C18661 Copper-Magnesium (CMG1) Alloy Wire

Introduction

Copper-magnesium is a solid solution alloy providing high strength with nominal reduction in conductivity relative to copper. CMG1 is one of the alloys covered by the broad CDA alloy designation C18661 for copper-magnesium. CMG1 combines high electrical conductivity with good tensile strength, excellent solderability and plateability. Applications include connectors, semiconductor pins, catenary trolley cables and conductors. There are no ASTM developed temper ranges for this alloy and the listed values are the recommendations of Fisk Alloy Wire.

To learn more please contact our sales department.

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C18661 Copper-Magnesium (CMG1) Alloy Wire

Chemical Composition - Limits	Chemical Composition - Nominal
Cu rem - incl Ag (99.5 min incl named elements)	Cu 99.6
Mg 0.10-0.7	Mg 0.4
Sn 0.20 max	P 0.01
Fe 0.10 max	
P 0.001-0.02	

Fabrication Index	
Soldering	5 - Excellent
Hot Worked	3 - Good
Cold Worked	5 - Excellent
Brazing	5 - Excellent
Machinability	1 - Poor

Physical Properties

Density	0.321 lb/in³
Electrical Resistivity (Annealed)	14 Ω·cir-mil/ft @ 68 °F
Electrical Conductivity (Annealed)	74% IACS @ 68 °F
Thermal Conductivity	167 Btu/ft²/ft·hr/°F @ 68 °F
Coefficient of Thermal Expansion	9.8 per °F (68-572 °F)
Modulus of Elasticity (Tension)	18 ksi
Modulus of Rigidity (Tension)	7 ksi
Melting Point (Solidus)	1,700 °F
Melting Point (Liquidus)	1,900 °F

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Round Wire

TEMPER NAME	TEMPER CODE	TENSILE STRENGTH (ksi) Min	TENSILE STRENGTH (ksi) Max	MILL LIMITS (inch)
Annealed		35.0	46.0	.0010 - .1285 inch
1/2 Hard	H02	55.0	70.0	
Hard	H04	75.0	90.0	
Spring	H08	90.0		

Square Wire

TEMPER NAME	TEMPER CODE	TENSILE STRENGTH (ksi) Min	TENSILE STRENGTH (ksi) Max	MILL LIMITS (inch)
Annealed		35.0	46.0	.0100 - .0808 inch
1/2 Hard	H02	55.0	70.0	
Hard	H04	75.0	90.0	
Spring	H08	90.0		

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