303 Stainless Steel, UNS S30300

Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire
AMS 5640, ASTM A314, ASTM A581, ASTM A582, QQ-S-764

303 Alloy Description

Alloy 303 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. Sulfur is added to produce the free-machining characteristics. The good mechanical and corrosion-resistant properties of the lower-sulfur grade are retained to the extent possible. This steel possesses non-galling properties that make disassembly of parts easy and help to avoid scratching or galling in moving parts.

Applications

Medical Instruments
Shafts
Valves
Fittings
Intricate parts that can only be made by machining

Chemistry Typical

Carbon: 0.12 max
Phosphorus: 0.20 max
Sulfur: 0.150 min
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:µin/in-°F(µm/m-°C)
68-392 °F (20-200 °C): 9.3 (16.7)

Modulus of Elasticity: KSI (MPa)
28 x 10³(193 x 10³) 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 (172MPa min)
Elongation: 35 % min

Properties: Tempered
303 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: Extra clean is also referred to as “bright annealed” or “bright annealed and cold
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 303 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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