

ATI Allegheny Ludlum Type 316L Stainless Steel, UNS S31603

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

Material Notes:

This is a molybdenum-bearing austenitic stainless steels which is more resistant to general corrosion and pitting/crevice corrosion than the conventional chromium-nickel austenitic stainless steels such as Type 304. These alloys also offer higher creep, stress-to-rupture and tensile strength at elevated temperature. Types 317 and 317L containing 3 to 4% molybdenum are preferred to Types 316 or 316L which contain 2 to 3% molybdenum in applications requiring enhanced pitting and general corrosion resistance. Austenitic stainless steels with higher molybdenum or molybdenum plus nitrogen content which provide even greater resistance to pitting, crevice corrosion an general corrosion are also available in flat-rolled products from Allegheny Ludlum. Properties of these alloys are described in separate technical data publications available from Allegheny Ludlum. In addition to excellent corrosion resistance and strength properties, this alloy also provides the excellent fabricability and formability. This is available in the form of sheet, strip and plate to ASTM A240 and ASME SA-240 and other pertinent specifications. Information provided by Allegheny Ludlum

Order this product through the following link:

http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-Type-316L-Stainless-Steel-UNS-S31603.php

Physical Properties	Metric	English	Comments
Density	8.027 g/cc	0.2900 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	<= 217	<= 217	Annealed; Max required by ASTM A 240 and ASME SA-240
Hardness, Rockwell B	<= 95	<= 95	Annealed; Max required by ASTM A 240 and ASME SA-240
Tensile Strength, Ultimate	>= 485 MPa	>= 70300 psi	Annealed; Min required by ASTM A 240 and ASME SA-240
Tensile Strength, Yield	>= 170 MPa @Strain 0.200 %	>= 24700 psi @Strain 0.200 %	Annealed; Min required by ASTM A 240 and ASME SA-240
Elongation at Break	>= 40 % @Thickness 50.8 mm	>= 40 % @Thickness 2.00 in	Annealed; Min required by ASTM A 240 and ASME SA-240
Modulus of Elasticity	200 GPa	29000 ksi	
Poissons Ratio	0.30	0.30	calculated
Shear Modulus	82.0 GPa	11900 ksi	
Charpy Impact	88.0 - 134 J	64.9 - 98.8 ft-lb	typical annealed

Thermal Properties	Metric	English	Comments
	16.5 μm/m-°C	9.17 μin/in-°F	

CTE linear Thermal Properties	Metric	English	Comments
	@ Temperature 20.0 - 100 °C	@ Temperature 68.0 - 212 °F	
	18.2 µm/m-°C	10.1 µin/in-°F	
	@Temperature 20.0 - 500 °C	@Temperature 68.0 - 932 °F	
	19.5 µm/m-°C	10.8 µin/in-°F	
	@Temperature 20.0 - 1000 °C	@Temperature 68.0 - 1830 °F	
Specific Heat Capacity	0.450 J/g-°C	0.108 BTU/lb-°F	
Thermal Conductivity	14.6 W/m-K	101 BTU-in/hr-ft ² -°F	
Melting Point	1390 - 1440 °C	2530 - 2620 °F	
Solidus	1390 °C	2530 °F	
Liquidus	1440 °C	2620 °F	
Maximum Service Temperature, Air	899 °C	1650 °F	Excellent oxidation and scaling resistance to this temp.

Component Elements Properties	Metric	English	Comments
Carbon, C	0.030 %	0.030 %	
Chromium, Cr	16 - 18 %	16 - 18 %	
Iron, Fe	62 - 69 %	62 - 69 %	as balance
Manganese, Mn	2.0 %	2.0 %	
Molybdenum, Mo	2.0 - 3.0 %	2.0 - 3.0 %	
Nickel, Ni	10 - 14 %	10 - 14 %	
Nitrogen, N	0.10 %	0.10 %	
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	0.0000740 ohm-cm	0.0000740 ohm-cm	

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