

ATI Allegheny Ludlum Altemp® 718 Nickel-Base Superalloy, Solution Treated plus Precipitation Heat Treated, UNS N07718

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

Allegheny Ludlum Altemp 718 alloy is an austenitic nickel-base superalloy which is used in applications requiring high strength to approximately 760 degrees Celsius and oxidation resistance to approximately 982 degrees Celsius. In addition, the alloy exhibits excellent tensile and impact strength even at cryogenic temperatures. High strength at room and elevated temperatures is developed by a precipitation heat treatment at 718 degrees Celsius with cooling and a hold at 621°C. The relatively slow response to precipitation hardening permits repair welding of the Altemp 718 alloy even in the aged condition. The Altemp 718 alloy is usually produced by a double melt practice using consumable electrode remelt procedures to provide homogeneity and extremely clean structures. Uses include aircraft ducting and engine plumbing. Tensile properties below are from AMS 5596 and/or AMS 5597. Information provided by Allegheny Ludlum

Order this product through the following link:

http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-Altemp-718-Nickel-Base-Superalloy-Solution-Treated-plus-Precipitation-Heat-Treated-UNS-N07718.php

Physical Properties	Metric	English	Comments
Density	8.22 g/cc	0.297 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	>= 1240 MPa	>= 180000 psi	
Tensile Strength, Yield	>= 1035 MPa @Strain 0.200 %	>= 150100 psi @Strain 0.200 %	
Elongation at Break	>= 12 %	>= 12 %	in 2"
Modulus of Elasticity	200 GPa	29000 ksi	
Poissons Ratio	0.294	0.294	
Shear Modulus	77.0 GPa	11200 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	12.8 µm/m-°C	7.11 µin/in-°F	
	@Temperature 20.0 - 93.0 °C	@Temperature 68.0 - 199 °F	
	13.9 µm/m-°C	7.72 µin/in-°F	
	@Temperature 20.0 - 315 °C	@Temperature 68.0 - 599 °F	
	14.4 µm/m-°C	8.00 µin/in-°F	
	@Temperature 20.0 -	@Temperature 68.0 -	

Thermal Properties	538 °C Metric	1000 °F English	Comments
Thermal Conductivity	11.2 W/m-K @Temperature 0.000 - 100 °C	77.7 BTU-in/hr-ft ² -°F @Temperature 32.0 - 212 °F	
Maximum Service Temperature, Air	982 °C	1800 °F	oxidation resistance to this temp

Component Elements Properties	Metric	English	Comments
Aluminum, Al	0.50 %	0.50 %	
Boron, B	0.0030 %	0.0030 %	
Carbon, C	0.050 %	0.050 %	
Chromium, Cr	18.5 %	18.5 %	
Cobalt, Co	0.30 %	0.30 %	
Copper, Cu	0.050 %	0.050 %	
Iron, Fe	18 %	18 %	as balance
Manganese, Mn	0.10 %	0.10 %	
Molybdenum, Mo	3.0 %	3.0 %	
Nickel, Ni	53 %	53 %	
Niobium, Nb (Columbium, Cb)	5.1 %	5.1 %	
Phosphorous, P	0.0060 %	0.0060 %	
Silicon, Si	0.15 %	0.15 %	
Sulfur, S	0.0010 %	0.0010 %	
Titanium, Ti	1.0 %	1.0 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000121 ohm-cm	0.000121 ohm-cm	

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