316Ti Stainless Steel, UNS S31635

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

316Ti Alloy Description

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Type 316Ti is a titanium stabilized variation of alloy 316. This austenitic chromium-nickel stainless steel containing molybdenum which increases the corrosion resistance, improves resistance to pitting chloride ion solutions and provide increased strength at elevated temperatures. Properties are similar to those of alloy 316 except that 316Ti due to its Titanium addition can be used at elevated sensitization temperatures. Corrosion resistance is improved, particularly against sulfuric, hydrochloric, acetic, formic and tartaric acids, acid sulfates and alkaline chlorides.

Applications

Screening application in marine environment
Pulp and Paper Equipment
Heat exchangers
Propeller shafts, Fittings
Exterior Architectural components in Marine Coastal Areas

Chemistry Typical

Carbon: 0.08 max
Manganese: 2.00 max
Silicon: 1.00 max
Chromium: 16.00-18.00
Nickel: 10.00-14.00

Molybdenum: 2.00-3.00
Titanium: 5 x (Carbon + Nitrogen) – 0.07
Phosphorus: 0.040 max
Sulfur: 0.030 max
Copper: 0.075 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): 29.4 (74.0)

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 (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 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} (17.5)
32-1200°F (0-649°C): 10.3 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: 40% min

Hardness: Rb 95 max

Properties: Tempered

1/16H

Ultimate Tensile Strength: 85 KSI min (585 MPa min)

Yield Strength: (0.2% Offset) 45 KSI min (310 MPa min)

Elongation: 35% min

1/8H

Ultimate Tensile Strength: 100 KSI min (690 MPa min)

Yield Strength: (0.2% Offset) 55 KSI min (380 MPa min)

Elongation: 35% min

1/4H

Ultimate Tensile Strength: 125 KSI min (860 MPa min)

Yield Strength: (0.2% Offset) 75 KSI min (515 MPA min)

Elongation: 10% min

Properties Tempered

Alloy 316Ti 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 more information.

Cold Forming

Alloy 316Ti can be readily formed and drawn.

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

Heat Treatment

Alloy 316Ti 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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