

CMW® 73 Copper Alloy

Category : Metal , Nonferrous Metal , Copper Alloy

Material Notes:

CMW® 73 material is a heat treatable copper base alloy having extremely high hardness and strength coupled with fair electrical and thermal conductivity. The extremely high hardness, strength and wear resistance is obtained in both cast and wrought material largely by means of heat treatment. It is generally useful where high stress is encountered or where high abrasion resistance is desired but where temperatures are not excessive. The annealing temperature is somewhat less than for other heat treatable high strength copper base alloys. The hardness of CMW® 73 material in the fully heat treated condition is sufficiently high to make machining somewhat difficult particularly in drilling and tapping of small holes. Where extensive machining or forming is to be done, CMW® 73 material can be supplied in the solution annealed (soft) condition and then hardened by a simple heat treatment following machining. CMW® 73 material is useful where extremely high hardness, strength and abrasion resistance is required. It may be advantageously used for certain flash and projection welding dies where high mechanical properties are required but where current density and heat are not excessive. Many of the steel strip flash welders in continuous steel strip mills are equipped with CMW® 73 die facings. The high hardness and abrasion resistance of CMW® 73 material makes it ideally suited for current carrying collets, chucks, bearings and shafts. Current carrying structural members of CMW® 73 material provide extremely high strength. Information provided by CMW Inc.

Order this product through the following link:

http://www.lookpolymers.com/polymer_CMW-73-Copper-Alloy.php

Physical Properties	Metric	English	Comments
Density	8.25 g/cc	0.298 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	38	38	Rod & Bar
	38	38	Casting
	38	38	Forging
Tensile Strength, Ultimate	758 MPa	110000 psi	Castings
	1170 MPa	170000 psi	Bar, Rod & Forgings
Tensile Strength, Yield	589 MPa	85400 psi	Castings
	1030 MPa	149000 psi	Bar, Rod & Forgings
Elongation at Break	2.0 %	2.0 %	Castings
	4.0 %	4.0 %	Rod & bar
	6.0 %	6.0 %	Forging
Modulus of Elasticity	128 GPa	18600 ksi	
Fatigue Strength			casting

Mechanical Properties	165 MPa Metric	23900 psi English	Comments
	207 MPa	30000 psi	Forging
	241 MPa	35000 psi	Rod & Bar

Thermal Properties	Metric	English	Comments
CTE, linear	17.8 $\mu\text{m}/\text{m}\cdot\text{°C}$	9.89 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 100 °C	@Temperature 212 °F	
Thermal Conductivity	130 W/m-K	902 BTU-in/hr-ft ² -°F	
Melting Point	857 - 982 °C	1570 - 1800 °F	
Solidus	857 °C	1570 °F	
Liquidus	982 °C	1800 °F	
Softening Point	375 °C	707 °F	Permanent Softening

Component Elements Properties	Metric	English	Comments
Beryllium, Be	1.9 %	1.9 %	
Co + Ni	0.40 %	0.40 %	
Copper, Cu	97.7 %	97.7 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000750 ohm-cm	0.00000750 ohm-cm	Forgings (23 % IACS)
	0.00000780 ohm-cm	0.00000780 ohm-cm	Drawn Rod & Bar (22% IACS)
	0.00000860 ohm-cm	0.00000860 ohm-cm	Castings (20 % IACS)

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