



## BRODER METALS GROUP K500

Alloy K500 is a nickel-copper alloy, precipitation hardenable through additions of aluminium and titanium. This alloy shows the corrosion resistant characteristics of such as Alloy 400 but with enhanced strength and hardness after precipitation hardening. However, Alloy K500 can be further strengthened by cold working before the precipitation hardening.

We supply Alloy K500 material in both the Cold worked and Hot Worked and Aged condition to offer the best combination of excellent mechanical properties from sub-zero temperatures up to about 480 degrees C, together with very good corrosion resistance in both marine and chemical environments.

These properties of Alloy K500, plus the fact that it is non-magnetic, make it eminently suitable for use as propeller and pump shafts, and pumps and valves components used in the manufacture of perchloroethylene, chlorinated plastics, and in marine applications where high strength and corrosion resistance are required.

We stock and supply Alloy K500 round bar to the full range of the following specifications:

BS 3076-89 NA18

UNS N05500

ASTM B865-04

QQN-286

NACE MR0175/ISO 15156-3:2003

We stock the following sizes:

Cold Worked & Precipitation Treated				
12.7 mm	15.875 mm	19.05 mm		
Hot Worked, Solution Treated and Precipitation Treated				
12.7 mm	15.875 mm	19.05 mm	22.23 mm	25.4 mm
31.75 mm	34.93 mm	38.1 mm	41.275 mm	44.45 mm
47.625 mm	50.8 mm	57.15 mm	63.5 mm	69.85 mm
76.2 mm	88.9 mm	90 mm	101.6 mm	127 mm
139.7 mm	152.4 mm	300 mm		

### Alloy K500 Mechanical Properties: Hot Worked, Solution Treated and Precipitation Treated

Size	Tensile strength Min		Yield Strength (0.2% offset) min		Elongation in 2" or 4D % min	Reduction in Area %	Hardness	
	Ksi min	MPa min	Ksi min	MPa min			HRC	HB (3000 Kg)
<=108.0 mm	130	900	90	620	20	35	25-35	253-327
>108.0 mm	130	900	90	620	17	35	25-35	253-327



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## Alloy K500 nominal Chemical Composition by Percent:

	Ni	Al	C	Fe	Mn	Si	Ti	S	Cu
Min	63.00	2.30	0.00	0.00	0.00	0.00	0.35	0.00	27.00
Max		3.15	0.18	2.00	1.50	0.50	0.85	0.01	33.00

We supply material with Nickel at 63% minimum (including not more than 2% cobalt)

## Heat Treatment

Solution Treatment			Age Harden		
Temp (Degrees C)	Time	Cooling Method	Temp (Degrees C)	Time	Cooling Method
980-1038	Suitable to ensure all material heated to solution treat temperature	Water	595	6-16 hours	Furnace to 480 degrees C at rate between 10-14 degrees C per hour

## Alloy K500 Mechanical Properties: Cold Worked & Precipitation Treated

Size	Tensile Strength min		Yield Strength (0.2% offset) min		Elongation in 2" or 4D % min	Reduction in Area %	Hardness	
	Ksi min	MPa min	Ksi min	MPa min			HRC	HB (3000 Kg)
<=25.4mm	145	1000	110	110	760	15	Reported	253-327
>108.0 mm	130	900	90	620	17	35	25-35	253-327

## Alloy K500 Mechanical Properties: Hot Worked, Solution Treated and Precipitation Treated

Size	Tensile Strength min		Yield Strength (0.2% offset) min		Elongation in 2" or 4D % min	Reduction in Area %	Hardness	
	Ksi min	MPa min	Ksi min	MPa min			HRC	HB (3000 Kg)
<=108.0 mm	130	900	90	620	20	35	25-35	253-327
>108.0 mm	130	900	90	620	17	35	25-35	253-327

Values for hot worked, solution treated and precipitation treated are in accordance with our own purchasing specification and not ASTM B865.