



Hamilton Precision Metals
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TECHNICAL DATA SHEET

HPM[®] NI 36

HPM[®] Ni 36 is a Nickel-Iron alloy with the lowest thermal expansion of any active alloy from -240°C to 330°C. It is selected when dimensional changes from temperature variation need to be minimized in electronic control devices.

NOMINAL COMPOSITION:

Nickel	36%	Carbon	.01%
Manganese	.30%	Iron	Balance

TYPICAL MECHANICAL PROPERTIES:¹

	<u>ANNEALED</u>	<u>COLD ROLLED</u>
Ultimate Tensile Strength	70,000 PSI	130,000 PSI
Yield Strength (.2% Offset)	40,000 PSI	125,000 PSI
Elongation in 2" *	35%	2%
Modulus of Elasticity (Tension)	21 X 10 ⁶ PSI	
Poisson's Ratio	0.295	

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

¹ Typical values to guide alloy selection but are not a guarantee of minimum or maximum.

HPM Ni 36

PHYSICAL PROPERTIES:²

Density.....	0.291 lbs/cu.in
Melting Point (Approx.).....	1425° C
Electrical Resistivity @ R.T.....	82 Microhm. cm
Temperature Coefficient of Resistivity..... (20° to 100°C)	1100 PPM/° C
Thermal Expansion Coefficient..... (20° to 200° C)	1.05 X 10 ⁻⁶ /° C
Thermal Conductivity @ 100°C.....	10.5 W/m. K
Curie Temperature.....	280° C
Magnetic Attraction.....	Yes

GENERAL INFORMATION:

The alloy can be readily formed from the annealed temper. Annealed hardness can be modified to approximately DPH 180 for best blanking characteristic. Grain size can be adjusted to provide the optimum deep drawing characteristic. It can be welded and brazed using conventional methods.

AVAILABILITY:

HPM Ni 36 is available from Hamilton Precision Metals as strip product in thicknesses from .0005” to .025” in widths up to 12.0”. It is also available in foil as thin as .000100” in widths of 4.0” maximum. The metal conforms to UNS K93603, ASTM F1684.

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