



Duplex Alloy 2205, UNS S31803, UNS S32205

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated
Specifications: ASTM A240, ASTM A 276, ASTM A 479, ASTM A 790

Duplex Alloys 2205 Alloy Description

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Duplex 2205 is a two-phase ferritic/austenitic. It is the most widely used duplex stainless steel grade and is characterized by high yield strength, double that of the standard austenitic stainless steel grades. It demonstrates good fatigue strength, as well as outstanding resistance to stress-corrosion cracking, crevice, pitting, erosion and general corrosion in severe environments.

Applications

Screens and other components for the pulp and paper industry

Well screens for oil and gas industry

Marine applications

Components for the chemical processing industry

Chemistry

Carbon: 0.30 max

Silicon: 1.0 max

Manganese: 2.00 max

Molybdenum: 2.50-3.50

Nickel: 4.50-6.50

Chromium: 21.00-23.00

Phosphorus: 0.03 max

Sulfur: 0.020 max

Nitrogen: 0.08-0.20

Iron: Balance

Physical Properties

Density: 0.285 lbs/in³, 7.88 g/cm³

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

68-212°F (20-100°C): 11.0 (19.0)

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

32-212°F: 7.6×10^{-6} (13.7)

Modulus of Elasticity: KSI (MPa)

27.5×10^3 (190×10^3) in tension

Mechanical Properties at Room Temperature

Annealed Typical

Ultimate Tensile Strength: 90 KSI min (620 MPa min)

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

Elongation: 25% min

Hardness: Rc 32 max

Properties Tempered

Duplex 2205 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 2205 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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