

Special Metals INCONEL® 686 Nickel Superalloy (UNS N06686) Round 1.500 in (38.1 mm)

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

Tensile strength (ultimate and yield) and elongation values reported here are typical for 1.500 inch round. Other property values are typical of INCONEL® alloy 686. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-INCONEL-686-Nickel-Superalloy-UNS-N06686-Round-1500-in-381-mm.php

Physical Properties	Metric	English	Comments
Density	8.72 g/cc	0.315 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	810.1 MPa	117500 psi	
Tensile Strength, Yield	359 MPa @Strain 0.200 %	52100 psi @Strain 0.200 %	
Elongation at Break	56 %	56 %	
Modulus of Elasticity	207 GPa	30000 ksi	
Poissons Ratio	0.34	0.34	
Shear Modulus	77.0 GPa	11200 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	11.97 $\mu\text{m/m-}^{\circ}\text{C}$ @Temperature 21.0 - 100 $^{\circ}\text{C}$	6.650 $\mu\text{in/in-}^{\circ}\text{F}$ @Temperature 69.8 - 212 $^{\circ}\text{F}$	Mean
	12.56 $\mu\text{m/m-}^{\circ}\text{C}$ @Temperature 21.0 - 300 $^{\circ}\text{C}$	6.978 $\mu\text{in/in-}^{\circ}\text{F}$ @Temperature 69.8 - 572 $^{\circ}\text{F}$	Mean
	13.01 $\mu\text{m/m-}^{\circ}\text{C}$ @Temperature 21.0 - 500 $^{\circ}\text{C}$	7.228 $\mu\text{in/in-}^{\circ}\text{F}$ @Temperature 69.8 - 932 $^{\circ}\text{F}$	Mean
Specific Heat Capacity	0.373 J/g- $^{\circ}\text{C}$	0.0891 BTU/lb- $^{\circ}\text{F}$	
Melting Point	1338 - 1380 $^{\circ}\text{C}$	2440 - 2520 $^{\circ}\text{F}$	
Solidus	1338 $^{\circ}\text{C}$	2440 $^{\circ}\text{F}$	

Liquidus Thermal Properties	1380 Å°C Metric	2520 Å°F English	Comments
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Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.010 %	<= 0.010 %	
Chromium, Cr	19 - 23 %	19 - 23 %	
Iron, Fe	<= 5.0 %	<= 5.0 %	
Manganese, Mn	<= 0.75 %	<= 0.75 %	
Molybdenum, Mo	15 - 17 %	15 - 17 %	
Nickel, Ni	59 %	59 %	As remainder
Phosphorous, P	<= 0.040 %	<= 0.040 %	
Sulfur, S	<= 0.020 %	<= 0.020 %	
Titanium, Ti	0.020 - 0.25 %	0.020 - 0.25 %	
Tungsten, W	3.0 - 4.4 %	3.0 - 4.4 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0001237 ohm-cm	0.0001237 ohm-cm	
Magnetic Permeability	1.001	1.001	at 200 Oersted (15.9 kA/m)

Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com

Email : sales@lookpolymers.com

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China