

HYMAC'IN



# **NANOMAG-MnZn**

Ultrafine powder (Mn,Zn)Fe<sub>2</sub>O<sub>4</sub>

November 2023



# Discover HYMAG'IN

---

HYMAG'IN produces and sells several ranges of innovative ferrite-based magnetic materials. The products are ultrafine powders or semi-finished products for additive manufacturing, such as magnetic filaments. HYMAG'IN products are aimed at aerospace, defense, automotive and telecom markets.

Ferrites are widely used in electronic systems. They are essential magnetic materials for passive components and solutions for electromagnetic compatibility (EMC). However, ferrite users face many challenges:

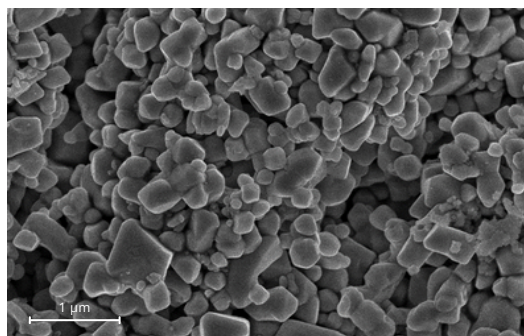
- miniaturize to reduce weight and volume
- reduce their environmental impact and energy consumption
- secure their supply chains

HYMAG'IN provides a solution to these needs by producing ferrites 100 times smaller, using a unique, sustainable and low-energy technology based in Europe.

NANOMAG-MnZn is designed for the manufacture of radio frequency absorbing materials for EMC. It can also be used to produce passive components for inductors, transformers and filters in the kHz - MHz range.

# NANOMAG-MnZn

## | Features



NANOMAG-MnZn is a Manganese-Zinc (Mn,Zn)Fe<sub>2</sub>O<sub>4</sub> ferrite powder.

The quality of NANOMAG products is characterised by electron microscopy (SEM-EDS) and X-ray diffraction (XRD).

### SEM PICTURES

Density		5 g/cm <sup>3</sup>
Purity		99.99 %
Laser granulometry		2 μm (avg)
Crystal size (SEM)	D10	100 nm
	D50	200 nm
	D90	400 nm
Curie temperature		330 °C
Saturation magnetisation		78 emu/g
Use frequencies		from 100 MHz to 5 GHz

NANOMAG-MnZn powder is easily incorporated into all types of polymers and silicones thanks to its ultrafine size. Therefore, sheets, gaskets and coatings made from NANOMAG-MnZn-filled composites are excellent EMC absorbers at frequencies ranging from 100 MHz to 5 GHz.

NANOMAG-MnZn can also be sintered to produce dense, low-loss ferrite products for energy conversion or signal filtering in the kHz - MHz range.

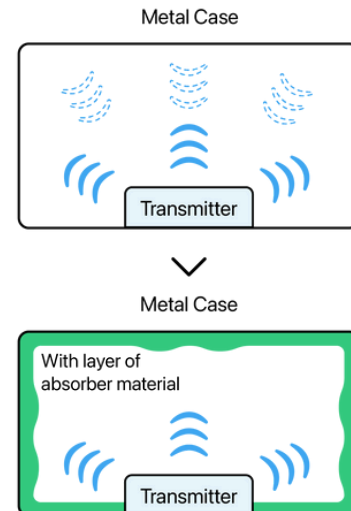


# Why choose NANOMAG-MnZn?

## ABSORBERS IN METAL CASINGS

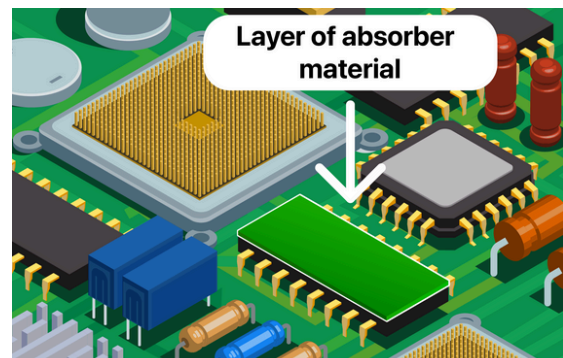
Adhesive absorbing sheets, based on NANOMAG-MnZn dispersed in silicone, are positioned inside the metal casings protecting the electronic board components.

These sheets absorb energy to attenuate interference due to wave reflection within the resonant cavity.



## EMC ABSORBERS ON COMPONENTS

Composite absorber plates loaded with NANOMAG-MnZn are laid on the radiating component. In EMC, these plates solve the problem of RF electromagnetic radiation directly on the problematic component.



With their high magnetic absorption losses ( $\mu''$ ) and magnetic field storage capacity ( $\mu'$ ), these plates reduce the noise caused by the radiating component.

## TOROIDS FOR POWER ELECTRONICS



Sintering NANOMAG-MnZn enables to realise magnetic components used in inductors, transformers and converters.

These components modify the voltage and current values of power supply circuits at frequencies ranging from kHz to MHz.

# CONTACT US

## FERRITES AND OTHER CUSTOM-MADE PRODUCTS

Looking for unique specifications?  
Let's work together to develop your ideal product!

Our R&D team can work on the following points:

- particle size;
- chemical composition: introduction of elements into the crystalline structure;
- static and frequency electromagnetic properties;
- the combination of our magnetic fillers within a wide range of matrices. Let work together to develop composite absorbers, dense products for power electronics, or magnetic filaments for additive manufacturing.

NEED MORE INFORMATION?  
**CLICK HERE TO CONTACT US**

▲ Sales Department:  
Lisa-Marie POUILLY  
lisa-marie.pouilly@hymagin.com

▲ [contact@hymagin.com](mailto:contact@hymagin.com)  
+33 (0)4 57 04 11 91



in

Photo credits :  
Binet Photo