303 STAINLESS STEEL, UNS S30300

Wire, AMS 5640, ASTM A 314, ASTM A 581, ASTM A 582, QQ-S-764

Applications

Type 303 should be considered for use in applications such as shafts, valve bodies, valves, valve trim, and fittings. This steel possesses non-galling properties that make disassembly of parts easy- and help to avoid scratching or galling in moving parts.

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.

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 lbs/in^3 8.00 g/cm^3

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-ft^2-°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 10^3 (193 x 10^3) in tension

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

Forms

Sheet, Strip, Plate: Inquire with Ulbrich Stainless Steel Sales
Wire – Profile, Round, Square
Rectangular cross sections: Inquire with Ulbrich Shaped Wire Sales

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

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.

Wire Finishes

XC – Extra clean bright annealed or bright annealed and cold rolled
Grease – Ultra-bright finish (for decorative applications)
Soap – Soap is not removed from tempered wire to act as a lubricant.

**Contact Ulbrich Wire for custom finishes.*

Heat Treatment

303 is non hardenable by heat treatment.

Welding

For best results refer to: SSINA's "Welding of Stainless Steels and Other Joining Methods".