

HPM[®] Ni 42



HPM[®] Ni 42 (UNS K94100)

HPM[®] Ni 42 is a Nickel-Iron alloy with a thermal expansion coefficient suitable for matching to the ceramic chip in numerous miniature electronic circuits.

GENERAL INFORMATION

The alloy is readily formed from the annealed temper and can be welded or brazed by standard methods. The alloy is not corrosion resistant at 20°C when exposed to a moist or salt-containing atmosphere.

AVAILABILITY

HPM[®] Ni 42 is available from Hamilton Precision Metals as strip product in thicknesses from 0.001" to 0.050" (0.0254 mm to 1.27 mm) in widths up to 12.0" (304.8 mm). The material conforms to ASTM F30 and UNS K94100.



Technical Data

TYPICAL MECHANICAL PROPERTIES ¹		
	ANNEALED	COLD ROLLED
Ultimate Tensile Strength	72,000 PSI	110,000 PSI
Yield Strength (0.2% Offset)	40,000 PSI	105,000 PSI
Elongation in 2" *	35%	5%
Modulus of Elasticity (Tension)	21 X 10 ⁶ PSI	-
Poisson's Ratio	0.25	-

* 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	41.0%
Manganese	0.40%
Silicon	0.20%
Iron	Balance

PHYSICAL PROPERTIES ²	
Density	0.293 lbs/cu.in.
Melting Point (Approx.)	1440°C
Electrical Resistivity @ R.T.	70 Microhm · cm
Temperature Coefficient of Resistivity (20° to 100°C)	2500 PPM/°C
Thermal Expansion Coefficient (30° to 400°C)	6.0 X 10 ⁻⁶ /°C
Thermal Conductivity @ R.T.	14.5 W/m · K
Curie Temperature	375°C
Magnetic Attraction	Yes

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