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310 Stainless Steel, UNS S31000

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated
ASTM A5167, ASTM A 276, ASTM 314, ASTM 580, QQ-S-763

310 Alloy Description

Alloy 310 stainless is an austenitic stainless steel with a high nickel and chromium content which makes the alloy heat resistant with excellent resistance to oxidation under mildly cyclic conditions through 2000°F. Its high chromium and nickel contents provide comparable corrosion resistance, superior resistance to oxidation and the retention of a larger fraction of room temperature strength than the common austenitic alloys like alloy 304. Stainless alloy 310 is often used at cryogenic temperatures, with excellent toughness to -450°F.

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Applications

Kilns

Heat exchangers

Furnace parts, muffles and retorts, annealing covers

Food processing equipment

Cryogenic structures.

Chemistry Typical

Carbon: 0.25 max

Phosphorus: 0.045 max

Silicon: 1.50 max

Nickel: 19.00-22.00

Manganese: 2.00 max

Sulfur: 0.030 max

Chromium: 24.00-26.00

Molybdenum: 0.75 max

Copper: 0.50 max

Iron: Balance

Physical Properties

Density: .289 lb/in³, 8.00 g/cm³

Electrical Resistivity: ohm-cir-mil/ft:

At 70 °F (21°C): 469.0

Specific Heat: BTU/lb-°F (J/g-°C) 32-212°F (0-100°C): 0.12(0.5)

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

32-212°F (0-100°C): 112 (16.2)

Mean Coefficient of Thermal Expansion: $\mu\text{in/in-}^\circ\text{F}$ ($\mu\text{m/m-}^\circ\text{C}$)

32-212 °F (0-100 °C): 8.78(15.8)

32-599 °F (0-315 °C): 9.00(16.2)

32-1000 °F (0-540 °C): 9.39(16.9)

32-1200 °F (0-650 °C): 10.6(19.1)

Modulus of Elasticity: KSI (MPa)

28-29 x 10³ (193-200 x 10³) in tension

Magnetic Permeability, H = 200: Annealed ≤ 1.008

Melting Range: 2550-2650 °F (1400-1455°C):

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 70 KSI min (482 MPa min)

Yield Strength: 30 KSI min (206MPa min)

Elongation: 40 % min

Properties: Tempered

Alloy 310 can be supplied in various rolled to temper conditions. Contact Ulbrich Wire with

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

Heat Treatment

Alloy 310 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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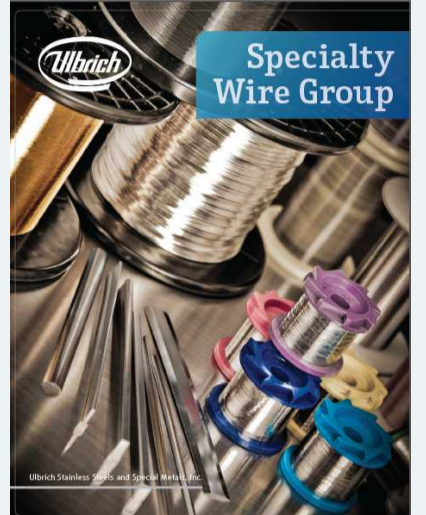
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Ulbrich Wire Group custom engineers precision wire products including; Fine Wire, Round Wire, Flat Wire, Square Wire, Shaped Profiles and PV Ribbon products. The Ulbrich Wire Group of companies are divisions of Ulbrich Stainless Steels and Special Special Metals, Inc. Our wire facilities have over 40 years of experience producing thousands of unique shapes ... [\[Learn More...\]](#)





Reach, RoHS, Conflict Minerals Compliant, Nuclear 10CFR50 & 10CFR21, Navy MIL C-24252E(SH) REV. E



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