347 Stainless Steel, UNS S34700

Shaped, Flat, Square, Round, Fine, Plated and Bare Wire
ASTM A240, ASTM 313, ASTM 580, AMS 5512, AMS 5546

347 Alloy Description

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Alloy 347 is a stabilized stainless steel similar to type 304 with an addition of Columbium and Tantalum. Columbium stabilizes this alloy making it immune to chromium carbide precipitation. Alloy 347 is recommended for welded applications that can not tolerate a post anneal. The alloy can operate between 800-1600°F

Applications

Header bars in heat exchangers

Aircraft exhaust parts

Expansion joints

Fasteners

Chemistry Typical

Carbon: 0.08 max

Manganese: 2.00 max

Silicon: 0,75 max

Chromium: 17.00-19.00

Nickel: 9.00-12.00

Molybdenum: 0.75 max

Columbium + Tantalum: 10 x (Carbon + Nitrogen) min-1.00 max

Phosphorus: 0.040 max

Sulfur: 0.030 max

Copper: 0.75 max

Iron: Balance

Physical Properties

Density: 0.288 lbs/in^3, 7.97 g/cm^3

Electrical Resistivity: microhm-in (microhm-cm):

68°F (20°C): 28.7 (73)

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): 9.3 (16.0)

At 932°F (500°C): 12.8 (22.0)

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

32-212°F (0-100°C): 9.3 x 10^{-6}(16.6)

32-1000°F (0-538°C): 10.5x 10^{-6} (18.9)

32-1500°F (0-873°C): 11.4 x 10^{-6}(20.5)

Modulus of Elasticity: KSI (MPa)

28.0 x 10^3 (1.93 x 10^3) in tension

11.2 x 10^3 (0.78 x 10^3) in torsion

Magnetic Permeability: H = 200 Oersteds:

Annealed < 1.02 max.

Melting Range: °F (°C) 2500 – 2550 (1371 – 1400)

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: 40% min
Hardness: Rb 92 max

Properties Tempered
Alloy 347 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
Refer to 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 347 can be readily formed and drawn. Like most other austenitic stainless steels, type 347 work hardens and may require annealing after severe forming.

Heat Treatment
Alloy 347 is non hardenable by heat treatment. It can only be hardened by cold working

Welding

Alloy 347 is weldable by common fusion and resistance methods. For best results refer to: SSINA's "Welding of Stainless Steels and Other Joining Methods".

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