

SOUTHERLY ALLOY

Monel K-500 Plate and Sheet | UNS N05500 | Werkstoff Nr. 2.4375

QQ-N-286 / DIN 17750 / ISO 6208 for Dimensions — Chemistry and Aged Values from ASTM B865

Product Description

Monel K-500 plate and sheet carries the UNS N05500 chemistry into flat-rolled product for linings, pressure vessels, and non-magnetic structural panels. Because aluminium and titanium respond to aging, the plate gains strength after forming rather than during it, so fabricators order the condition around their own shop sequence. Hot-rolled plate, cold-rolled sheet, and strip share one chemistry and one certificate.

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-reduced plate and sheet that will be aged after forming are quoted against the annealed rows.

Physical Properties (typical values)

Property	Value	Property	Value
Density	Approx. 8.44 g/cm ³	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
AMS-QQ-N-286	Federal specification covering K-500 plate, sheet, and strip
DIN 17750	Nickel-copper flat-rolled product — plate, sheet, and strip
ISO 6208	Nickel-copper plate, sheet, and strip
BS 3072 NA18	British nickel-copper plate and sheet standard
DIN 17743	Wrought nickel-copper alloys — chemical composition
NACE MR0175 / ISO 15156-3	Sour service; aged product at 35 HRC max
UNS N05500 · W.Nr. 2.4375 · NiCu30Al	Designations

ASTM B127 is written for UNS N04400 and does not cover N05500, so flat-rolled K-500 is quoted against QQ-N-286 or DIN 17750 rather than B127.

Typical Supply Dimensions

Product Form	Typical Supply Range	Length
Hot-rolled plate	4.76–100 mm thick, to 2000 mm wide	Up to 6000 mm
Cold-rolled plate	2–5 mm thick, to 1500 mm wide	Up to 6000 mm
Sheet	0.46–6.4 mm thick, to 1500 mm wide	Up to 6000 mm
Strip	0.13–6.4 mm thick, to 600 mm wide	Coil or cut length
Circle and ring	Cut to your outside and inside diameter	As ordered

Plate thickness is measured before leveling. Flatness and edge condition are agreed at quotation, and ultrasonic examination is available for coded pressure work. 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.

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