

# SHUNT MANGANIN



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Shunt Manganin is a Copper-Manganese resistance alloy used for shunts in various high current applications. The alloy has a low temperature coefficient of resistivity with peak resistance at about 50°C. The thermal EMF vs. Copper is very low.

### GENERAL INFORMATION

The alloy can be easily formed from the annealed temper. The maximum recommended operating temperature in air is 200°F.

### AVAILABILITY

Shunt Manganin is available from Hamilton Precision Metals as strip product in thicknesses from 0.0005 to 0.053" (0.0127 mm to 1.346 mm) in widths up to 12.0" (304.8 mm). It is also available in foil as thin as 0.000100" (0.00254 mm) in widths of 4.0" (101.6 mm) maximum.



## Technical Data

TYPICAL MECHANICAL PROPERTIES <sup>1</sup>		
	ANNEALED	COLD ROLLED
Ultimate Tensile Strength	60,000 PSI	90,000 PSI
Yield Strength (0.2% Offset)	25,000 PSI	80,000 PSI
Elongation in 2" *	40%	2%

\*The measured elongation will be less as thickness decreases to 0.002" and less.

<sup>1</sup> These values may be adjusted by control of process variables – consult HPM for desired values.

NOMINAL COMPOSITION	
Copper	87%
Manganese	9.5%
Nickel	3.5%

PHYSICAL PROPERTIES <sup>2</sup>	
Density	0.296 lb/in <sup>3</sup>
Melting Point (Approx.)	985°C
Electrical Resistivity @ R.T.	38.1 Microhm · cm
Temperature Coefficient of Resistivity (40° to 60°C)	±15 PPM/°C
Thermal EMF vs. Cu (0-100°C)	<3 Microvolts/°C
Thermal Expansion Coefficient 20° to 100°C	18.7 x 10 <sup>-6</sup> /°C
Thermal Conductivity @ R.T.	19.8 W/m · K
Magnetic Attraction	None

<sup>2</sup> Typical values to guide alloy selection but are not a guarantee of minimum or maximum.