

Alloy 500 Nickel Bar (NA18, N05500, K500)

Smiths Advanced Metals

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Outstanding Corrosion Resistance

Alloy 500 (NA18 N05500) is a precipitation hardened nickel alloy which offers enhanced strength and hardness after heat treatment.

Our product, containing 63% nickel, is a nickel copper-based alloy with additions of titanium and aluminium, creating a material which achieves considerably high strength after age hardening - the material benefits from excellent mechanical property retention across temperatures ranging from 480° C to sub-zero.

Low-magnetic permeability is another attribute which makes the alloy highly suitable for electronics. With high fatigue strength, Alloy 500 is easy to fabricate and weld, although heavy machining is best achieved while the material is hot-worked and quenched or annealed.

Corrosion Resistance

The corrosion resistance of the alloy compares similarly to Alloy 400. It offers excellent protection in various industrial media, including chemical and marine environments, hydrochloric and sulphuric acids, alkalis, and non-oxidising mineral salts. The material also corrodes at a low rate in high-velocity seawater.

Alloy 500 resists stress corrosion cracking (SCC) which gives it suitability for sour gas environments, although the alloy is susceptible if fully age-hardened.



*Chemical Composition (weight %)

	Ni	Cu	Fe	Al	C	Si	Mn	Ti	S
min.	63.00	27.00		2.30				0.35	
max.		33.00	2.00	3.20	0.25	0.50	1.50	0.85	0.01

* As per BS 3076

Benefits

- Outstanding corrosion resistance
- High strength and hardness
- Excellent mechanical property retention

Key Applications

- Propeller shafts
- Pump and valve components
- Heat exchangers

Product Suitability

Alloy 500 should be considered for applications requiring excellent corrosion resistance, strength and hardness, which performs well across various temperatures.

Market beneficiaries include sub-sea and above-sea service, oil, gas, petrochemical and marine applications.

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