



# FISK MA18B Free-Machining Copper

## UNS C18700 / CuPb1P / CW113C

MA18B is a free-machining high copper with machinability rating of 85, very high electrical conductivity, and good capacity for cold work. The alloy is used in applications where machined components from copper are required such as high current contacts, pins, and switch parts, as well as various hardware components with an expected electrical capacity.

Fabrication Indices	
Machinability	85
Cold Working	good
Hot Working	poor
Brazing	good
Soldering	excellent
Welding	poor

**Available Forms**  
Rod and Wire, round

**Typical Standards**  
ASTM B301  
ASTM B249, B250  
EN 12164

**Chemical Composition**  
99.5% min Copper, incl. Lead & Silver  
0.8-1.5% Lead

### Mechanical Properties

#### ○ Round Rod

TEMPER NAME	TEMPER CODE	TENSILE STRENGTH	YIELD STRENGTH	ELONGATION	MILL LIMITS
		min, ksi (MPa)	min, ksi (MPa) @ 0.5% EUL	min, %	
half-hard	H02	38 (260)	30 (205)	8	0.0394 - 0.2500", incl. (1 - 6.5 mm, incl.)
		38 (260)	30 (205)	12	over 0.2500 - 0.3150" (over 6.5 - 8 mm)
hard	H04	48 (330)	40 (275)	4	0.0394 - 0.2500", incl. (1 - 6.5 mm, incl.)
		44 (305)	38 (260)	8	over 0.2500 - 0.3150" (over 6.5 - 8 mm)

#### ○ Round Wire

TEMPER NAME	TEMPER CODE	TENSILE STRENGTH	YIELD STRENGTH	ELONGATION	MILL LIMITS
		min, ksi (MPa)	min, ksi (MPa) @ 0.5% EUL	min, %	
half-hard	H02	38 (260)	-	6	0.0100 - 0.2362" (0.25 - 6 mm)
hard	H04	48 (330)	-	4	

### Physical Properties

Melting Point (Liquidus)	1976 °F	1080 °C
Melting Point (Solidus)	1747 °F	953 °C
Annealing Range (min - max)	800 - 1200 °F	425 - 650 °C
Density	0.323 lb/in <sup>3</sup>	8.94 gm/cm <sup>3</sup>
Electrical Resistivity (Annealed)	10.8 Ω-cir-mil/ft @ 68 °F	1.79 μΩ-cm @ 20 °C
Electrical Conductivity (Annealed)	96% IACS @ 68 °F	0.557 MS-cm @ 20 °C
Thermal Conductivity	218 Btu/ft <sup>2</sup> /ft-hr/°F @ 68 °F	377 W/m-K @ 20 °C
Coefficient of Thermal Expansion	9.8 x 10 <sup>-6</sup> per °F (68-572 °F)	17.7 x 10 <sup>-6</sup> per °C (20-300 °C)
Modulus of Elasticity (Tension)	17,000 ksi	117,000 MPa
Modulus of Rigidity	6,400 ksi	44,100 MPa

The information provided on this page is for reference purposes only.

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