

CMW® 3 Copper Alloy

Category : Metal , Nonferrous Metal , Copper Alloy

Material Notes:

CMW® 3 material is a high strength, high conductivity copper base alloy. CMW® 3 material is heat treatable. Optimum mechanical and physical properties of CMW® 3 material are developed by heat treatment or through a combination of heat treatment and cold working.CMW® 3 material is used extensively for spot welding electrodes and is well suited for custom bent designs, flash welding dies, and seam welding wheels, and provides better performance and greater savings than other copper alloys used for spot and seam welding.Property data for fully precipitation heat treated condition.Information provided by CMW Inc.

Order this product through the following link: http://www.lookpolymers.com/polymer_CMW-3-Copper-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.89 g/cc	0.321 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	68	68	Forging (Hot Forged and Heat Treated)
	68	68	Premium Casting
	78	78	Premium Forging (Hot Forged, Heat Treated, and Cold Worked to less than 1" thick)
	80	80	Strip (TH04)
	75	75	Plate
	@Thickness <=25.0 mm	@Thickness <=0.984 in	Frate
	83	83	Drawn Bod & Bar
	@Diameter <=25.0 mm	@Diameter <=0.984 in	Jaminou a Bul
Tensile Strength, Ultimate	345 MPa	50000 psi	Premium Casting
	414 MPa	60000 psi	Forging (Hot Forged and Heat Treated)
	469 MPa	68000 psi	Premium Forging (Hot Forged, Heat Treated, and Cold Worked to less than 1" thick)
	517 MPa	75000 psi	Strip (TH04)
	448 MPa	65000 psi	Plate
	@Thickness <=25.0 mm	@Thickness <=0.984 in	
	517 MPa	75000 psi	Drawn Rod & Bar

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Mechanical Properties	@Diameter <=25.0 mm Metric	@Diameter <=0.984 in English	Comments
Tensile Strength, Yield	276 MPa	40000 psi	Premium Casting
	298 MPa	43200 psi	Forging (Hot Forged and Heat Treated)
	414 MPa	60000 psi	Premium Forging (Hot Forged, Heat Treated, and Cold Worked to less than 1" thick)
	482 MPa	69900 psi	Strip (TH04)
	379 MPa	55000 psi	Plata
	@Thickness <=25.0 mm	@Thickness <=0.984 in	Fidle
	482 MPa	69900 psi	Drown Dod 9 Dor
	@Diameter <=25.0 mm	@Diameter <=0.984 in	DIAWII KUU & DAI
Elongation at Break	3.0 %	3.0 %	Strip (TH04)
	17 %	17 %	Premium Forging (Hot Forged, Heat Treated, and Cold Worked to less than 1" thick)
	20 %	20 %	Premium Casting
	28 %	28 %	Forging (Hot Forged and Heat Treated)
	20 %	20 %	DL L
	@Thickness <=25.0 mm	@Thickness <=0.984 in	Plate
	15 %	15 %	Drawn Rod & Bar
	@Diameter <=25.0 mm	@Diameter <=0.984 in	
Reduction of Area	45 %	45 %	Premium Casting
	65 %	65 %	Premium Forging (Hot Forged, Heat Treated, and Cold Worked to less than 1" thick)
	73 %	73 %	Forging (Hot Forged and Heat Treated)
	60 %	60 %	Drawn Rod & Bar
	@Diameter <=25.0 mm	@Diameter <=0.984 in	
Modulus of Elasticity	110 GPa	16000 ksi	Bar, Rod & Forgings
	110 GPa	16000 ksi	Castings & Strip
	114 GPa	16500 ksi	Plate

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Thermal Properties	Metric	English	Comments
CTE, linear	17.6 µm/m-°C	9.78 µin/in-°F	
	@Temperature 100 °C	@Temperature 212 °F	
Thermal Conductivity	324 W/m-K	2250 BTU-in/hr-ft²-°F	
Melting Point	1070 - 1075 °C	1960 - 1967 °F	
Solidus	1070 °C	1960 °F	
Liquidus	1075 °C	1967 °F	
Softening Point	500 °C	932 °F	Permanent Softening

Component Elements Properties	Metric	English	Comments
Chromium, Cr	0.90 %	0.90 %	
Copper, Cu	99.1 %	99.1 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000203 ohm-cm	0.00000203 ohm-cm	Bar, Rod & Forgings (85 % IACS)
	0.00000216 ohm-cm	0.00000216 ohm-cm	Castings & Strip (80 % IACS)
	0.00000221 ohm-cm	0.00000221 ohm-cm	Plate (78 % IACS)

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