



E STEEL SDN BHD (891338-A)

NO 3, Lorong Sungai Puloh 7/KU 6,
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Monel K500, Alloy K500, UNS N05500, 2.4375

Technical Data Sheet

Chemical Composition Limits									
Weight%	Ni+Co	C	Mn	Fe	S	Si	Cu	Al	Ti
K-500	63 min	0.25 max	1.5 max	2 max	0.01 max	0.5 max	27 - 33	2.3 - 3.15	0.35 - 0.85

MONEL K500 (NA18, 2.4375) is a precipitation-hardenable nickel-copper alloy that combines high strength, corrosion resistance and non magnetic properties.

A thoroughly modern alloy, **MONEL K500** (N05500), is a high performance alloy that benefits greatly from double melting through the Electro Slag Refining (ESR) process, this ensures the cleanest and highest quality of material is supplied. ESR processing improves alloy purity and is required for this alloy to remove non metallic inclusions that can form HARD spots in the material when the alloy is aged, Inclusions in materials can result in inconsistent material properties, increased machining difficulty and processing times and ultimately part failures.

Although we supply **MONEL K500** (NA18) in all conditions we predominantly supply material in the Hot Worked and Aged condition, which offers the optimum combination of high strength and ductility across the size range, all our material is manufactured to meet the most demanding of the Offshore and Energy Industry customer requirements.

Application Of Monel Alloy K500

Typical applications for alloy K-500 are pump shafts and impellers; doctor blades and scrapers; oil-well drill collars and instruments; electronic components; springs; and valve trim.

Corrosion Resistance

The corrosion resistance of Monel alloy K-500 is substantially equivalent to that of alloy 400 except that, when in the age-hardened condition, alloy K-500 has a greater tendency toward stress-corrosion cracking in some environments. Monel alloy K-500 has been found to be resistant to a sour-gas environment. After 6 days of continuous immersion in saturated (3500ppm) hydrogen sulfide solutions at acidic and basic pH's (ranging from 1.0 to 11.0), U-bend specimens of age-hardened sheet show no cracking. There was some tightly adherent black scale. Hardness of the specimens ranged from 28 to 40 Rc.

The combination of very low corrosion rates in high-velocity sea water and high strength make alloy K-500 particularly suitable for shafts of centrifugal pumps in marine service. In stagnant or slow-moving sea water, fouling may occur followed by pitting, but this pitting slows down after a fairly rapid initial attack.



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Machining

Heavy machining of alloy K-500 is best accomplished when the material is in the annealed condition or hot-worked and quenched condition. Age-hardened material, however, can be finish-machined to close tolerances and fine finished. The recommended practice, therefore, is to machine slightly oversize, age-harden, then finish to size. During aging, a slight permanent contraction (about 0.0002 in/in) takes place, but little warpage occurs because of the low temperatures and slow cooling rates involved

Mechanical Properties

Condition	Solution Annealed / Age	Cold Worked / Age	Hot Worked / Age
Tensile Strength (Mpa)	1000	1078	1078
0.2% Yield Strength (Mpa)	686	902	902
Elongation (%)	28	22	25
Hardness (HB)	285	310	305