

316 Stainless Steel | 316L Stainless Steel

316/316L STAINLESS STEEL DATASHEET

316 stainless steel or 316L stainless steel are both Chromium-Nickel stainless steel with added molybdenum to increase corrosion resistance and mechanical properties. 316 stainless steel falls under the austenitic class of stainless steels, which is the most common class of stainless grades. The key difference between 304 stainless steel and 316 stainless steel is the addition of molybdenum, an alloy which drastically enhances corrosion resistance, especially for more saline or chloride exposed environments. 316L stainless steel is almost identical to 316 stainless steel. The only difference is the lower carbon content in 316L stainless steel allows for better corrosion resistance than 316 stainless steel.

Common industry/applications are: Aerospace, Chemical Processing, Food and Beverage Processing, Oil and Gas, Medical and Pharmaceutical, Pulp and Paper Processing, and General Industry.

Product forms include round bar, hex, square, rectangle & flat bar, plate & sheet, hollow bar, tubing and pipe, and forgings.



Standards

- UNS S31600
- UNS S31603

Physical Properties

- Density: 0.285LB/in³ (7.90g/cm³)
- Melting Point: 2550–2590°F (1398–1421°C)
- Modulus of Elasticity: 29.0x10⁶psi (200 GPa)
- Magnetic Permeability: 1.02 Max @ 200 H (Annealed)

Characteristics

- Excellent resistance to corrosion.
- Increased tensile strength at elevated temperatures.
- Good cryogenic strength and toughness.

Chemical Composition

	C	Mn	S	P	Si	Cr	Ni	Cu	Mo
316	0.08 Max	2.00 Max	0.030 Max	0.045 Max	1.00 Max	16.0 - 18.0	10.0 - 14.0	-	-
316L	0.03 Max	2.00 Max	0.030 Max	0.045 Max	1.00 Max	16.0 - 18.0	10.0 - 14.0	-	-

Mechanical Properties

Tensile (min) KSI (Mpa)	Yield (min) KSI (Mpa)	Elongation (min) %	Reduction of Area (min) % **	Hardness * HRC (BHN)
75 (515)	30 (205)	35%	45%	22 (237)

Mechanical properties can be altered (increased/decreased) by many methods such as cold working or strain hardening, or by the addition or modification of chemistry. Grades such as 316L Condition B are strain hardened, while grades like 316Ti, or 316H are grades with altered chemistry. However, these grades are more specialized and may not be available in all forms and sizes.

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SPECIALTY STEEL SUPPLY
19201 CIRCLE LAKE DR
PINEHURST, TX 77362
Call for a quote (281) 821-7111

