

PRECIPITATION HARDENABLE NICKEL-COPPER ALLOY

TYPICAL APPLICATIONS

Pump shafts
Oil well tools and instruments
Springs
Valve trim
Fasteners/bolting
Marine propeller shafts
Electronic components
Cryogenic equipment

MATERIAL SPECIFICATIONS

- UNS N05500
- BS 3072-76 (NA18)
- ASTM B865
- SAE AMS 4676
- Wr.N 2.4375
- NACE MR01-75 / ISO 15156

PRODUCT DESCRIPTION

Alloy K-500 is a precipitation/age hardenable nickel-copper alloy providing high mechanical strength combined with excellent corrosion resistance. Tensile strength is typically twice and yield strength three times that of alloy 400 nickel-copper.

The alloy exhibits outstanding properties at sub-zero (including cryogenic) temperatures at which ductility and toughness are virtually unimpaired. It also possesses low permeability and is non-magnetic to temperatures as low as minus 101°C.

AVAILABILITY

Bar, wire, pipe, tube, sheet, plate, strip.

MACHINING AND JOINING

Heavy machining of alloy K-500 is best achieved when the material is in the annealed or hot-worked and quenched condition. It is common practise to machine slightly oversize, age-harden, then finish to size. However, age-hardened material can be finish machined to close tolerances and fine finishes.

The alloy can be joined by industry-standard welding, brazing and soft soldering processes.

CORROSION RESISTANCE

Alloy K-500 provides excellent resistance to corrosion in seawater, oil & gas environments and a wide variety of industrial media. The corrosion resistance of alloy K-500 is substantially equivalent to that of alloy 400 (non-hardenable nickel-copper alloy) except that, when in the age-hardened condition, alloy K-500 has a greater tendency toward stress corrosion cracking in some media.

CHEMICAL COMPOSITION

| Weight% | C | S | Si | Mn | Cu | Fe | Al | Ti | Ni+Co |
|---------|------|------|-----|-----|------|-----|------|------|-------|
| Min. | | | | | 27.0 | | 2.30 | 0.35 | 63.0 |
| Max. | 0.25 | 0.01 | 0.5 | 1.5 | 33.0 | 2.0 | 3.15 | 0.85 | |

TYPICAL MECHANICAL PROPERTIES

| | |
|---------------|-------|
| UTS, MPa | 1,100 |
| 0.2% PS, MPa | 790 |
| Elongation, % | 20 |

TECHNICAL SALES ASSISTANCE

Our resident team of qualified metallurgists and engineers will be pleased to assist further on any technical topic.

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