

## ATI Allegheny Ludlum Stainless Steel Type 301, annealed (UNS S30100)

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

### Material Notes:

Allegheny Ludlum Type 301 is a high strength grade of steel available in six conditions or tempers, its resistance to atmosphere corrosion and its bright, attractive surface make it an excellent choice for decorative structural applications. Applications include automobile molding and trim, wheel cover, conveyor belts, kitchen equipment, roof draining systems, hose clamps, springs, truck and trailer bodies, railway and subway cars. By varying the chemical composition within the limits set by the ASTM Specifications and by temper rolling, a broad range of magnetic and mechanical properties can be obtained for a variety of applications. Information provided by Allegheny Ludlum Corporation.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_ATI-Allegheny-Ludlum-Stainless-Steel-Type-301-annealed-UNS-S30100.php](http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-Stainless-Steel-Type-301-annealed-UNS-S30100.php)

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

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	165	165	
Hardness, Rockwell B	85	85	
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	211 GPa	30600 ksi	transverse
	214 GPa	31000 ksi	longitudinal
Compressive Yield Strength	262 MPa	38000 psi	transverse
	262 MPa	38000 psi	longitudinal
Fatigue Strength	241 MPa	35000 psi	endurance limit; test details not reported
Charpy Impact	150 J	111 ft-lb	
	150 J @Temperature -73.0 °C	111 ft-lb @Temperature -99.4 °F	
	150 J @Temperature 196 °C	111 ft-lb @Temperature 385 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	16.6 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	9.22 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 20.0 - 100 $^{\circ}\text{C}$	@Temperature 68.0 - 212 $^{\circ}\text{F}$	
	17.6 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	9.78 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 20.0 - 300 $^{\circ}\text{C}$	@Temperature 68.0 - 572 $^{\circ}\text{F}$	
	18.6 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	10.3 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 20.0 - 500 $^{\circ}\text{C}$	@Temperature 68.0 - 932 $^{\circ}\text{F}$	
	19.5 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	10.8 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	
	@Temperature 20.0 - 700 $^{\circ}\text{C}$	@Temperature 68.0 - 1290 $^{\circ}\text{F}$	
Specific Heat Capacity	0.500 J/g- $^{\circ}\text{C}$	0.120 BTU/lb- $^{\circ}\text{F}$	
	@Temperature 0.000 - 100 $^{\circ}\text{C}$	@Temperature 32.0 - 212 $^{\circ}\text{F}$	
Thermal Conductivity	16.3 W/m-K	113 BTU-in/hr-ft $^2$ - $^{\circ}\text{F}$	
	@Temperature 100 $^{\circ}\text{C}$	@Temperature 212 $^{\circ}\text{F}$	
	21.4 W/m-K	149 BTU-in/hr-ft $^2$ - $^{\circ}\text{F}$	
	@Temperature 500 $^{\circ}\text{C}$	@Temperature 932 $^{\circ}\text{F}$	
Melting Point	1399 - 1421 $^{\circ}\text{C}$	2550 - 2590 $^{\circ}\text{F}$	
Solidus	1399 $^{\circ}\text{C}$	2550 $^{\circ}\text{F}$	
Liquidus	1421 $^{\circ}\text{C}$	2590 $^{\circ}\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	$\leq 0.15\%$	$\leq 0.15\%$	
Chromium, Cr	16 - 18 %	16 - 18 %	
Iron, Fe	75 %	75 %	as balance
Manganese, Mn	$\leq 2.0\%$	$\leq 2.0\%$	
Nickel, Ni	6.0 - 8.0 %	6.0 - 8.0 %	
Nitrogen, N	$\leq 0.10\%$	$\leq 0.10\%$	
Phosphorous, P	$\leq 0.045\%$	$\leq 0.045\%$	
Silicon, Si	$\leq 0.75\%$	$\leq 0.75\%$	

Component Elements Properties	Metric	English	Comments
	<= 0.030 %	<= 0.030 %	

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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