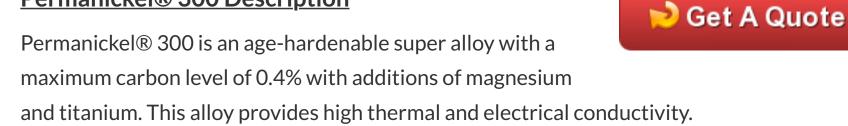


# Permanickel® 300, UNS N03300

# Shaped, Flat, Square, Round, Fine Wire, Plated and Bare Wire ASTM F290

# Permanickel® 300 Description





**Electrical contacts** 

**Electrical springs** 

**Actuators** 

# **Chemistry Typical**

Nickel + Cobalt: 97 min

Carbon: 0.40 max

Silicon: 0.35 max

Manganese: 0.50 max

Magnesium: 0.2-0.5

Titanium: 0.2-0.6

Sulfur: 0.010 max

Iron: 0.6 max

Copper: 0.25 max

#### **Physical Properties**

Density, 0.316 lbs/in<sup>3</sup>, 8.74 g/cm<sup>3</sup>

Thermal Conductivity, BTU/hr/ft²/ft/°F (W/m•K) 212°F (100°C)- 400 (16.2)

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

32-212°F: 6.8 x 10-6 (16.5)

Modulus of Elasticity, KSI (MPa)  $30.0 \times 10^3 (207 \times 10^3)$  in tension

Melting Point: 2600°F (1427°C)

# Mechanical Properties at Room Temperature

**Properties: Annealed** 

Ultimate Tensile Strength: 90 – 120 KSI Yield Strength (0.2% offset): 35 – 60 KSI

Elongation: 25-50%

Hardness: Rb 90 max

#### **Properties Tempered**

Permanickel® 300 can be cold rolled to achieve the temper properties required by specific customers and/or manufacturing requirements. Contact Ulbrich Wire for details.

## Annealed & Aged

Ultimate Tensile Strength: 150-190 KSI

Elongation: 10 -20% Hardness: Rc 30-40

#### Half Hard

Ultimate Tensile Strength: 130-155 KSI

Elongation: 3-15% Hardness: Rc 25-34

#### Half Hard & Aged

Ultimate Tensile Strength: 170-210 KSI

Elongation: 1-20%

Hardness: Rc 33-42

#### **Spring Temper**

Ultimate Tensile Strength: 150-190 KSI

Elongation: 2-10%

Hardness: Rc 30-40

#### **Spring Temper & Aged**

Ultimate Tensile Strength: 180-230 KSI

Elongation: 5-15%

Hardness: Rc 36-46

## **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** 

#### **Cold Forming**

Permanickel® 300 can be easily formed by conventional method.

#### **Heat Treatment**

Permanickel® 300can be hardened by cold working and by heat treating.

#### Welding

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

Permanickel® 300 is a registered trademark of the Special Metals Corp

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 6.1.201