

Monel K-500 Datasheet

Monel K500 is an age-hardened nickel-copper alloy combining excellent corrosion resistance with high strength and hardness, widely used in marine engineering, oil & gas, and chemical...

Alloy / Grade	Monel K-500
Common Forms	Round Bar, Shafting, Rod, Forgings, Wire.
Key Feature	High strength (approx. 3x the yield strength of Monel 400).
Service Focus	Through age-hardening, K-500 achieves yield strengths up to 110 ksi (compared to ~30 ksi for annealed Monel 400), making it suitable for heavy-duty...

1. Product Overview

Monel K-500 is a precipitation-hardenable nickel-copper alloy. It combines the excellent corrosion resistance characteristic of Monel 400 with the added advantages of greater strength and hardness, achieved through the addition of aluminum and titanium and a controlled heat treatment cycle.

Grade	Core Description	Typical Service Focus
Monel K-500	Monel K-500 is a precipitation-hardenable nickel-copper alloy. It combines the excellent corrosion resistance...	Select Monel K-500 when you need the corrosion resistance of the standard nickel-copper alloy but require...
Supply Capability	Round Bar, Shafting, Rod, Forgings, Wire.	Standard mill forms, cut-to-size material and project supply
Technical Review	Confirm final values by product form, heat treatment and material certificate	Through age-hardening, K-500 achieves yield strengths up to 110 ksi (compared to ~30 ksi for annealed Monel...

2. Key Features

- Select Monel K-500 when you need the corrosion resistance of the standard nickel-copper alloy but require significantly higher mechanical...
- Through age-hardening, K-500 achieves yield strengths up to 110 ksi (compared to ~30 ksi for annealed Monel 400), making it suitable for heavy-duty...
- Maintains virtually the same outstanding resistance as Monel 400 to sea water, sour gas environments, and various chemical process streams.
- Remains non-magnetic down to cryogenic temperatures, a critical property for electronic housing and specialized oilfield survey instruments.

Further information under:	https://www.nickelcasting.com/nickel-alloys/monel-metal-alloys/Monel-k500/
Home page:	www.nickelcasting.com
Email:	ni@Nickelcasting.com

Technical Data

The following values are provided as general reference data for engineering review and procurement planning. Confirm final values against the applicable specification, product form, heat treatment condition and material certificate.

3. Chemical Composition (%)

Element	Content (%)
Nickel (Ni)	63.0 min
Copper (Cu)	27.0 - 33.0
Aluminum (Al)	2.30 - 3.15
Titanium (Ti)	0.35 - 0.85
Iron (Fe)	2.0 max
Manganese (Mn)	1.5 max
Carbon (C)	0.18 max

4. Standard Specifications

Product Form	ASTM / ASME Standards
Bar, Rod, Wire	ASTM B865, ASME SB865 (Supersedes B164 for K-500)
Forgings	ASTM B564, ASME SB564
Pipe & Tube (Seamless)	ASTM B163 (Condenser Tubes), ASTM B165

5. Mechanical Properties - Typical at Room Temperature

Property	Typical Values (Room Temp)
Tensile Strength	140 - 190 ksi (965 - 1310 MPa)
Yield Strength (0.2% Offset)	100 - 160 ksi (690 - 1100 MPa)
Elongation	30 - 20 %
Hardness (Rockwell C)	27 - 38 HRC

Note: Values are typical or specification reference values. Purchase requirements should be confirmed against the required standard, drawing and material test report.

Applications and Ordering Information

Use this section to define inquiry requirements and accelerate technical confirmation for Monel K-500 products.

6. Typical Applications

Industry / Area	Typical Components
Industrial Service	Used for high-performance boat shafts requiring high fatigue strength and seawater corrosion resistance.
Chemical / Process Equipment	Non-magnetic drill collars, safety lifts, and valve components for sour gas (H ₂ S) service.
Oil, Gas & Marine	Impellers, pump shafts, and valve stems handling corrosive liquids where high wear resistance is needed.
High-Temperature / Power	High-strength springs and fasteners that must operate in corrosive environments without failing.
Precision Components	We specialize in Monel K-500 shafting and bar stock. Contact our metallurgists today for pricing and heat treatment options.

7. Available Supply Forms

Pipe & Tube	Plate & Sheet	Bar & Rod
Pipe Fittings	Flanges	Wire & Strip
Forgings	Custom Cutting	Project Supply

8. Information to Include When Requesting a Quote

- Required grade: Monel K-500, with ASTM / ASME / AMS specification if applicable.
- Product form: pipe, tube, plate, sheet, bar, fittings, flanges, forgings or machined parts.
- Dimensions: outside diameter, wall thickness, length, width, thickness or drawing number.
- Quantity, delivery destination and required delivery schedule.
- Special requirements: cutting, machining, heat treatment, NDT, PMI, test report or material certificate.

Company Information	
Address	Shanghai, China
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Home Page	www.nickelcasting.com
Product Page	https://www.nickelcasting.com/nickel-alloys/monel-metal-alloys/Monel-k500/

Disclaimer

This datasheet is provided for general reference only. Actual values may vary by product form, heat treatment, manufacturing condition and applicable specification. Please contact us for confirmed specifications, test reports and material certificates before ordering.