

SPECIFICATIONS

Commercial	Alloy 500
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Alloy 500 is a precipitation hardenable copper nickel alloy, with minimum 63% Nickel and the addition of titanium and aluminium that can be heat treated to give very high strength. The alloy has similar corrosion resistance to alloy 400 in a wide range of media including seawater, hydrofluoric acid, sulfuric acid and alkalies.

This alloy is supplied hot worked and aged (with cold worked mechanical properties)

Bars 1 inch to 4 inch diameter are supplied with 3.2 Certification.

Bars are UT tested to DEF STAN 02-729

All bars are of European Origin.

CHEMICAL COMPOSITION

ASTM B865-04 (2015)
Bar, Rod, Forgings

Element	% Present
Copper (Cu)	27.00 - 33.00
Aluminium (Al)	2.30 - 3.15
Iron (Fe)	0.0 - 2.00
Manganese (Mn)	0.0 - 1.50
Titanium (Ti)	0.35 - 0.85
Silicon (Si)	0.0 - 0.50
Carbon (C)	0.0 - 0.18
Sulphur (S)	0.0 - 0.01
Nickel (Ni)	Balance

ALLOY DESIGNATIONS

ASTM B865-04 (2015) / UNS N05500
BS 3076 NA18
NACE MR0175/0103

SUPPLIED FORMS

- Bar
- Rod
- Forgings

GENERIC PHYSICAL PROPERTIES

Property	Value
Density	8.5 g/cm ³
Thermal Expansion	12.3 x10 ⁻⁶ /K
Modulus of Elasticity	179 GPa
Thermal Conductivity	17.4 W/m.K

Room temperature Physical Properties are shown (20C) and most vary as temperature changes.

MECHANICAL PROPERTIES

ASTM B865-04 (2015)

Round Bar - Hot worked & Annealed

Property	Value
Proof Stress	690 Min MPa
Tensile Strength	965 Min MPa
Elongation A50 mm	20 Min %
Hardness Brinell	265 Min HB
Hardness Rockwell C	27 Min HRC

ASTM B865-04 (2015)

Round Bar - Cold Worked/Age Hardened
6.4mm to 25.4mm

Property	Value
Proof Stress	760 Min MPa
Tensile Strength	1000 Min MPa
Elongation A50 mm	15 Min %
Hardness Brinell	300 Min HB
Hardness Rockwell C	32 Min HRC

ASTM B865-04 (2015)
Round Bar - Cold Worked/Age Hardened
25.5mm to 76.2mm

Property	Value
Proof Stress	690 Min MPa
Tensile Strength	965 Min MPa
Elongation A50 mm	17 Min %
Hardness Brinell	280 Min HB
Hardness Rockwell C	29 Min HRC

ASTM B865-04 (2015)
Round Bar - Cold Worked/Age Hardened
76.3mm to 101.6mm

Property	Value
Proof Stress	655 Min MPa
Tensile Strength	930 Min MPa
Elongation A50 mm	20 Min %
Hardness Brinell	255 Min HB
Hardness Rockwell C	25 Min HRC

CHARACTERISTICS

- Excellent corrosion resistance
- High strength and hardness
- Low magnetic permeability
- Excellent low temperature properties
- High fatigue strength
- Easily processed and machined

APPLICATIONS

- Pump and Valve components
- Drill collars
- Propellers
- Shafts
- Fasteners and Springs

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REVISION HISTORY

Datasheet Updated 18 July 2019

DISCLAIMER

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