



Monel® K500 (Alloy K500), UNS N05500

Shaped, Flat, Square, Round, Fine Wire, Plated and Un-plated
ASTM B865, AMS 4676, QQN286

Alloy K500 Description

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Alloy K500 is a nickel copper alloy which combines the excellent corrosion resistance of Alloy 400 with the added advantages of greater strength and hardness. The increase in strength and hardness is a result of the precipitation hardening capability gained by the additions of titanium and aluminum.

Applications

Chains and cables

Pump components

Marine instruments

Doctor blades and scrapers for pulp and paper production

Shafts

Electronic components

Springs

Chemistry Typical

Nickel: 63.0 min

Copper: 27.0-33.0

Aluminum: 2.30-3.15

Titanium: 0.35-0.85

Iron: 2.00 MAX

Phosphorus 0.020 max

Sulfur: 0.010 max

Silicon: 0.050 max

Manganese: 1.50 max

Carbon: 0.25 max

Physical Properties

Density, 0.305 lbs/in³, 8.44 g/cm³

Mean Coefficient of Thermal Expansion: in/in/°F (mm/m/°C):

70- 212°F(20-100°C): 7.6×10^{-6} (13.7)

Modulus of Elasticity: KSI (MPa)

26x 10³ (179 x 10³) in Tension

Magnetic Permeability, H = 200: Annealed < 1.002

Melting Point: 2460°F (1350°C) approx.

Mechanical Properties at Room Temperature

Properties: Annealed

Ultimate Tensile Strength: 90 KSI min (620 MPa min)

Yield Strength: 40 KSI min (275 MPa min)

Elongation: 30% min

Hardness:

HV 170 max: gauges ≤ 0.010 inches

Rb 85 max: gauges > 0.010 inches

Properties: Tempered

Alloy K500 can be cold rolled to achieve the temper properties required by specific customers and/or manufacturing requirements. Contact Ulbrich Wire for details

Heat Treat Capabilities

Aged

Ultimate Tensile Strength: 130 KSI min (895 MPa min)

Yield Strength (0.2% offset): 90 KSI min (620 MPa min)

Elongation: 15% min

Hardness: Rc 24 min

Half Hard & Aged

Ultimate Tensile Strength: 145 KSI min (1000 MPa min)

Yield Strength (0.2% offset): 110 KSI min (760 MPa min)

Elongation: 8% min

Hardness: Rc 30 min

Full Hard & Aged

Ultimate Tensile Strength: 170 KSI min (1170 MPa min)

Yield Strength (0.2% offset): 140 KSI min

Elongation: 5% min

Hardness: Rc 34 min

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

Welding

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

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