



330 Stainless Steel, UNS N08330

Shaped, Flat, Square, Round, Fine, Plated, and Bare Wire

AMS 5592, AMS 5716, ASTM B 511, ASTM B 512, ASTM B 535, ASTM B 536, ASTM B 546, ASTM B 710, ASTM B 739

330 Alloy Description

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Alloy 330 stainless is an austenitic heat and corrosion resisting alloy that offers a combination of strength and resistance to carburization, oxidation and thermal shock. Carburization and oxidation resistance to about 2100°F are enhanced by the silicon content of the alloy. Alloy 330 stainless remains fully austenitic at all temperatures. This alloy was designed for applications in high temperature industrial environments where good resistance to the combined effects of carburization and thermal cycling are required.

Applications

Heat exchangers

Furnace parts, muffles and retorts, annealing covers

Food processing equipment

Cryogenic structures

Chemistry Typical

Carbon: 0.08 max

Phosphorus: 0.030 max

Silicon: 0.75-1.50 max

Nickel: 34.00-37.00

Manganese: 2.00 max

Sulfur: 0.030 max

Chromium: 17.00-20.00

Molybdenum: 0.75 max

Copper: 0.50 max

Iron: Balance

Physical Properties

Density: .289 lb/in³, 8.00 g/cm³

Electrical Resistivity: ohm-cm

At 68 °F (20°C): 0.000102

At 797°F (425°C): 0.00014

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

At 75°F (24°C): 86.8 (12.5)

At 212°F (100°C): 113 (16.3)

At 797°F (425°C): 135 (19.4)

At 932°F (500°C): 150 (21.6)

At 1600°F (870°C): 198 (28.5)

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

32.0-212°F (0-100 °C): 8.00 (14.4)

32.0-599°F (0-315 °C): 8.89 (16.0)

32.0-1000°F (0-540 °C): 9.28 (16.7)

32.0-1200°F (0-650 °C): 9.61 (17.3)

32.0-1600°F (0-870 °C): 10.0 (18.0)

Modulus of Elasticity: KSI (MPa)

28.6×10^3 (197×10^3) in tension

Magnetic Permeability, H = 200: Annealed ≤ 1.02

Melting Range: °F (°C): 2550-2597(1400-1425)

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 85 KSI (585 MPa min)

Yield Strength: 42 KSI min (290MPa min)

Elongation: 45 % min

Properties Tempered

Alloy 330 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

Heat Treatment

Alloy 330 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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