



## Nanocrystalline Alloy - NANO

**Magnetic Metals NANO 9001:** The composition is 82% Iron, with balance Silicon, Niobium, Boron, Copper, Carbon, Nickel and Molybdenum. This alloy is essentially a high flux with very low coercivity and power loss over wide range of Frequency. For these reasons this material is better performing to substitute for 80% nickels (1 and 1/2 mil.). The applications are for high frequency Transformers, current transformers, noise filter, Pulse Transformers and Magnetic parts for Switching Mode Power Supplies: Choke, Saturation Reactors.

### MAGNETIC PROPERTIES

Flux Density (Kgauss)	= 12 - 13.5
Squareness (Br/Bm)	= > .85 for square loop and .60 for round loop
Coercive force, (Hc -Oersted)	= 0.04
Resistivity (micro-Ohm -cm)	= 120
Curie temperature	= 570 °C
Density (gm/cc)	= 7.3
Material thickness (inch)	= .0007"
Stacking Factor	= .75

**NAMLITE COATING:** To reduce Eddy currents at high frequency, the thinner gages of material are selected and the isolation between laminations (coating) become important. For high frequencies applications (> 50Khz), Namlite coating is applied to Nano material to reduce the eddy current losses.

### Comparison of a toroidal core with and without Namlite coating:

#### Permeability:

@ 100Gauss, 10Khz:

Regular without Namlite coating	= 70,000
With Namlite coating	= 40,000

@ 100Gauss, 100Khz:

Regular without Namlite coating	= 15,000
With Namlite coating	= 20,000

#### Core Loss:

@ 1KGauss, 10Khz:

Regular without Namlite coating	= .15 W/LB
With Namlite coating	= .17 W/LB

@ 1KGauss, 100Khz:

Regular without Namlite coating	= 8 W/LB
With Namlite coating	= 6 W/LB

### Part numbers for NANO -9001 cores:

**Toroidal core:** xxxx – P - 9001: For regular products / operating frequency < 50 KHz.

xxxx – P - 9001-P: With Namlite coating, for pulse applications or operating frequency > 50 KHz.

**NOTE:** Magnetic Metals is processing Nano 9001 material for round loop applications. For square loop applications, customers should use AMOR 9101 mat'l for economical reasons.

**Cut Core:** MMN-xxxx:

**NOTE:** For cut core, Magnetic Metals is processing material for high frequency applications With Namlite coating.