

Product Description

Monel K-500 pipe and tube takes the UNS N05500 chemistry through a full precipitation cycle before shipment, so the delivered wall already carries roughly three times the Monel 400 yield strength. Seamless pipe, heat-exchanger tube, and small-diameter instrument tubing serve seawater cooling loops, process lines in reducing media, and non-magnetic sensor sheaths. Bore condition and pressure integrity are examined on every length.

Chemical Composition (ASTM B865)

Element	Content	Element	Content
Nickel (Ni) plus Cobalt (Co)	63.0% min.	Iron (Fe), max.	2.0%
Copper (Cu)	27.0–33.0%	Manganese (Mn), max.	1.5%
Aluminium (Al)	2.30–3.15%	Carbon (C), max.	0.18%
Titanium (Ti)	0.35–0.85%	Silicon (Si), max.	0.50%
Sulfur (S), max.	0.010%	Strengthening route	Age hardening, Ni3(Ti,Al)

Minimum Room-Temperature Mechanical Properties, Age-Hardened

Condition / Section	Tensile Strength	Yield Strength, 0.2% Offset	Elongation	Basis
Hot-worked and age-hardened, all sizes	≥ 140 ksi (965 MPa)	≥ 100 ksi (690 MPa)	20%	B865
Annealed and age-hardened, sections to 25.4 mm (1 in.)	≥ 130 ksi (895 MPa)	≥ 90 ksi (620 MPa)	20%	B865
Annealed and age-hardened, sections over 25.4 mm (1 in.)	≥ 130 ksi (895 MPa)	≥ 85 ksi (585 MPa)	20%	B865

Unaged material follows hardness acceptance instead: annealed stock is capped at 185 HB (90 HRB) and no tensile minimum applies. Hardness rows in the standard serve for information only. Cold-worked tube drawn to a finished size can be quoted against the cold-worked aged rows of the same table.

Physical Properties (typical values)

Property	Value	Property	Value
Density	Approx. 8.44 g/cm³	Electrical resistivity, 20 °C	Approx. 0.615 µΩ·m
Melting range	Approx. 1315–1350 °C	Thermal expansion, 20–100 °C	Approx. 13.7 µm/m·K
Modulus of elasticity	Approx. 179 GPa	Curie temperature	Approx. -101 °C (-150 °F)
Thermal conductivity, 20 °C	Approx. 17.5 W/m·K	Magnetic behaviour	Essentially non-magnetic
Specific heat, 20 °C	Approx. 419 J/kg·K	Service ceiling	Approx. 480 °C before overaging

Applicable Standards

Standard / Designation	Scope
ASTM B865	Source of the UNS N05500 chemistry and the aged acceptance values
BS 3074 NA18	British nickel-copper seamless tube standard
DIN 17751	Nickel-copper seamless pipe and tube
DIN 17743	Wrought nickel-copper alloys — chemical composition
AMS-QQ-N-286	Federal specification for K-500 product forms
NACE MR0175 / ISO 15156-3	Sour service; aged product at 35 HRC max
UNS N05500 · W.Nr. 2.4375 · NiCu30Al	Designations

No ASTM seamless tube specification names UNS N05500. ASTM B622 lists a fixed set of nickel and nickel-cobalt grades that excludes N05500, and B165, B163, B725, and B730 apply to UNS N04400. Welded pipe is quoted against an agreed technical specification.

Typical Supply Dimensions

Product Form	Typical Supply Range	Length
Seamless pipe	6–219 mm outside dia.	Random or fixed
Seamless tube	6–101.6 mm outside dia.	Fixed or random
Heat-exchanger tube	6–25.4 mm outside dia., wall 0.5–2 mm	Fixed
Instrument tubing	1.6–25.4 mm outside dia., wall 0.2–2 mm	Coil or straight
Welded pipe	12.7–610 mm outside dia.	Random or fixed

Examination follows the ordered document: eddy-current and hydrostatic testing on every length, with ultrasonic testing available for critical duty. Filler metal: ERNiCu-7.

Southerly Alloy — nickel alloy bar, rod, pipe, tube, plate and fittings · www.southerly-alloy.com · Values are for reference; the mill test certificate prevails for final acceptance.