317L Stainless Steel, UNS S31703

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated
ASTM A167, ASTM A240

317L Alloy Description

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Alloy 317L is a low carbon variation of alloy 317. This austenitic chromium-nickel stainless steel can be used in applications where it is not possible to anneal after welding and where maximum corrosion resistance is required. It provides good oxidation resistance in intermittent service to 1600°F and in continuous service to 1700°F.

Applications

Screens for marine and chemical applications

Pulp and paper applications

Marine components

Food Processing

Seals and other components for the oil and gas industry

Chemistry Typical

Carbon: 0.030 max

Manganese: 2.00 max

Silicon: 0.75 max

Chromium: 18.00-20.00

Nickel: 11.00-15.00

Molybdenum: 3.00-4.00

Phosphorus: 0.045 max

Iron: Balance

Physical Properties

Density 0.29 lbs/in^3, 7.99 g/cm^3

Electrical Resistivity, microhm-in (microhm-cm):
68°F (20°C): 31.19 (79.0)

Specific Heat: BTU/lb/°F (kJ/kg•K):
32-212°F (0-100°C): 0.12 (0.50)

Thermal Conductivity: BTU/hr/ft^2/ft/°F (W/m•K)
At 212°F (100°C): 9.4 (16.2)
At 932°F (500C): 12.4 (21.4)

Mean Coefficient of Thermal Expansion:in/in/°F (µm/m•K)
32-212°F (0-100°C): 8.9 x 10^{-6}(16.0)
32-600°F (0-315°C): 9.0 x 10^{-6}(16.2)
32-1000°F (0-538°C): 9.7 x 10^{-6}(18.5)
32-1500°F (0-871°C): 11.1 x 10^{-6}(18.5)

Modulus of Elasticity: KSI (MPa)
28.0 x 10^3 (193 x 10^3) in tension
11.2 x 10^3 (77 x 10^3) in torsion

Magnetic Permeability: H = 200 Oersteds: Annealed:< 1.02 max.

Melting Range: °F (°C) 2500 – 2590 (1371 – 1421)

Mechanical Properties at Room Temperature

Properties: Annealed
Ultimate Tensile Strength: 75 KSI min (515 MPa min)
Yield Strength: (0.2% Offset) 30 KSI min (205 MPa min)
Elongation: 35% min

Hardness: Rb 95 max

Properties: Tempered

Alloy can be cold rolled to achieve the temper properties required by specific customers and/or manufacturing requirements. Contact Ulbrich Wire for details.

Additional Properties

Corrosion Resistance

See NACE (National Association of Corrosion Engineers) for recommendations.

Standard Wire Finishes

Extra Clean: (XC) Extra clean is also referred to as “bright annealed” or “bright annealed and cold rolled”

Grease (round wire only): Drawn in a heavy grease produces an “Ultra bright” finish for decorative applications

Soap (round wire only): Soap is used as a lubricant in the drawing process and is not removed. It acts as a lubricant during customer part forming operation. A soap finish is available in tempered products.

Plated: Many plating options are available.

*Special finishes are available: Contact Ulbrich Wire Sales with special finish and plating requests.

Forms

Continuous Coils

Cut to lengths

Precision cutting

Cold Forming

Alloy 317L can be readily formed and drawn.

Heat Treatment

Alloy 317L is non hardenable by heat treatment and can only be hardened by cold working.

Welding

For best results refer to: SSINA’s “Welding of Stainless Steels and Other Joining Methods”.

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