

## California Fine Wire Manganin 230 (Shunt) Copper, Manganese, and Nickel Resistance Wire

Category : Metal , Electronic/Magnetic Alloy , Nonferrous Metal , Copper Alloy

### Material Notes:

All values may vary dependent on specific design and usage. Nickel content modified.

Capabilities: Wire, Ribbon, Square, Insulated, Plated. Information provided by California Fine Wire.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_California-Fine-Wire-Manganin-230-Shunt-Copper-Manganese-and-Nickel-Resistance-Wire.php](http://www.lookpolymers.com/polymer_California-Fine-Wire-Manganin-230-Shunt-Copper-Manganese-and-Nickel-Resistance-Wire.php)

Physical Properties	Metric	English	Comments
Density	8.17 g/cc	0.295 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Tensile Strength at Break	483 MPa	70000 psi	Annealed
	1030 MPa	150000 psi	Hard

Thermal Properties	Metric	English	Comments
CTE, linear	18.7 $\mu\text{m}/\text{m}\cdot\text{C}$	10.4 $\mu\text{in}/\text{in}\cdot\text{F}$	
	@Temperature 20.0 $^{\circ}\text{C}$	@Temperature 68.0 $^{\circ}\text{F}$	
Specific Heat Capacity	0.406 J/g- $^{\circ}\text{C}$	0.0970 BTU/lb- $^{\circ}\text{F}$	
	@Temperature 20.0 $^{\circ}\text{C}$	@Temperature 68.0 $^{\circ}\text{F}$	
Thermal Conductivity	19.8 W/m-K	137 BTU-in/hr-ft <sup>2</sup> - $^{\circ}\text{F}$	
Melting Point	1020 $^{\circ}\text{C}$	1868 $^{\circ}\text{F}$	
Maximum Service Temperature, Air	200 $^{\circ}\text{C}$	392 $^{\circ}\text{F}$	Operating Temperature

Component Elements Properties	Metric	English	Comments
Copper, Cu	84 %	84 %	
Manganese, Mn	12 %	12 %	
Nickel, Ni	4.0 %	4.0 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000382 ohm-cm	0.0000382 ohm-cm	3% tolerance on sizes below 0.02, 5% tolerance on sizes above 0.02

Descriptive Properties	Value	Comments
Magnetic	None	
Temperature Coefficient of Resistance	$\pm 0.000015$ ohms/ohm-°C	0-100°C
Thermal EMF vs. Copper	<+3	

## Contact Songhan Plastic Technology Co.,Ltd.

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