Special Metals INCONELÂ® alloy 783 Ni-Co-Fe Alloy

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

Material Notes:

The newest of the high-performance superalloys invented by Special Metals Corporation, INCONELÂ® alloy 783 (UNS R30783/US Patent 5,478,417), is an oxidation-resistant, low expansion, nickel-cobalt-iron alloy with aluminum, chromium, and niobium additions. The new alloy is of considerable interest to aircraft gas turbine engine designers and materials engineers for containment and clearance control components such as rings, casings, shrouds and seals for compressors, turbines and exhaust systems. The three-phase age hardenable alloy offers a range of improvements for these applications over alternative alloys in current use.Information Provided by Special Metals Corporation

Order this product through the following link:
http://www.lookpolymers.com/polymer_Special-Metals-INCONEL-alloy-783-Ni-Co-Fe-Alloy.php

Physical Properties	Metric	English	Comments
Density	7.81 g/cc	0.282 lb/inÂ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength at Break	807 MPa @Temperature 704 Â°C	117000 psi @Temperature 1300 Â°F	
	979 MPa @Temperature 649 Â°C	142000 psi @Temperature 1200 Â°F	
	1034 MPa @Temperature 538 Â°C	150000 psi @Temperature 1000 Â°F	
	1076 MPa @Temperature 427 Â°C	156100 psi @Temperature 801 Â°F	
	1194 MPa @Temperature 21.0 Â°C	173200 psi @Temperature 69.8 Â°F	
Tensile Strength, Yield	607 MPa @Temperature 704 Â°C	88000 psi @Temperature 1300 Â°F	
	683 MPa @Temperature 649 Â°C	99100 psi @Temperature 1200 Â°F	
	686 MPa	99500 psi	

Mechanical Properties	Metric	English	Comments
	@Temperature 538 Â°C	@Temperature 1000 Â°F	
	717 MPa @Temperature 427 Â°C	104000 psi @Temperature 801 Â°F	
	779 MPa @Temperature 21.0 Â°C	113000 psi @Temperature 69.8 Â°F	
Elongation at Break	24 % @Temperature 21.0 Â°C	24 % @Temperature 69.8 Â°F	
	25 % @Temperature 427 Â°C	25 % @Temperature 801 Â°F	
	25 % @Temperature 538 Â°C	25 % @Temperature 1000 Â°F	
	28 % @Temperature 649 Â°C	28 % @Temperature 1200 Â°F	
	39 % @Temperature 704 Â°C	39 % @Temperature 1300 Â°F	
Reduction of Area	39 % @Temperature 649 Â°C	39 % @Temperature 1200 Â°F	
	42 % @Temperature 427 Â°C	42 % @Temperature 801 Â°F	
	44 % @Temperature 21.0 Â°C	44 % @Temperature 69.8 Â°F	
	46 % @Temperature 538 Â°C	46 % @Temperature 1000 Â°F	
	64 % @Temperature 704 Â°C	64 % @Temperature 1300 Â°F	
	210 MPa	30500 psi	

Mechanical Properties	Metric	English	Comments
Rupture Strength	@Temperature 704 Â°C, Time 3.96e+6 sec	@Temperature 1300 Â°F, Time 1100 hour	
	300 MPa @Temperature 704 Â°C, Time 1.44e+6 sec	43500 psi @Temperature 1300 Â°F, Time 400 hour	
	570 MPa @Temperature 593 Â°C, Time 3.96e+7 sec	82700 psi @Temperature 1100 Â°F, Time 11000 hour	
	689 MPa @Temperature 593 Â°C, Time 1.44e+6 sec	100000 psi @Temperature 1100 Â°F, Time 400 hour	
	689 MPa @Temperature 538 Â°C, Time 3.96e+7 sec	100000 psi @Temperature 1000 Â°F, Time 11000 hour	
	903 MPa @Temperature 538 Â°C, Time 1.08e+6 sec	131000 psi @Temperature 1000 Â°F, Time 300 hour	
Modulus of Elasticity	128.7 GPa @Temperature 927 Â°C	18670 ksi @Temperature 1700 Â°F	
	152.5 GPa @Temperature 704 Â°C	22120 ksi @Temperature 1300 Â°F	
	163.8 GPa @Temperature 538 Â°C	23760 ksi @Temperature 1000 Â°F	
	171.3 GPa @Temperature 316 Â°C	24850 ksi @Temperature 601 Â°F	
	175.5 GPa @Temperature 93.0 Â°C	25450 ksi @Temperature 199 Â°F	
	177.3 GPa @Temperature 21.0 Â°C	25720 ksi @Temperature 69.8 Â°F	

Mechanical Properties	Metric	English	Comments
Poissons Ratio	0.29	0.29	
	@Temperature 927 Â°C	@Temperature 1700 Â°F	
	0.30 @Temperature 538 Â°C	0.30 @Temperature 1000 Â°F	
	0.30 @Temperature 704 Â°C	0.30 @Temperature 1300 Â°F	
	0.31 @Temperature 21.0 Â°C	0.31 @Temperature 69.8 Â°F	
	0.31 @Temperature 93.0 Â°C	0.31 @Temperature 199 Â°F	
	0.32 @Temperature 316 Â°C	0.32 @Temperature 601 Â°F	
Shear Modulus	49.8 GPa @Temperature 927 Â°C	7220 ksi @Temperature 1700 Â°F	
	58.6 GPa @Temperature 704 Â°C	8500 ksi @Temperature 1300 Â°F	
	62.8 GPa @Temperature 538 Â°C	9110 ksi @Temperature 1000 Â°F	
	65.0 GPa @Temperature 316 Â°C	9430 ksi @Temperature 601 Â°F	
	67.0 GPa @Temperature 93.0 Â°C	9720 ksi @Temperature 199 Â°F	
	67.8 GPa @Temperature 21.0 Â°C	9830 ksi @Temperature 69.8 Â°F	

Thermal Properties	Metric	English	Comments
CTE, linear	10.08 Âµm/m-Â°C	5.600 Âµin/in-Â°F	

Thermal Properties	Metric	English	Comments
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	10.33 Âµm/m-Â°C @Temperature 500 Â°C	5.739 Âµin/in-Â°F @Temperature 932 Â°F	
	10.94 Âµm/m-Â°C @Temperature 800 Â°C	6.078 Âµin/in-Â°F @Temperature 1470 Â°F	
	12.33 Âµm/m-Â°C @Temperature 1100 Â°C	6.850 Âµin/in-Â°F @Temperature 2010 Â°F	
Specific Heat Capacity	0.455 J/g-Â°C	0.109 BTU/lb-Â°F	
Thermal Conductivity	10.1 W/m-K @Temperature 21.0 Â°C	70.1 BTU-in/hr-ftÂ²-Â°F @Temperature 69.8 Â°F	Annealed
	11.4 W/m-K @Temperature 93.0 Â°C	79.1 BTU-in/hr-ftÂ²-Â°F @Temperature 199 Â°F	Annealed
	14.8 W/m-K @Temperature 316 Â°C	103 BTU-in/hr-ftÂ²-Â°F @Temperature 601 Â°F	Annealed
	22.0 W/m-K @Temperature 649 Â°C	153 BTU-in/hr-ftÂ²-Â°F @Temperature 1200 Â°F	Annealed
Melting Point	1336 - 1407 Â°C	2437 - 2565 Â°F	
Solidus	1336 Â°C	2437 Â°F	
Liquidus	1407 Â°C	2565 Â°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	5.0 - 6.0 %	5.0 - 6.0 %	
Boron, B	0.0030 - 0.012 %	0.0030 - 0.012 %	
Carbon, C	<= 0.030 %	<= 0.030 %	
Chromium, Cr	2.5 - 3.5 %	2.5 - 3.5 %	
Cobalt, Co	28.083 - 39.90 %	28.083 - 39.90 %	Remainder
Copper, Cu	<= 0.50 %	<= 0.50 %	
Iron, Fe	24 - 27 %	24 - 27 %	

Component Elements Properties	Metric	English	Comments
Manganese, Mn	<= 0.50 %	<= 0.50 %	
Nickel, Ni	26 - 30 %	26 - 30 %	
Niobium, Nb (Columbium, Cb)	2.5 - 3.5 %	2.5 - 3.5 %	
Phosphorous, P	<= 0.015 %	<= 0.015 %	
Silicon, Si	<= 0.50 %	<= 0.50 %	
Sulfur, S	<= 0.0050 %	<= 0.0050 %	
Titanium, Ti	0.10 - 0.40 %	0.10 - 0.40 %	

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