MOLY PERMALLOY®

HAMILTON PRECISION METALS

www.hpmetals.com

Moly Permalloy

Moly Permalloy® is a Nickel-Iron-Molybdenum alloy with a magnetic permeability that makes it suitable for electrical shielding applications.

GENERAL INFORMATION

The alloy can be readily formed from the annealed temper. Effective magnetic shielding is provided by annealing at 1900°F or higher. Joining is accomplished by spot welding or tungsten inert gas welding.

AVAILABILITY

Moly Permalloy® is available from Hamilton Precision Metals as strip product from 0.0005" to 0.015" (0.0127 mm to 0.38 mm) in widths 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. The metal conforms to ASTM A753, Type 4 and MIL N 14411, Type 1.

Technical Data

TYPICAL MECHANICAL PROPERTIES[1]		
	ANNEALED	COLD ROLLED
Ultimate Tensile Strength	90,000 PSI	160,000 PSI
Yield Strength (0.2% Offset)	35,000 PSI	150,000 PSI
Elongation in 2" *	30%	1%
Modulus of Elasticity (Tension)	32 X 10^6 PSI	-

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

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

NOMINAL COMPOSITION	
Nickel	80.0%
Molybdenum	4.8%
Manganese	0.50%
Silicon	0.35%
Iron	Balance

PHYSICAL PROPERTIES [2]	
Density	0.315 lbs./cu.in.
Melting Point (Approx.)	1450°C
Electrical Resistivity @ R.T.	59 Microhm · cm
Temperature Coefficient of Resistivity (-20° to 500°C)	1100 PPM/°C
Thermal Expansion Coefficient (25° to 200°C)	12.7 x 10^{-6}/°C
Thermal Conductivity @ R.T.	34.6 W/m · K
Curie Temperature	455°C
DC Magnetic Properties	
Coercive Force from Hmax = 1.0 oersted	0.02 max. oersted
Hysteresis Loss @ 1.0 oersted	16/cycle
Permeability @ 40 gauss	50,000
Permeability @ maximum induction	200,000
Saturation Induction	8,000 gauss
Maximum Residual Induction	3,500 gauss
Magnetic Attraction	Yes

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

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