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

NOMINAL COMPOSITION:

- Nickel 80.0%
- Molybdenum 4.8%
- Manganese .50%
- Silicon .35%
- Iron Balance

TYPICAL MECHANICAL PROPERTIES:

<table>
<thead>
<tr>
<th>Property</th>
<th>ANNEALED</th>
<th>COLD ROLLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultimate Tensile Strength</td>
<td>90,000 PSI</td>
<td>160,000 PSI</td>
</tr>
<tr>
<td>Yield Strength (.2% Offset)</td>
<td>35,000 PSI</td>
<td>150,000 PSI</td>
</tr>
<tr>
<td>Elongation in 2” *</td>
<td>30%</td>
<td>1%</td>
</tr>
<tr>
<td>Modulus of Elasticity (Tension)</td>
<td>$32 \times 10^6$ PSI</td>
<td></td>
</tr>
</tbody>
</table>

*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.

Rev. 0

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MOLY PERMALLOY

PHYSICAL PROPERTIES:

Density - 0.315 lbs.cu.in.
Melting Point (Approx.) - 1450°C
Electrical Resistivity @ R.T. - 59 Microhm·cm
Temperature Coefficient of Resistivity - 1100 PPM/°C
(-20° to 500°C) -
Thermal Expansion Coefficient - $12.7 \times 10^{-6}/°C$
(25° to 200°C) -
Thermal Conductivity @ R.T. - 34.6 W/m·K
Curie Temperature - 455°C

DC Magnetic Properties
- Coercive Force from Hmax = 1.0 oersted - .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

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 .0005” to .015” in widths to 12.0”. It is also available in foil as thin as .000100” in widths of 4.0” maximum. The metal conforms to ASTM A753, Type 4 and MIL N 14411, Type 1.

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