



# Nickel 200, UNS N02200

Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire  
ASTM B 160, ASTM B162, AMS 5553

## Nickel 200 Description

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Nickel is a wrought commercially pure Nickel with a maximum carbon level of 0.15%. This alloy provides highly ductile mechanical properties across a wide temperature range. It provides corrosion resistance in neutral to moderately reducing environments, provides high thermal and electrical conductivity in comparison to nickel-base alloys, stainless and low alloy steels. This alloy is not recommended for service above 600°F (316°C) because long-time exposures in the 800°F to 1200°F range result in precipitation of a carbon containing phase and loss of ductility.

## Applications

Electronic components where going maybe required

Lead wires

Battery components

Transducers

Sparking electrodes

Heat exchangers

Bands and tags

## Chemistry Typical

Nickel + Cobalt: 99.00 min

Carbon: 0.15 max

Manganese: 0.35 max

Silicon: 0.35 max

Sulfur: 0.010 max

Iron: 0.40 max

Copper: 0.25 max

## **Physical Properties**

Density, 0.321 lbs/in<sup>3</sup>, 8.89 g/cm<sup>3</sup>

Specific Heat: BTU/lb/°F (J/kg•K):

32-212°F (0-100°C): 0.12 (456)

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

At 212°F (100°C): 38.8(67.1)

At 400°F (204°C): 35.4(61.3)

At 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):  $7.4 \times 10^{-6}$ (13.3)

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

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

Modulus of Elasticity, KSI (MPa)

$30.0 \times 10^3$  ( $207 \times 10^3$ )

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

## **Mechanical Properties at Room Temperature**

### **Properties: Annealed**

Ultimate Tensile Strength: 55 KSI min (380 MPa min)

Yield Strength (0.2% offset): 15 KSI min (100 MPa min)

Elongation:

35% min: gauges  $\leq$  0.0035 inches

40% min: gauges  $>$  0.0035 inches

Hardness:

HV 117 max: gauges  $\leq 0.010$  inches

Rb 66 max: gauges  $> 0.010$  inches

### **Properties: Tempered**

Nickel 200 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**

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**

Nickel 200 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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