



303Se Stainless Steel, UNS S30323

Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire
AMS 5640, AMS 5641, ASTM A582, QQ-S-764

303se Alloy Description

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Alloy 303Se alloy is a free-machining stainless steel specifically designed to exhibit improved machinability. It is a non-magnetic austenitic stainless steel which is not hardenable by heat treatment. Selenium replaces sulfur to produce the free-machining characteristics and has somewhat improved formability over 303. The good mechanical and corrosion-resistant properties of the lower-sulfur grade are retained to the extent possible.

Applications

Medical Instruments

Shafts

Valves

Fittings

Intricate parts that can only be made by machining.

Chemistry Typical

Carbon: 0.12 max

Phosphorus: 0.120-0.170

Selenium: 0.15-0.35

Silicon: 1.00 max

Nickel: 8.00-10.00

Chromium: 17.00-19.00

Manganese: 2.00 max

Iron: Balance

Physical Properties

Density: 0.283 lb/in³, 8.00 g/cm³

Electrical Resistivity: ohm-cir-mil/ft:

At 70°F: 433.0

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)

At 212 °F (100°C): 112 (16.20)

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

68 – 392 °F (20 – 200 °C): 9.3 (16.7)

Modulus of Elasticity: ksi (MPa)

28×10^3 Ksi (193×10^3) in tension

Melting Range: °F (°C): 2550-2590 (1400-1420)

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Ultimate Tensile Strength: 75 KSI min (517 MPa min)

Yield Strength: 25 KSI min (172 MPa min)

Elongation: 35 % min

Properties: Tempered

303Se can be cold worked to various tempers. Contact Ulbrich Shaped Wire Technical Service for additional information

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

303Se 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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