

ATI Allegheny Ludlum 310S 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-310S-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	624 MPa	90500 psi	ASTM E8
	44.0 MPa	6380 psi	ASTM E8
	@Temperature 1093 °C	@Temperature 1999 °F	
	81.0 MPa	11700 psi	ASTM E8
	@Temperature 982 °C	@Temperature 1800 °F	
	155 MPa	22500 psi	ASTM E8
	@Temperature 871 °C	@Temperature 1600 °F	
	393 MPa	57000 psi	ASTM E8
	@Temperature 649 °C	@Temperature 1200 °F	
	484 MPa	70200 psi	ASTM E8
	@Temperature 538 °C	@Temperature 1000 °F	
Tensile Strength, Yield	508 MPa	73700 psi	ASTM E8
	@Temperature 427 °C	@Temperature 801 °F	
	533 MPa	77300 psi	ASTM E8
	@Temperature 204 °C	@Temperature 399 °F	
	27.0 MPa	3920 psi	ASTM E8
	@Temperature 1093 °C	@Temperature 1999 °F	
	56.0 MPa	8120 psi	ASTM E8

Mechanical Properties	@Temperature 982 °C Metric	@Temperature 1800 °F English	Comments
	111 MPa	16100 psi	ASTM E8
	@Temperature 871 °C	@Temperature 1600 °F	
	178 MPa	25800 psi	ASTM E8
	@Temperature 649 °C	@Temperature 1200 °F	
	203 MPa	29400 psi	ASTM E8
	@Temperature 538 °C	@Temperature 1000 °F	
	209 MPa	30300 psi	ASTM E8
	@Temperature 427 °C	@Temperature 801 °F	
	254 MPa	36800 psi	ASTM E8
	@Temperature 204 °C	@Temperature 399 °F	
	314 MPa	45500 psi	ASTM E8
	@Strain 0.200 %	@Strain 0.200 %	
Elongation at Break	42.6 %	42.6 %	ASTM E8
	32 %	32 %	ASTM E8
	@Temperature 649 °C	@Temperature 1200 °F	
	33.5 %	33.5 %	ASTM E8
	@Temperature 427 °C	@Temperature 801 °F	
	35.8 %	35.8 %	ASTM E8
	@Temperature 204 °C	@Temperature 399 °F	
	37 %	37 %	ASTM E8
	@Temperature 538 °C	@Temperature 1000 °F	
	56.5 %	56.5 %	ASTM E8
	@Temperature 871 °C	@Temperature 1600 °F	
	93.3 %	93.3 %	ASTM E8
	@Temperature 982 °C	@Temperature 1800 °F	
	121 %	121 %	ASTM E8
	@Temperature 1093 °C	@Temperature 1999 °F	
Creep Strength	20.0 MPa	2900 psi	1% creep
	@Temperature 788 °C, Time 3.60e+7 sec	@Temperature 1450 °F, Time 10000 hour	

Mechanical Properties	Metric	English	Comments
Rupture Strength	@Temperature 593 °C, Time 3.60e+7 sec	@Temperature 1100 °F, Time 10000 hour	
	20.0 MPa	2900 psi	
	@Temperature 899 °C, Time 3.60e+7 sec	@Temperature 1650 °F, Time 10000 hour	
	138 MPa	20000 psi	
Modulus of Elasticity	@Temperature 593 °C, Time 3.60e+7 sec	@Temperature 1100 °F, Time 10000 hour	
	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	15.9 µm/m-°C	8.83 µin/in-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
	17.1 µm/m-°C	9.50 µin/in-°F	
	@Temperature 20.0 - 500 °C	@Temperature 68.0 - 932 °F	
Specific Heat Capacity	18.9 µm/m-°C	10.5 µin/in-°F	
	@Temperature 20.0 - 1000 °C	@Temperature 68.0 - 1830 °F	
	0.502 J/g-°C	0.120 BTU/lb-°F	
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
Thermal Conductivity	13.8 W/m-K	95.8 BTU-in/hr-ft²-°F	
	@Temperature 20.0 - 100 °C	@Temperature 68.0 - 212 °F	
	18.7 W/m-K	130 BTU-in/hr-ft²-°F	
	@Temperature 20.0 - 500 °C	@Temperature 68.0 - 932 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.080 %	0.080 %	
Chromium, Cr	24 - 26 %	24 - 26 %	
Iron, Fe	48.345 - 53.345 %	48.345 - 53.345 %	As Remainder

Component Elements Properties	Metric	English	Comments
Nickel, Ni	19 - 22 %	19 - 22 %	
Phosphorous, P	0.045 %	0.045 %	
Silicon, Si	1.5 %	1.5 %	
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	
Magnetic Permeability	1.02	1.02	at 200H

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