



Duplex Alloy 2304 Stainless Steel, UNS S32304

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

Duplex Alloys 2304 Alloy Description

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Duplex alloy 2304 is a two-phase, ferritic-austenitic stainless steel. It has similar corrosion resistance properties to alloy 316L with a yield strength almost twice those of alloys 304L/316L. This allows the designer to save weight, particularly for properly designed pressure vessel applications. The alloy is particularly suitable for applications covering the -50°C/+300°C temperature range.

Application

Screens and other components for the pulp and paper industry

Food processing equipment

Chemistry

Carbon: 0.03 max

Manganese: 2.50 max

Phosphorus: 0.040 max

Sulfur: 0.030 max

Silicon: 1.00 max

Chromium: 21.50-24.50

Nickel: 2.00-5.50

Copper: 0.05-0.60

Molybdenum: 0.05-0.60

Nitrogen: 0.05-0.20

Iron: Balance

Physical Properties

Density: 0.284 lbs/in³, 7.86 g/cm³

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

68-212°F (20-100°C): 9.0 (17.0)

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

32-212°F: 6.97×10^{-6} (13.0)

Modulus of Elasticity: KSI (MPa)

29.0×10^3 (200×10^3) in tension

Magnetic Permeability: Ferromagnetic

Melting Point: 2570/2660°F (1410/1460°C)

Annealed Nominal

Ultimate Tensile Strength: 110 KSI min (758 MPa min)

Yield Strength: (0.2% offset) 65 KSI min (448 MPa min)

Elongation: 30% min

Properties Tempered

Duplex alloy 2304 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: 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

Duplex alloy 2304 cannot be hardened by heat treatment

Welding

For best results refer to: SSINA’s “Welding of Stainless Steels and Other Joining Methods”

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