



201 Stainless Steel Wire, UNS S20100

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated Wire

ASTM A666, ASTM A240

201 Alloy Description

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This austenitic chromium-nickel-manganese stainless alloy was developed mid-century to conserve nickel. Alloy 201 can be used as an alternative to alloy 301 in some tempered applications. Because of the relatively high yield strength in the annealed condition, the use of alloy 201 is limited in this condition. Alloy 201 is generally used in the tempered condition particularly for springs and fasteners.

Applications

Various screening applications

Clamps

Springs

Display racks and food service applications

Chemistry Typical

Carbon: 0.15 max

Manganese: 5.50- 7.50 max

Phosphorus: .060 max

Sulfur: 0.030 max

Silicon: 0.75 max

Chromium: 18.00- 20.00 max

Nickel: 3.50- 5.50

Nitrogen: 0.25

Physical Properties

Density: 0.283 lbs/in³, 7.81 g/cm³

Electrical Resistivity: microhm-in, microhm-cm: 27.0 (68.5)

Specific Heat: BTU/lbs./°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) 8.7×10^{-6} (15.7)

32 – 600 °F (0 – 315 °C) 9.7×10^{-6} (17.5)

32 – 1000 °F (0 – 538 °C) 10.2×10^{-6} (18.4)

32 – 1200 °F (0 – 649 °C) 10.5×10^{-6} (18.9)

32 – 1600 °F (0 – 871 °C) 11.3×10^{-6} (20.3)

Modulus of Elasticity, KSI (MPa)

28.6×10^3 (197×10^3)

Magnetic Permeability, H= 200 Oersteds: Annealed: 1.02 max

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

Mechanical Properties at Room Temperature

Annealed Condition

Ultimate Tensile Strength: 95 KSI min (655 MPA min)

Yield Strength (0.2% Offset): 38 KSI min (260 MPA min)

Elongation: 40%min

Hardness: B95 max

Tempered 1/16 Hard

Ultimate Tensile Strength: 95 KSI min (655 MPA min)

Yield Strength (0.2% Offset): 45 KSI min (310 MPA min)

Elongation: 40% min

Tempered 1/8 Hard

Ultimate Tensile Strength: 100 KSI min (690 MPA min)

Yield Strength (0.2% Offset): 55 KSI min (380 MPA min)

Elongation: 45% min

Tempered 1/4 Hard

Ultimate Tensile Strength: 125 KSI min (860 MPA min)

Yield Strength (0.2% Offset): 75 KSI min (515 MPA min)

Elongation: 25% min

Tempered 1/2 Hard

Ultimate Tensile Strength: 150 KSI min (1035 MPA min)

Yield Strength (0.2% Offset): 110 KSI min (760 MPA min)

Elongation: 15% < 0.15"

18% > 0.15"

Tempered 3/4 Hard

Ultimate Tensile Strength: 175 KSI min (1205 MPA min)

Yield Strength (0.2% Offset): 135 KSI min (930 MPA min)

Elongation: 10% < 0.15"

12% > 0.15"

Tempered Full Hard

Ultimate Tensile Strength: 185 KSI min (1275 MPA min)

Yield Strength (0.2% Offset): 140 KSI min (965 MPA min)

Elongation: 8% < 0.15"

9% > 0.15"

Additional Properties

Corrosion Resistance

Please 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 201 is considered a formable stainless and is often drawn, stamped and headed. It work hardens easily and should be followed by anneal.

Heat Treatment

Alloy 201 cannot be heat treated.

Welding

Refer SSINA for Welding Recommendations

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