickel Superalloy, Cold Drawn Tube, 0.50 inch (12.7 mm) o.d. and 0.050 inch (1.27 mm) Thickness

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 Cold Drawn Tube, 0.50 inch (12.7 mm) o.d. and 0.050 inch (1.27 mm) Thickness. 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-Cold-Drawn-Tube-050-inch-127-mm-od-and-0050-inch-127-mm-Thickness.php](http://www.lookpolymers.com/polymer_Special-Metals-INCONEL-690-Nickel-Superalloy-Cold-Drawn-Tube-050-inch-127-mm-od-and-0050-inch-127-mm-Thickness.php)

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

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	758 MPa	110000 psi	
Tensile Strength, Yield	461 MPa @Strain 0.200 %	66800 psi @Strain 0.200 %	
Elongation at Break	39 %	39 %	
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 $\mu\text{m/m-}^\circ\text{C}$ @Temperature 24.0 - 100 $^\circ\text{C}$	7.811 $\mu\text{in/in-}^\circ\text{F}$ @Temperature 75.2 - 212 $^\circ\text{F}$	Mean
	14.53 $\mu\text{m/m-}^\circ\text{C}$ @Temperature 24.0 - 300 $^\circ\text{C}$	8.072 $\mu\text{in/in-}^\circ\text{F}$ @Temperature 75.2 - 572 $^\circ\text{F}$	Mean
	15.19 $\mu\text{m/m-}^\circ\text{C}$ @Temperature 24.0 - 500 $^\circ\text{C}$	8.439 $\mu\text{in/in-}^\circ\text{F}$ @Temperature 75.2 - 932 $^\circ\text{F}$	Mean
	17.41 $\mu\text{m/m-}^\circ\text{C}$ @Temperature 20.0 - 1000 $^\circ\text{C}$	9.672 $\mu\text{in/in-}^\circ\text{F}$ @Temperature 68.0 - 1830 $^\circ\text{F}$	Mean, extrapolated

Thermal Properties	Metric	English	Comments
Thermal Conductivity	13.5 W/m-K	93.7 BTU-in/hr-ft <sup>2</sup> - °F	
Melting Point	1343 - 1377 °C	2449 - 2511 °F	
Solidus	1343 °C	2449 °F	
Liquidus	1377 °C	2511 °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)

## Contact Songhan Plastic Technology Co.,Ltd.

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