

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

 **Get A Quote**

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

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 303 is non hardenable by heat treatment.

Welding

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

Limitation of Liability and Disclaimer of Warranty: In no event will Ulbrich Stainless Steels and Special Metals, Inc., be liable for any damages arising from the use of the information included in this document or that it is suitable for the ‘applications’ noted. We believe the information and data provided to be accurate to the best of our knowledge but, all data is considered typical values only. It is intended for reference and general information and not recommended for specification, design or engineering purposes. Ulbrich assumes no implied or express warranty in regard to the creation or accuracy of the data provided in this document.

