Permanickel® 300, UNS N03300

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

Permanickel® 300 Description

Get A Quote

Permanickel® 300 is an age-hardenable super alloy with a maximum carbon level of 0.4% with additions of magnesium and titanium. This alloy provides high thermal and electrical conductivity.

Applications

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^3, 8.74 g/cm^3

Thermal Conductivity, BTU/hr/ft^2/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)
30.0x 10^3 (207 x 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

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