



Hamilton Precision Metals
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TECHNICAL DATA SHEET

SHUNT MANGANIN

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.

NOMINAL COMPOSITION:

Copper	87%
Manganese	9.5%
Nickel	3.5%

TYPICAL MECHANICAL PROPERTIES:¹

	<u>ANNEALED</u>	<u>COLD ROLLED</u>
Ultimate Tensile Strength	60,000 PSI	90,000
Yield Strength (.2% Offset)	25,000 PSI	80,000
Elongation in 2" *	40%	2%

*The measured elongation will be less as thickness decreases to .002" and less.

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

SHUNT MANGANIN

PHYSICAL PROPERTIES:²

Density	-	0.296 lbs/cu.in.
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 ⁻⁶ /° C
Thermal Conductivity @ R.T.	-	19.8 W/m· K
Magnetic Attraction	-	None

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 .0005 to .053” in widths up to 12.0”. It is also available in foil as thin as .000100” in widths of 4.0” maximum.

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