CMW® 100 Copper Alloy

Category : Metal , Nonferrous Metal , Copper Alloy

Material Notes:

CMW® 100 material is a heat treatable, high strength, high conductivity copper base alloy. Its properties are a combination of highest strength and hardness with relatively high electrical and thermal conductivity. CMW® 100 material has excellent properties. The properties are developed largely by heat treatment although in some wrought forms, the alloy is additionally cold worked.The high hardness, good wear resistance and high annealing temperatures of CMW® 100 material, coupled with sufficiently high electrical conductivity, make it ideal for electrodes used in spot and seam welding high resistance materials such as stainless steel, Nichrome, Monel metal and many of the high temperature heat resisting alloys. Its heat treatment capabilities allow forming custom bent electrode designs. The excellent casting properties of CMW® 100 material makes possible exceptionally smooth, clean castings for use as flash and projection welding dies and current carrying bushings. In resistance welders, high strength, current-carrying members formerly made of low electrical conductivity aluminum bronze can be decreased in section if made of CMW® 100 material for the same electrical requirements. Much higher currents can be handled if the sections are left the same size. CMW® 100 material is ideal for current carrying springs and structural parts where high conductivity and high strengths are required.Information provided by CMW Inc.

Order this product through the following link:
http://www.lookpolymers.com/polymer_CMW-100-Copper-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.75 g/cc	0.316 lb/in³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	95	95	Castings
	100	100	Forgings
	100	100	Drawn rod and bar
	100	100	Strip (TH04)
Tensile Strength, Ultimate	655 MPa	95000 psi	Castings
	689 MPa	99900 psi	Forgings
	758 MPa	110000 psi	Drawn rod and bar
	793 MPa	115000 psi	Strip (TH04)
Tensile Strength, Yield	565 MPa	81900 psi	Castings
	621 MPa	90100 psi	Forgings
	655 MPa	95000 psi	Drawn rod and bar
	689 MPa	99900 psi	Strip (TH04)

Mechanical Properties	Metric	English	Comments
Elongation at Break	6.0 %	6.0 %	Castings
	8.0 %	8.0 %	Strip (TH04)
	10 %	10 %	Rod & bar
	15 %	15 %	Forging
Modulus of Elasticity	117 GPa	17000 ksi	
Fatigue Strength	124 MPa	18000 psi	casting
	241 MPa	35000 psi	Strip (TH04)
	275 MPa	39900 psi	Drawn rod and bar

Thermal Properties	Metric	English	Comments
CTE, linear	17.6 µm/m-°C @Temperature 100 °C	9.78 µin/in-°F @Temperature 212 °F	
Thermal Conductivity	180 W/m-K	1250 BTU-in/hr-ft²-°F	Casting
	197 W/m-K	1370 BTU-in/hr-ft²-°F	Drawn rod, bar and strip
	197 W/m-K	1370 BTU-in/hr-ft²-°F	Forging
Melting Point	971 - 1088 °C	1780 - 1990 °F	
Solidus	971 °C	1780 °F	
Liquidus	1088 °C	1990 °F	
Softening Point	455 °C	851 °F	Permanent Softening

Component Elements Properties	Metric	English	Comments
Beryllium, Be	0.50 %	0.50 %	
Co + Ni	1.5 - 2.55 %	1.5 - 2.55 %	
Copper, Cu	96.95 - 98 %	96.95 - 98 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000359 ohm-cm	0.00000359 ohm-cm	(48 % IACS)

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