

Special Metals INCONEL® 706 Precipitation Hardening Alloy, Forged Disc, 2 Part Heat Treatment

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

Material Notes:

Tensile strength (ultimate and yield), reduction of area, and elongation values reported here are typical for Forged Disc, 2 Part Heat Treatment samples. Density and magnetic permeability are typical of precipitation hardened INCONEL® alloy 706. Other property values are typical of INCONEL® alloy 706. For tensile-limited applications, the alloy receives a two part heat treatment as follows: Solution treat 1700-1850°F (925-1010°C) for a time commensurate with section size, then air cool. Precipitation treatment 1350°F (730°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-Forged-Disc-2-Part-Heat-Treatment.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	1260 MPa	183000 psi	
Tensile Strength, Yield	1085 MPa @Strain 0.200 %	157400 psi @Strain 0.200 %	
Elongation at Break	22 %	22 %	
Reduction of Area	43 %	43 %	
Modulus of Elasticity	210 GPa	30500 ksi	Dynamic Method
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 µm/m-°C @Temperature 24.0 - 100 °C	7.478 µin/in-°F @Temperature 75.2 - 212 °F	Mean
	15.08 µm/m-°C @Temperature 24.0 - 300 °C	8.378 µin/in-°F @Temperature 75.2 - 572 °F	Mean
	15.59 µm/m-°C @Temperature 24.0 - 500 °C	8.661 µin/in-°F @Temperature 75.2 - 932 °F	Mean

Thermal Properties	Metric	English	Comments
	16.42 J/m-Å°C	9.122 J/in-Å°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	
Magnetic Permeability	1.01	1.01	at 200 Oersted (15.9 kA/m);Annealed
Curie Temperature	<= -78.0 Å°C	<= -108 Å°F	

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