Nickel 201, UNS N02201

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated
ASTM B162

Nickel 201 Wire Description

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Nickel 201 isa commercially pure nickel with a maximum carbon level of 0.02%.This alloy provides highly ductile mechanical properties across a wide temperature range, and corrosion resistance in neutral to moderately reducing environments. It provides high thermal and electrical conductivity in comparison to nickel-base alloys, stainless and low alloy steels. With its lower carbon content, alloy 201 may be considered for service above 600°F (316°C), where alloy 200 with higher carbon content is not recommended.

Applications

Applications requiring excellent corrosion resistance and strong magnetic properties.
Lead wires
Battery components
Transducers
Sparking electrodes
Heat exchangers

Chemistry Typical

Nickel + Cobalt: 99.99 min
Carbon: 0.02 max
Manganese: 0.35 max
Silicon: 0.35 max

Sulfur: 0.010 max

Iron: 0.40 max

Copper: 0.25 max

Physical Properties

Density: 0.322 lbs/in^3, 8.90 g/cm^3

Thermal Conductivity, BTU/hr/ft^2/ft/°F (W/m•K)

212°F (100°C): 38.8(67.1)

400°F (204°C): 35.4(61.3)

600°F (316°C): 36.5(56.3)

Mean Coefficient of Thermal Expansion, in/in/°F (µm/m•K)

80-200°F (27-93°C): 7.4 x 10^{-6}(13.3)

80-400°F (27-204°C): 7.7x 10^{-6}(13.9)

80-600°F (27-316°C): 8.0x 10^{-6}(14.4)

Modulus of Elasticity KSI (MPa)

30.0x 10^3 (207 x 10^3)

Melting Range: 2615-2535°F(1435-1445°C)

Mechanical Properties at Room Temperature

Properties: Annealed

Ultimate Tensile Strength: 50 KSI min (345 MPa min)

Yield Strength (0.2% offset): 12 KSI min (83 MPa min)

Elongation:

30% min: gauges < 0.050 inches

35% min: gauges ≥ 0.050 inches

Hardness:

HV 117 max: gauges ≤ 0.010 inches

Rb 66 max: gauges > 0.010 inches

Properties Tempered

Alloy 201 can be cold rolled to achieve the temper properties required by specific customers and/or manufacturing requirements. Contact Ulbrich Wire for details.

Additional Properties

Corrosion Resistance

Alloy 201 is used principally in reducing or neutral environments. It may also be used in oxidizing environments that cause the formation of a passive film. The nickel content of this alloy renders it virtually immune to chloride stress corrosion cracking. It can also be used in fresh and many other process waters. Sulfurous atmospheres are corrosive to Nickel alloys. Refer to NACE (National Association of Corrosion Engineers) for recommendations.

Standard Wire Finishes

Extra Clean: (XC) 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 201 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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