



ASM Aerospace Specification Metals Inc.



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Special Metals MONEL™ Alloy K-500

Subcategory: Copper Alloy; Metal; Nickel Alloy; Superalloy

Key Words: DIN 17743, 17752, 17754; Werkstoff Nr. 2.4375; QQ-N-286; NACE MR -01-75, Monel Nickel-Copper Alloy, UNS N05500; BS 3072 - 3076 (NA18); ASME Boiler Code Section VIII; SAE AMS 4676; MIL-N-24549

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	2.3 - 3.15	Fe	Max 2	S	Max 0.01
C	Max 0.25	Mn	Max 1.5	Si	Max 0.5
Cu	27 - 33	Ni	Min 63	Ti	0.35 - 0.85

Material Notes:

A precipitation-hardenable nickel-copper alloy that combines the corrosion resistance of MONEL alloy 400 with greater strength and hardness. It also has low permeability and is nonmagnetic to under -150°F (-101°C). Used for pump shafts, oil-well tools and instruments, doctor blades and scrapers, springs, valve trim, fasteners, and marine propeller shafts. Standard product forms are round, hexagon, flats, forging stock, pipe, tube, plate, sheet, strip, and wire.

Data provided by the manufacturer, Special Metals.

Physical Properties	Metric	English	Comments
Density	<u>8.44 g/cc</u>	0.305 lb/in ³	
Mechanical Properties			
Tensile Strength, Ultimate	<u>1100 MPa</u>	160000 psi	Precipitation Hardened. Value at room temperature.
Tensile Strength, Ultimate at Elevated Temperature	<u>860 MPa</u>	125000 psi	Precipitation Hardened prior to test; 425°C
Tensile Strength, Yield	<u>790 MPa</u>	115000 psi	Precipitation Hardened. Value at room temperature; 0.2% offset.
Tensile Strength, Yield at Elevated Temperature	<u>630 MPa</u>	91400 psi	Precipitation Hardened prior to test; 0.2% offset; 425°C
Elongation at Break	<u>25 %</u>	25 %	Precipitation Hardened

Elongation at Break at Elevated Temperature	12 %	12 %	Precipitation Hardened prior to test.; 425°C
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Electrical Properties

Electrical Resistivity	6.15e-005 ohm-cm	6.15e-005 ohm-cm	
Magnetic Permeability	1.002	1.002	at 200 oersted (15.9 kA/m)
Curie Temperature	-65 °C	-85 °F	

Thermal Properties

CTE, linear 20°C	13.7 µm/m-°C	7.61 µin/in-°F	20-100°C
Specific Heat Capacity	0.419 J/g-°C	0.1 BTU/lb-°F	
Thermal Conductivity	17.5 W/m-K	121 BTU-in/hr-ft ² -°F	
Melting Point	1315 - 1350 °C	2400 - 2460 °F	
Solidus	1315 °C	2400 °F	
Liquidus	1350 °C	2460 °F	

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.