

ATI Allegheny Ludlum 309 Austenitic Stainless Steel

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

Material Notes:

Characteristics: comparable corrosion resistance, superior resistance to oxidation, and the retention of a larger fraction of room temperature strength than common austenitic alloys. Good creep deformation resistance. Applications: Heat treatment industry-conveyor belts, rollers, burner parts, refractory supports, retorts linings, oven linings, fans, tube hangers, baskets, and trays. Chemical process industry- containers for hot concentrated acids, ammonia, and sulfur dioxide. Food processing industry- used in contact with hot acetic and citric acid. Information provided by Allegheny Ludlum

Order this product through the following link:

http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-309-Austenitic-Stainless-Steel.php

Physical Properties	Metric	English	Comments
Density	8.03 g/cc	0.290 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	621 MPa	90100 psi	ASTM E8
	69.0 MPa	10000 psi	ASTM E8
	@Temperature 982 °C	@Temperature 1800 °F	
	145 MPa	21000 psi	ASTM E8
	@Temperature 871 °C	@Temperature 1600 °F	
	248 MPa	36000 psi	ASTM E8
	@Temperature 760 °C	@Temperature 1400 °F	
	379 MPa	55000 psi	ASTM E8
	@Temperature 649 °C	@Temperature 1200 °F	
	455 MPa	66000 psi	ASTM E8
@Temperature 538 °C	@Temperature 1000 °F		
497 MPa	72100 psi	ASTM E8	
@Temperature 427 °C	@Temperature 801 °F		
552 MPa	80100 psi	ASTM E8	
@Temperature 204 °C	@Temperature 399 °F		
Tensile Strength, Yield	128 MPa	18600 psi	ASTM E8
	@Temperature 871 °C	@Temperature 1600 °F	
	138 MPa	20000 psi	ASTM E8

Mechanical Properties	@Temperature 760 °C Metric	@Temperature 1400 °F English	Comments
	152 MPa	22000 psi	ASTM E8
	@Temperature 649 °C	@Temperature 1200 °F	
	166 MPa	24100 psi	ASTM E8
	@Temperature 538 °C	@Temperature 1000 °F	
	207 MPa	30000 psi	ASTM E8
	@Temperature 427 °C	@Temperature 801 °F	
	241 MPa	35000 psi	ASTM E8
	@Temperature 204 °C	@Temperature 399 °F	
	290 MPa	42100 psi	ASTM E8
	@Strain 0.200 %	@Strain 0.200 %	
Elongation at Break	49 %	49 %	ASTM E8
	35 %	35 %	ASTM E8
	@Temperature 649 °C	@Temperature 1200 °F	
	36 %	36 %	ASTM E8
	@Temperature 538 °C	@Temperature 1000 °F	
	40 %	40 %	ASTM E8
	@Temperature 427 °C	@Temperature 801 °F	
	40 %	40 %	ASTM E8
	@Temperature 760 °C	@Temperature 1400 °F	
	46 %	46 %	ASTM E8
	@Temperature 204 °C	@Temperature 399 °F	
	50 %	50 %	ASTM E8
	@Temperature 871 °C	@Temperature 1600 °F	
	65 %	65 %	ASTM E8
	@Temperature 982 °C	@Temperature 1800 °F	
Creep Strength	24.0 MPa	3480 psi	1% creep
	@Temperature 788 °C, Time 3.60e+7 sec	@Temperature 1450 °F, Time 10000 hour	
	83.0 MPa	12000 psi	1% creep
	@Temperature 593 °C, Time 3.60e+7 sec	@Temperature 1100 °F, Time 10000 hour	

Mechanical Properties	Metric	English	Comments
Rupture Strength	@Temperature 899 °C, Time 3.60e+7 sec	@Temperature 1650 °F, Time 10000 hour	
	83.0 MPa	12000 psi	
	@Temperature 677 °C, Time 3.60e+7 sec	@Temperature 1250 °F, Time 10000 hour	
Modulus of Elasticity	200 GPa	29000 ksi	
Poissons Ratio	0.30	0.30	calculated
Shear Modulus	77.0 GPa	11200 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	15.6 µm/m-°C	8.67 µin/in-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
	17.6 µm/m-°C	9.78 µin/in-°F	
	@Temperature 20.0 - 500 °C	@Temperature 68.0 - 932 °F	
	19.4 µm/m-°C	10.8 µin/in-°F	
	@Temperature 20.0 - 1000 °C	@Temperature 68.0 - 1830 °F	
Specific Heat Capacity	0.502 J/g-°C	0.120 BTU/lb-°F	
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
Thermal Conductivity	15.6 W/m-K	108 BTU-in/hr-ft ² -°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
	18.7 W/m-K	130 BTU-in/hr-ft ² -°F	
	@Temperature 20.0 - 500 °C	@Temperature 68.0 - 932 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.20 %	0.20 %	
Chromium, Cr	22 - 24 %	22 - 24 %	
Iron, Fe	57.975 - 62.975 %	57.975 - 62.975 %	As Remainder
Manganese, Mn	2.0 %	2.0 %	
Nickel, Ni			

Component Elements Properties	Metric	English	Comments
Phosphorous, P	0.045 %	0.045 %	
Silicon, Si	0.75 %	0.75 %	
Sulfur, S	0.030 %	0.030 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000780 ohm-cm	0.0000780 ohm-cm	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Electrical Resistivity	0.0001148 ohm-cm	0.0001148 ohm-cm	
	@Temperature 1200 °C	@Temperature 2190 °F	
Magnetic Permeability	1.02	1.02	at 200H

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