



ASM Aerospace Specification Metals Inc.



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## AISI Type 316L Stainless Steel, annealed plate

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

**Key Words:** UNS S31603, AISI 316L, ISO 2604-1 F59, ISO 2604-4 P57, ISO 2604-4 P58, ISO 4954 X2CrNiMo17133E, ISO 683/13 19, ISO 683/13 19a, biomaterials, biomedical implants, biocompatible materials

Component	Wt. %	Component	Wt. %	Component	Wt. %
C	0.03	Mn	2	P	0.045
Cr	17	Mo	2.5	S	0.03
Fe	65	Ni	12	Si	1

### Material Notes:

Similar to Type 316 for superior corrosion resistance, but also has superior resistance to intergranular corrosion following welding or stress relieving. Good corrosion resistance to most chemicals, salts, and acids and molybdenum content helps resistance to marine environments. The low carbon content of 316L reduces the possibility of in vivo corrosion for medical implant use. High creep strength at elevated temperatures. 316L has fabrication characteristics similar to Types 302 and 304.

**Applications:** biomedical implants, chemical processing, food processing, photographic, pharmaceutical, textile finishing, marine exterior trim.

Physical Properties	Metric	English	Comments
Density	<u>8 g/cc</u>	0.289 lb/in <sup>3</sup>	

### Mechanical Properties

Hardness, Brinell	146	146	
Hardness, Knoop	166	166	Converted from Brinell hardness.
Hardness, Rockwell B	79	79	
Hardness, Vickers	152	152	Converted from Brinell hardness.
Tensile Strength, Ultimate	<u>560 MPa</u>	81200 psi	
Tensile Strength, Yield	<u>235 MPa</u>	34100 psi	
Elongation at Break	<u>55 %</u>	55 %	in 50 mm
Modulus of Elasticity	<u>193 GPa</u>	28000 ksi	

Charpy Impact	<a href="#">103 J</a>	76 ft-lb	V-notch, 30°C
Izod Impact	<a href="#">150 J</a>	111 ft-lb	21°C

### Electrical Properties

Electrical Resistivity	<a href="#">7.4e-005 ohm-cm</a>	7.4e-005 ohm-cm	at 20°C
Magnetic Permeability	1.008	1.008	at RT

### Thermal Properties

Specific Heat Capacity	<a href="#">0.5 J/g-°C</a>	0.12 BTU/lb-°F	from 0-100°C (32-212°F)
Melting Point	1375 - 1400 °C	2510 - 2550 °F	
Solidus	<a href="#">1375 °C</a>	2510 °F	
Liquidus	<a href="#">1400 °C</a>	2550 °F	
Maximum Service Temperature, Air	<a href="#">870 °C</a>	1600 °F	Intermittent Service
Maximum Service Temperature, Air	<a href="#">925 °C</a>	1700 °F	Continuous Service

### References for this datasheet.

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.