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305 Stainless Steel, UNS S30500

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated Wire
AMS 5514, ASTM A240, QQ-S-766

305 Alloy Description

Alloy 305 Stainless Steel is an austenitic chromium nickel stainless steel with a low rate of work hardening. The alloy is non-magnetic in the annealed condition and but increases at a much slower rate with increasing cold work than other austenitic stainless. This property allows the alloy to be used in many electronic components. The low rate of work hardening makes it suitable for many coining.

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Applications

Coining applications
Medical devices
Electronic components
Deep draw application

Chemistry Typical

Carbon: 0.12 max
Manganese: 2.00 max
Silicon: 1.00 max
Chromium: 17.00 – 19.00
Nickel: 10.00 – 13.00
Molybdenum: 0.75 max
Phosphorus: 0.040
Sulfur: 0.030 max
Copper: 0.75 max
Iron: Balance

Physical Properties

Density: 0.29 lbs/in³ 7.99 g/cm³

Electrical Resistivity, microhm-in (microhm-cm)
68°F (20°C): 28.4 (74.0)

Specific Heat, BTU/lb/°F (kJ/kg•K)
32-212°F (0-100°C): 0.12 (0.50)

Thermal Conductivity, BTU/hr/ft²/ft/°F (W/m•K)
At 212°F (100°C): 9.4 (16.2)
At 932°F (500°C): 12.4 (21.4)

Mean Coefficient of Thermal Expansion, in/in/°F (μm/m•K)”
32- 212°F (0-100°C): 9.6 x 10⁻⁶(17.3)
32- 600°F (0-315°C): 9.9 x 10⁻⁶(17.8)
32-1000°F (0-538°C): 10.2 x 10⁻⁶(18.4)
32-1200°F (0-649°C): 10.4 x 10⁻⁶(18.7)

Modulus of Elasticity, KSI (MPa)
28.0 x 10³ (193 x 10³) in tension

Magnetic Permeability, H = 200 Oersted's Annealed < 1.02

Melting Range, °F (°C) 2550-2650 (1399-1454)

Mechanical Properties

Annealed Typical

Ultimate Tensile Strength: 75 KSI min, 515 MPA min

Yield Strength (0.2% OFFSET): 30 KSI min, 205 MPA min

Elongation: 40% min

Hardness: B92 or equiv. max

Properties Tempered

1/4 Hard

Ultimate Tensile Strength: 120-135 KSI (827-930 MPa)

Yield Strength (.2% offset): 100-120 KSI (589-896 MPa)

Elongation: 15 % nominal

Hardness: Rc 25-30

Full Hard

Ultimate Tensile Strength: 185-225 KSI (1275-1551 MPa)

Yield Strength (.2% offset): 170-210 KSI (1172-1447 MPa)

Elongation: 1-2 %

Hardness: Rc 40-45

Tempered

305 can be supplied in various rolled to temper conditions. Contact Ulbrich Wire with special mechanical property requests

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

Cold Forming

Alloy 305 can be readily formed and is considered a good choice for drawn parts.

Heat Treatment

Alloy 305 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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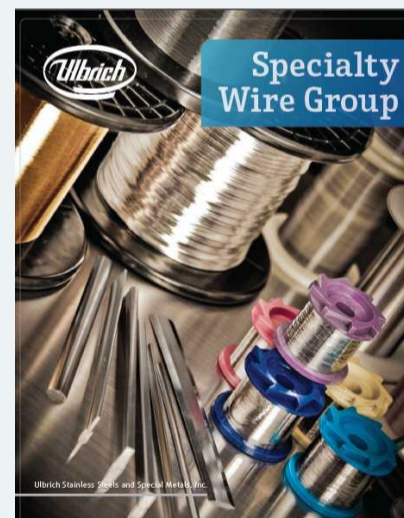
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Reach, RoHS, Conflict Minerals Compliant, Nuclear 10CFR50 & 10CFR21, Navy MIL C-24252E(SH) REV. E



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