



ASM Aerospace Specification Metals Inc.



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## Allegheny Ludlum Stainless Steel Type 301, 1/2 Hard (UNS S30100)

**Subcategory:** Ferrous Metal; Metal; Stainless Steel; T 300 Series Stainless Steel

**Key Words:** ASTM A240; ASTM A666

Component	Wt. %	Component	Wt. %	Component	Wt. %
C	Max 0.15	Mn	Max 2	P	Max 0.045
Cr	16 - 18	N	Max 0.1	S	Max 0.03
Fe	75	Ni	6 - 8	Si	Max 0.75

### Material Notes:

Iron content above calculated as balance.

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.

Physical Properties	Metric	English	Comments
Density	<u>8.03 g/cc</u>	0.29 lb/in <sup>3</sup>	
<b>Mechanical Properties</b>			
Hardness, Brinell	297	297	
Hardness, Rockwell C	32	32	
Tensile Strength, Ultimate	<u>Min 1034 MPa</u>	Min 150000 psi	
Tensile Strength, Yield	<u>Min 758 MPa</u>	Min 110000 psi	0.2% offset
Elongation at Break	<u>Min 18 %</u>	Min 18 %	in 2" (50 mm)

Modulus of Elasticity	<a href="#">185 GPa</a>	26800 ksi	as rolled longitudinal
Modulus of Elasticity	<a href="#">186 GPa</a>	27000 ksi	as rolled transverse
Compressive Yield Strength	<a href="#">621 MPa</a>	90100 psi	longitudinal
Compressive Yield Strength	<a href="#">979 MPa</a>	142000 psi	transverse
Charpy Impact	<a href="#">150 J</a>	111 ft-lb	at 23°C; 150 J at -73°; 150 J at 196°
Fatigue Strength	<a href="#">379 MPa</a>	55000 psi	endurance limit; test details not reported

### Electrical Properties

Electrical Resistivity	<a href="#">7.2e-005 ohm-cm</a>	7.2e-005 ohm-cm	
Magnetic Permeability	Max 1.02	Max 1.02	typically < 1.02 at 200H; increases with cold work.

### Thermal Properties

CTE, linear 20°C	<a href="#">16.6 μm/m-°C</a>	9.22 μin/in-°F	Range 20° - 100°C
CTE, linear 250°C	<a href="#">17.6 μm/m-°C</a>	9.78 μin/in-°F	Range 20° - 300°C
CTE, linear 500°C	<a href="#">18.6 μm/m-°C</a>	10.3 μin/in-°F	Range 20°- 500°C; 19.5 μm/m-°C Range 20° - 700°C
Specific Heat Capacity	<a href="#">0.5 J/g-°C</a>	0.12 BTU/lb-°F	between 0° -100° C
Thermal Conductivity	<a href="#">16.3 W/m-K</a>	113 BTU-in/hr-ft <sup>2</sup> -°F	at 100°C; 21.4 W/m-K at 500°C
Melting Point	1399 - 1421 °C	2550 - 2590 °F	
Solidus	<a href="#">1399 °C</a>	2550 °F	
Liquidus	<a href="#">1421 °C</a>	2590 °F	

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.