

Special Metals INCONEL® alloy 740 Precipitation-Hardenable Ni-Cr-Co Superalloy

Category : Metal , Nonferrous Metal , Cobalt Alloy , Nickel Alloy , Superalloy

Material Notes:

INCONEL® alloy 740 is a nickel-chromium-cobalt alloy developed by Special Metals Corporation. The alloy is age hardenable by the precipitation of a gamma prime second phase. Potential applications include advanced power production boiler tubes and diesel engine exhaust valves. INCONEL alloy 740 is still under development. While the composition is defined, work is continuing on processing the alloy. Information Provided by Special Metals Corporation

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-INCONEL-alloy-740-Precipitation-Hardenable-Ni-Cr-Co-Superalloy.php

Physical Properties	Metric	English	Comments
Density	8.05 g/cc	0.291 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	33.6	33.6	
Tensile Strength, Ultimate	1209 MPa	175300 psi	
Tensile Strength, Yield	818.4 MPa @Strain 0.200 %	118700 psi @Strain 0.200 %	
Elongation at Break	36.4 %	36.4 %	
Modulus of Elasticity	158 GPa @Temperature 900 Â°C	22900 ksi @Temperature 1650 Â°F	
	193 GPa @Temperature 500 Â°C	28000 ksi @Temperature 932 Â°F	
	218 GPa @Temperature 100 Â°C	31600 ksi @Temperature 212 Â°F	
	221 GPa @Temperature 22.0 Â°C	32100 ksi @Temperature 71.6 Â°F	

Thermal Properties	Metric	English	Comments
CTE, linear	12.38 Âµm/m-Â°C @Temperature 100 Â°C	6.878 Âµin/in-Â°F @Temperature 212 Â°F	
	14.27 Âµm/m-Â°C	7.928 Âµin/in-Â°F	

Thermal Properties	Metric	English	Comments
	@ Temperature 500 Â°C	@ Temperature 932 Â°F	
	15.81 Âµm/m-Â°C	8.783 Âµin/in-Â°F	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	
Specific Heat Capacity	0.449 J/g-Â°C	0.107 BTU/lb-Â°F	
	@Temperature 23.0 Â°C	@Temperature 73.4 Â°F	
	0.476 J/g-Â°C	0.114 BTU/lb-Â°F	
	@Temperature 100 Â°C	@Temperature 212 Â°F	
	0.513 J/g-Â°C	0.123 BTU/lb-Â°F	
	@Temperature 500 Â°C	@Temperature 932 Â°F	
	0.635 J/g-Â°C	0.152 BTU/lb-Â°F	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	
Thermal Conductivity	10.2 W/m-K	70.8 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 23.0 Â°C	@Temperature 73.4 Â°F	
	11.7 W/m-K	81.2 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 100 Â°C	@Temperature 212 Â°F	
	17.1 W/m-K	119 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 500 Â°C	@Temperature 932 Â°F	
	23.8 W/m-K	165 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	
Melting Point	1288 - 1362 Â°C	2350 - 2484 Â°F	
Solidus	1288 Â°C	2350 Â°F	
Liquidus	1362 Â°C	2484 Â°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	0.90 %	0.90 %	
Carbon, C	0.030 %	0.030 %	
Chromium, Cr	25 %	25 %	
Cobalt, Co	20 %	20 %	

Component Elements Properties	Metric	English	Comments
Manganese, Mn	0.30 %	0.30 %	
Molybdenum, Mo	0.50 %	0.50 %	
Nickel, Ni	48.27 %	48.27 %	Remainder
Niobium, Nb (Columbium, Cb)	2.0 %	2.0 %	
Silicon, Si	0.50 %	0.50 %	
Titanium, Ti	1.8 %	1.8 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0001168 ohm-cm	0.0001168 ohm-cm	

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