

Properties of Stainless Steel 316L

Stainless steel grade 316L is an ultra-low carbon version of the often-used grade 316. L-grade steels have 0.03-percent carbon maximum while standard grades of stainless steel have 0.08-percent of a carbon maximum. This slight difference from grade 316 makes a huge difference in some of the applications and properties of grade 316L. This type of stainless steel is used by the marines, in reactor pressure vessels for boilers and in various other applications.

Corrosion Resistance

- This is potentially the most important property and the reason for use of stainless steel grade 316L. The high corrosion resistance of 316L allows for its use in chloride environments, architecture and marine applications. In cold sea water, 316L is thought of as a "standard marine grade stainless steel" according to Azom, but the property does not hold as true for warm sea water. Stainless steel 316L works well against corrosion in various atmospheric environments, especially in hard and acidic water.

Heat Resistance

- One of stainless steel 316L's strongest properties is its heat resistance. The metal's oxidation resistance holds up through 870 degrees C and it remains serviceable up to 925 degree C. Unlike grade 316, grade 316L can be used throughout the temperature range of 425 to 860 degrees Celsius without worry about aqueous corrosion resistance

Weld ability and Machining

- Grade 316L cannot typically be welded using oxyacetylene methods of welding. Other methods, like standard fusion and resistance methods, work exceptionally well whether or not filler metals are utilized. Stainless steel 316L can harden if it is machined too quickly, so constant feed rates and low speeds are often used with this grade of steel.

Other Properties

- Stainless steel grade 316L is used more than many other steel grades because its properties are an improvement of others. Grade 316L has a higher creep, tensile strength and stress to rupture at elevated temperatures than austenitic stainless steels made with chromium-nickel. The strength of 316L can be increased by cold working during process like drawing, stamping and shearing.