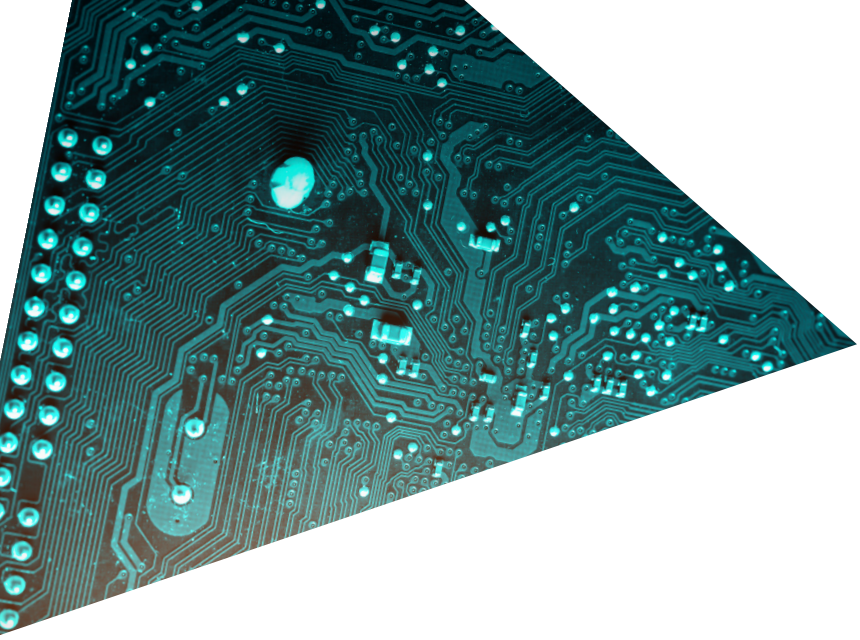
HYMAG'IN

NANOMAG-Fe

Iron oxide nanopowder Fe_3O_4

September 2023



Discover HYMAG'IN

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

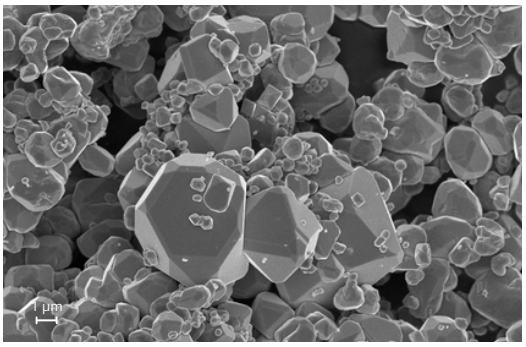
Ferrites are widely used in electronic systems. They are essential magnetic materials for passive components and solutions for electromagnetic compatibility (EMC). However, ferrite users face many challenges:

- miniaturize to reduce weight and volume
- reduce their environmental impact and energy consumption
- control 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-Fe is a key element in EMC, thanks to its ability to absorb microwave electromagnetic waves.

NANOMAG-Fe | Features



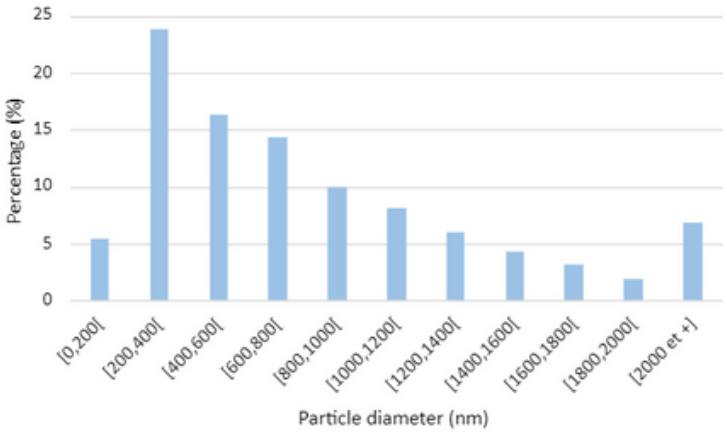
SEM PICTURES

NANOMAG-Fe is a powder of iron oxide Fe_3O_4.

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

NANOMAG-Fe particles range in size from 50 to 2,500 nm, with a median size of 700 nm.

The broad size distribution of these magnetic fillers makes them more homogeneous when they are dispersed in polymer matrices to create composite materials.



NANOMAG-Fe GRANULOMETRY

The nanometric dimensions of NANOMAG products enable to meet the key challenges of embedded electronics: miniaturization and lighter systems.

Density	5 g/cm³
Purity	99.99 %
D50	700 nm
Curie temperature	580 °C
Saturation magnetisation	86 emu/g
Use frequencies	from 1 to 20 GHz

Why choose NANOMAG-Fe?

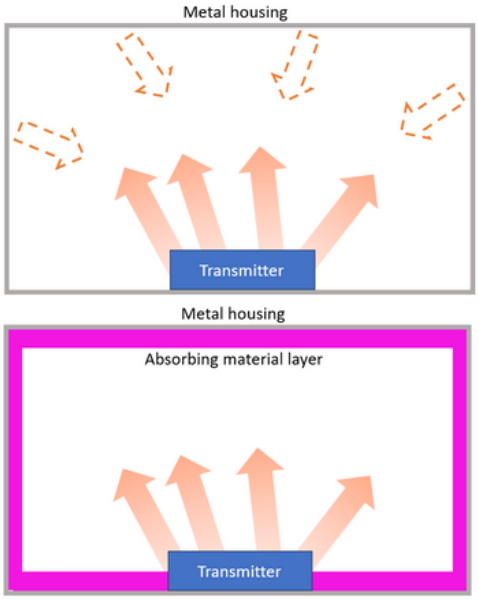
NANOMAG-Fe powder is easily incorporated into all types of polymers and silicones to produce electromagnetic absorbing composite materials, such as thin, flexible, easily machinable sheets. These composites can also be used to make shielding gaskets, absorbing foams, magnetic paints and other products.

Below are examples of EMC use cases after shaping NANOMAG-Fe.

ABSORBERS IN METAL CASINGS

Adhesive absorbing sheets, based on NANOMAG-Fe 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.



SHIELDING GASKETS

Elastomer gaskets filled with NANOMAG-Fe are used in the connector area of a metal casing.

This solution supplements the metal shielding provided by the housing, as it prevents energy leaks that could cause perturbations outside the electronic system.

CONTACT US

FERRITES AND OTHER CUSTOM-MADE PRODUCTS

Special 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 with matrices with suitable mechanical properties to create composite absorbers, dense products for power electronics or filaments for additive manufacturing.

NEED MORE INFORMATION?
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