

## Special Metals INCONEL® 706 Precipitation Hardening Alloy, Cold Rolled Sheet, 3 Part Heat Treatment, 0.062 inch (1.57 mm) Thickness

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy , Iron Base

### Material Notes:

Tensile and bearing strengths (ultimate and yield) and elongation values reported here are typical for Cold Rolled Sheet, 3 Part Heat Treatment, 0.062 inch (1.57 mm) Thickness samples. Density and magnetic permeability are typical of precipitation hardened INCONEL® alloy 706. Other property values are typical of INCONEL® alloy 706. For optimum creep and rupture properties, the alloy receives a three part heat treatment as follows: Solution treat 1700-1850°F (925-1010°C) for a time commensurate with section size, then air cool. Stabilizing treatment 1550°F (845°C)/3 hr, air cool. Precipitation treatment 1325°F (720°C)/8 hr, furnace cool at 100°F (55°C)/hr to 1150°F (620°C)/8 hr, air cool. Data provided by the manufacturer, Special Metals.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Special-Metals-INCONEL-706-Precipitation-Hardening-Alloy-Cold-Rolled-Sheet-3-Part-Heat-Treatment-0062-inch-157-mm-Thickness.php](http://www.lookpolymers.com/polymer_Special-Metals-INCONEL-706-Precipitation-Hardening-Alloy-Cold-Rolled-Sheet-3-Part-Heat-Treatment-0062-inch-157-mm-Thickness.php)

Physical Properties	Metric	English	Comments
Density	8.08 g/cc	0.292 lb/in <sup>3</sup>	Precipitation Hardened

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1300 MPa	189000 psi	
Tensile Strength, Yield	1058 MPa @Strain 0.200 %	153500 psi @Strain 0.200 %	
Elongation at Break	18 %	18 %	
Modulus of Elasticity	210 GPa	30500 ksi	Dynamic Method
Ultimate Bearing Strength	2067 MPa	299800 psi	Transverse, pin diameter = 0.250 in. (6.35 mm). Edge distance ratio of 1.5.
Bearing Yield Strength	1518 MPa	220200 psi	2% Offset, Transverse, pin diameter = 0.250 in. (6.35 mm). Edge distance ratio of 1.5.
Poissons Ratio	0.382	0.382	Calculated by mfr.
Shear Modulus	76.0 GPa	11000 ksi	Dynamic Method

Thermal Properties	Metric	English	Comments
CTE, linear	13.46 Åµm/m-Å°C	7.478 Åµin/in-Å°F	Mean
	@Temperature 24.0 - 100 Å°C	@Temperature 75.2 - 212 Å°F	
	15.08 Åµm/m-Å°C	8.378 Åµin/in-Å°F	Mean

Thermal Properties	Metric @Temperature 24.0 - 300 Â°C	English @Temperature 75.2 - 312 Â°F	Comments
	15.59 Âµm/m-Â°C	8.661 Âµin/in-Â°F	Mean
	@Temperature 24.0 - 500 Â°C	@Temperature 75.2 - 932 Â°F	
	16.42 Âµm/m-Â°C	9.122 Âµin/in-Â°F	Mean
	@Temperature 21.0 - 700 Â°C	@Temperature 69.8 - 1290 Â°F	
Specific Heat Capacity	0.444 J/g-Â°C	0.106 BTU/lb-Â°F	
Thermal Conductivity	12.5 W/m-K	86.8 BTU-in/hr-ftÂ²- Â°F	
Melting Point	1334 - 1371 Â°C	2433 - 2500 Â°F	
Solidus	1334 Â°C	2433 Â°F	
Liquidus	1371 Â°C	2500 Â°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	<= 0.060 %	<= 0.060 %	
Boron, B	<= 0.0060 %	<= 0.0060 %	
Carbon, C	<= 0.30 %	<= 0.30 %	
Chromium, Cr	14.5 - 17.5 %	14.5 - 17.5 %	
Cobalt, Co	<= 1.0 %	<= 1.0 %	
Copper, Cu	<= 0.35 %	<= 0.35 %	
Iron, Fe	38 %	38 %	As remainder
Manganese, Mn	<= 0.35 %	<= 0.35 %	
Nickel, Ni	39 - 44 %	39 - 44 %	Including Cobalt
Niobium, Nb (Columbium, Cb)	2.5 - 3.3 %	2.5 - 3.3 %	Includes Ta
Phosphorous, P	<= 0.020 %	<= 0.020 %	
Silicon, Si	<= 0.35 %	<= 0.35 %	
Sulfur, S	<= 0.015 %	<= 0.015 %	
Titanium, Ti	<= 0.40 %	<= 0.40 %	

Electrical Properties	Metric	English	Comments
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Electrical Properties	Metric	English	Comments
Magnetic Permeability	1.01	1.01	at 200 Oersted (15.9 kA/m);Annealed
Curie Temperature	$\leq -78.0 \text{ }^{\circ}\text{C}$	$\leq -108 \text{ }^{\circ}\text{F}$	

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