

HPM[®] Ni 36



HPM[®] Ni 36 (UNS K93603)

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.

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 0.0005" to 0.025" (0.0127 mm to 0.635 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. The metal conforms to UNS K93603, ASTM F1684.



Technical Data

TYPICAL MECHANICAL PROPERTIES ¹		
	ANNEALED	COLD ROLLED
Ultimate Tensile Strength	70,000 PSI	130,000 PSI
Yield Strength (0.2% 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 0.002" and less.

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

NOMINAL COMPOSITION	
Nickel	36%
Manganese	0.30%
Carbon	0.01%
Iron	Balance

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/R.T.
Curie Temperature	280°C
Magnetic Attraction	Yes

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