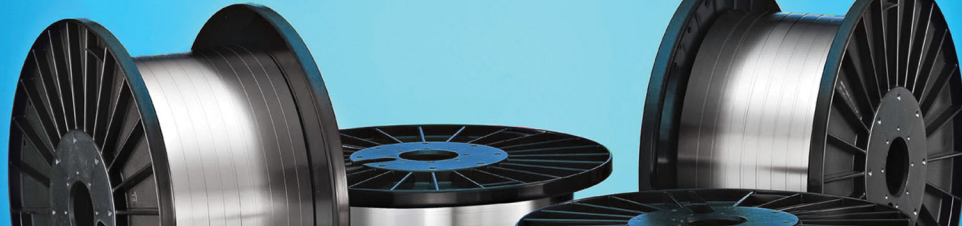




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317 STAINLESS STEEL, UNS S31700

Strip, Coil, Foil, Wire, AMS 5507, ASTM A666

Applications

Chemical processing, food processing, oil refineries, paper mills, gas scrubbers, photographic handling, and marine applications

Description

Type 317 is an austenitic chromium-nickel stainless steel with excellent corrosion resistance; Its high Molybdenum content enhances the grade's superior pitting resistance. It is the most corrosion resistant of the 300 Series alloys and possesses the highest tensile and creep strength properties at elevated temperatures.

Chemistry Typical

Carbon: 0.08 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
Sulfur: 0.030 max
Nitrogen: 0.10 max

Physical Properties

Density: 0.29 lbs/in³ 7.99 g/cm³

Electrical Resistivity: microhm-in (microhm-cm): 68 °F (20 °C): 29.4 (74.0)

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

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Thermal Conductivity: BTU/hr/ft²/ft/°F (W/m•K):

At 212 °F (100 °C): 9.4 (16.2)

At 932 °F (500 °C): 12.4 (21.4)

Mean Coefficient of Thermal Expansion: in/in/°F (µm/m•K)

32 - 212 °F (0 – 100 °C): 8.9×10^{-6} (16.0)

32 - 600 °F (0 – 315 °C): 9.0×10^{-6} (16.2)

32 - 1000 °F (0 – 538 °C): 10.3×10^{-6} (18.5)

32 - 1500 °F (0 – 871 °C): 11.1×10^{-6} (18.5)

Modulus of Elasticity: ksi (MPa)

28×10^3 (193×10^3) in tension

11.2×10^3 (77×10^3) in torsion

Magnetic Permeability: H = 200: Annealed < 1.02 max

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

Forms

Coil – Sheet, Strip, Ribbon

Wire – Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 75 KSI min (517 MPa min)

Yield Strength: 30 KSI min (205 MPa min)

Elongation: 35% min

Hardness: Rb 95 max

Properties: Tempered

Type 317 can be cold worked to various tempers. Contact Ulbrich Technical Service for additional information.

Additional Properties

Corrosion Resistance

Refer to NACE (National Association of Corrosion Engineers) for recommendations.

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Finishes

1 – Hot rolled annealed and descaled. It is available in strip, foil and ribbon. It is used for applications where a smooth decorative finish is not required.

2D – Dull finish produced by cold rolling, annealing and descaling. Used for deep drawn parts and those parts that need to retain lubricants in the forming process.

2B – Smooth finish produced by cold rolling, annealing and descaling. A light cold rolling pass is added after anneal with polished rolls giving it a brighter finish than 2D.

#BA – Bright annealed cold rolled and bright annealed

#CBA – Course bright annealed cold rolled matte finish and bright anneal

#2 – Cold Rolled

2BA – Smooth finish produced by cold rolling and bright annealing. A light pass using highly polished rolls produces a glossy finish. A 2BA finish may be used for lightly formed applications where a glossy finish is desired in the formed part.

Polished – Various grit finish for specific polish finished requirements.

** Not all finishes are available in all alloys – Contact Ulbrich Sales for more information.*

Wire Finishes

XC – Extra clean bright annealed or bright annealed and cold rolled

Grease – Ultra-bright finish (for decorative applications)

Soap – Soap is not removed from tempered wire to act as a lubricant.

** Contact Ulbrich Wire for custom wire finishes.*

Cold Forming

Type 317 can be readily formed and drawn.

Heat Treatment

Type 317 is non hardenable by heat treatment.

Welding

For best results refer to: SSINA's "Welding of Stainless Steels and Other Joining Methods".

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