

HYMAG'IN



FILAMAG

Absorbing filaments for
additive manufacturing

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.

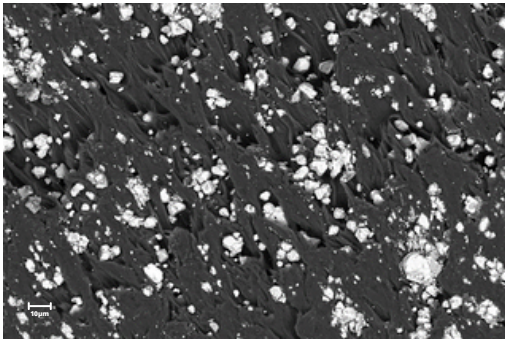
FILAMAG is a range of filaments designed for the additive manufacturing of absorbing microwave products.

FILAMAG | Features

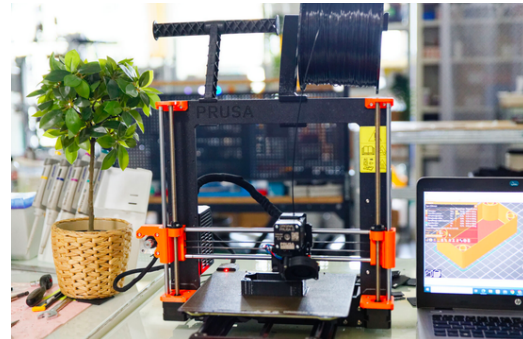
FILAMAG is a range of filaments made from polymer filled with NANOMAG magnetic nanoferrite powder.

HYMAG'IN has the expertise required to integrate these powders into different types of rigid or flexible polymer matrices.

FILAMAG magnetic filaments can be used with Fused Deposition Modeling (FDM) 3D printing technology.



SEM PICTURES



3D FDM PRINTING

	FILAMAG-R	FILAMAG-F
Composition	Nanoferrite Fe ₃ O ₄ PETG matrix	Nanoferrite Fe ₃ O ₄ Flexible polymer
Possible load rates	50% to 70% by mass	50% to 70% by mass
Extrusion temperature	240 °C	230 °C
Printer bed temperature	85 °C	45 °C
Nozzle (minimum)	0.8 mm	1 mm
Diameter	1.75 mm	1.75 mm

Why choose FILAMAG?

Geometry: FILAMAG filaments enable to print absorbing parts as precisely as required to match the geometry of electronic systems.



Relationship between Geometry and Weight - Performance :

The structure of the printed material, in the form of micro-pyramids or honeycombs, enables better interaction with electromagnetic waves, resulting in increased absorption and lighter absorbers.

Adaptation of the parameters related to mechanical properties:

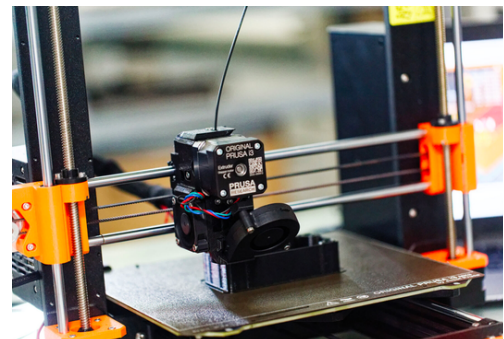
The matrix chosen for the filament, as well as the loading rate, are criteria which have an impact on the final mechanical properties of the printed part. HYMAG'IN is able to adapt these parameters to suit user requirements.

FILAMAG-F, the flexible filament, can be used to print absorber products that require a certain degree of flexibility for integration into the system and for use under mechanical stress, for example.

3D PRINTED CASING

HYMAG'IN uses these filaments to produce 3D electronic casings designed to protect electronic boards.

These casings not only protect components, but also offer an alternative to traditional metal covers, which reflect waves and are too heavy to meet the challenges of lightweighting systems.



The lightweight 3D-printed composite casing effectively prevents the transmission and reflection of waves by absorbing them.

CONTACT US

FILAMENTS AND OTHER ADDITIVE MANUFACTURING TECHNOLOGIES

Do you have specifications on filament properties? On the use of particular fillers and/or matrices?

Are you looking for advantages linked to the technology used?

Our experts are at your service to offer you a range of services to meet your needs:

- Assessing the feasibility of filaments composed of other fillers/matrices;
- Analysis and execution of printing tests using the most suitable additive manufacturing method;
- Characterization of your 3D printed product;
- Development and optimization of your 3D printed product using our expertise in additive manufacturing.

NEED MORE INFORMATION?
CLICK HERE TO CONTACT US

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