



# Alloy 80/20 Nickel-Chromium, UNS # N06003

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

## Alloy 80/20 Nickel-Chromium Wire Description

 [Get A Quote](#)

Its chemical composition gives good oxidation resistance especially under conditions of frequent switching or wide temperature fluctuations. This alloy can be used at operating temperatures up to 1200°C, (2190 °F).

## Applications

Resistance heating elements for industrial devices such as flat irons, water heaters, plastic molding dies, soldering irons

## Chemistry Typical

Nickel: 80%

Chromium: 20%

## Physical Properties

Density: 0.303 lb/in<sup>3</sup>, 8.31 g/cm<sup>3</sup>

Electrical Resistivity: ohm-cir-mil/ft (ohm-mm<sup>2</sup>/mm):

At 68°F (20°C): 650 (1.08)

At 212°F (100°C): 656 (1.09)

At 392°F (200°C): 662 (1.10)

At 572°F (300°C): 668 (1.11)

At 752°F (400°C): 680 (1.13)

At 1290°F (700°C): 686 (1.14)

At 1470°F (800°C): 686 (1.14)

At 1650°F (900°C): 686 (1.14)

At 1830°F (1000°C): 692 (1.15)

At 2010°F (1100°C): 699 (1.16)

At 2190°F (1200°C): 704 (1.17)

Specific Heat: BTU/lb-°F (J/g-°C)

At 68°F (20°C): 0.107 (0.448)

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

133 (19.2)

Mean Coefficient of Thermal Expansion:  $\mu\text{in/in-}^\circ\text{F}$  ( $\mu\text{m/m-}^\circ\text{C}$ ):

At 68-212°F (20-100°C): 6.94 (12.5)

Melting Temperature: 2550°F (1400°C)

## **Mechanical Properties at Room Temperature**

### **Properties: Annealed Typical**

Ultimate Tensile Strength: 95000 KSI (655 MPa)

### **Properties Tempered**

Alloy 80/20 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: (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 80/20 is non hardenable by heat treatment.

## **Welding**

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

*Limitation of Liability and Disclaimer of Warranty: In no event will Ulbrich Stainless Steels and Special Metals, Inc., be liable for any damages arising from the use of the information included in this document or that it is suitable for the 'applications' noted. We believe the information and data provided to be accurate to the best of our knowledge but, all data is considered typical values only. It is intended for reference and general information and not recommended for specification, design or engineering purposes. Ulbrich assumes no implied or express warranty in regard to the creation or accuracy of the data provided in this document.*

Copyright January 2014 Ulbrich Stainless Steels & Special Metals, Inc. – Revision 6.1.2015

