

Special Metals INCONEL® 706 Precipitation Hardening Alloy, Hot Finished Rod, 3 Part Heat Treatment, 8.0 inch (203 mm) Diameter

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

Material Notes:

Tensile strength (ultimate and yield), compressive strength, reduction of area, and elongation values reported here are typical for Hot Finished Rod, 3 Part Heat Treatment, 8.0 inch (203 mm) Diameter 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-Hot-Finished-Rod-3-Part-Heat-Treatment-80-inch-203-mm-Diameter.php

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

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1300 MPa	189000 psi	
Tensile Strength, Yield	1010 MPa @Strain 0.200 %	146000 psi @Strain 0.200 %	
Elongation at Break	18 %	18 %	
Reduction of Area	28 %	28 %	
Modulus of Elasticity	210 GPa	30500 ksi	Dynamic Method
Compressive Yield Strength	1102 MPa	159900 psi	(0.2% Offset) Thickness not reported for this value
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
	@Temperature 24.0 - 300 Å°C	@Temperature 75.2 - 572 Å°F	

Thermal Properties	Metric $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	English $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	Comments
	@Temperature 24.0 - 500 Å°C	@Temperature 75.2 - 932 Å°F	Mean
	16.42 Å $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	9.122 Å $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	Mean
	@Temperature 21.0 - 700 Å°C	@Temperature 69.8 - 1290 Å°F	
Specific Heat Capacity	0.444 J/g·Å°C	0.106 BTU/lb·Å°F	
Thermal Conductivity	12.5 W/m·K	86.8 BTU-in/hr-ftÅ²-Å°F	
Melting Point	1334 - 1371 Å°C	2433 - 2500 Å°F	
Solidus	1334 Å°C	2433 Å°F	
Liquidus	1371 Å°C	2500 Å°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
Electrical Resistivity	0.0000985 ohm-cm	0.0000985 ohm-cm	

Electrical Properties	Metric	English	Comments
Curie Temperature	<= -78.0 Â°C	<= -108 Â°F	at 200 Gauss (15.9 kA/m), Annealed

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