

ATI Allegheny Ludlum Stainless Steel Type 321 (UNS S32100)

Category : Metal , Ferrous Metal , Stainless Steel , T 300 Series Stainless Steel

Material Notes:

AL 321 is a stabilized stainless steel which offers excellent resistance to intergranular corrosion following exposure to temperatures in the chromium carbide precipitation range from 800° to 1500°C. The addition of titanium stabilizes against chromium carbide formation. Tensile and hardness data below per ASTM A 240 and ASME SA-240 Information provided by Allegheny Ludlum Corporation.

Order this product through the following link:

http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-Stainless-Steel-Type-321-UNS-S32100.php

Physical Properties	Metric	English	Comments
Density	7.92 g/cc	0.286 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	<= 217	<= 217	plate
Hardness, Rockwell B	<= 95	<= 95	sheet or strip
Tensile Strength, Ultimate	>= 515 MPa	>= 74700 psi	
Tensile Strength, Yield	>= 205 MPa @Strain 0.200 %	>= 29700 psi @Strain 0.200 %	
Elongation at Break	>= 40 %	>= 40 %	in 2" (50 mm)
Modulus of Elasticity	193 GPa	28000 ksi	in tension
Fatigue Strength	180 MPa	26100 psi	endurance limit; test conditions not reported

Thermal Properties	Metric	English	Comments
CTE, linear	16.6 µm/m-°C	9.22 µin/in-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
	18.9 µm/m-°C	10.5 µin/in-°F	
	@Temperature 20.0 - 600 °C	@Temperature 68.0 - 1110 °F	
	20.5 µm/m-°C	11.4 µin/in-°F	
	@Temperature 20.0 - 1000 °C	@Temperature 68.0 - 1830 °F	
Specific Heat Capacity	0.500 J/g-°C	0.120 BTU/lb-°F	
	16.3 W/m-K	113 BTU-in/hr-ft ² -°F	

Thermal Properties	Metric @ Temperature 20.0 - 100 °C	English @ Temperature 68.0 - 212 °F	Comments
Melting Point	1398 - 1446 °C	2548 - 2635 °F	
Solidus	1398 °C	2548 °F	
Liquidus	1446 °C	2635 °F	
Maximum Service Temperature, Air	816 °C	1500 °F	good for prolonged service

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.080 %	<= 0.080 %	
Chromium, Cr	17 - 19 %	17 - 19 %	
Iron, Fe	70 %	70 %	as balance
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Nickel, Ni	9.0 - 12 %	9.0 - 12 %	
Nitrogen, N	<= 0.10 %	<= 0.10 %	
Phosphorous, P	<= 0.045 %	<= 0.045 %	
Silicon, Si	<= 0.75 %	<= 0.75 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	
Titanium, Ti	<= 0.70 %	<= 0.70 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000720 ohm-cm	0.0000720 ohm-cm	
Magnetic Permeability	<= 1.02	<= 1.02	typically < 1.02 at 200H; increases with cold work.

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