

Soft magnetic composite materials for EMC, inductors and sensors with high interference immunity

Based on many years of experience, NEOSID conceptualises, creates and delivers ferrite components, which are produced by a specialised injection moulding process and have proven successful in many areas. Using injection moulding, ferrite components can be realised without laborious and expensive reworking (see Image 1). This would not be achievable easily or at all using the otherwise common dry pressing method.



Image 1: Injection-moulded ferrites from NEOSID.

NEOSID has recently expanded its wide range of soft magnetic materials by a further two composite materials: PF1is and PFS3.

Both materials have the following in common:

- Insulation of magnetic particles, thus very low eddy current losses at frequencies up to several MHz (see Image 2).
- Composite material with a “dispersed air gap”, thus a high current carrying capacity.
- Shaping by injection moulding enables the production of complex shapes and extremely thin walls.
- Very close tolerances, even without mechanical reworking.

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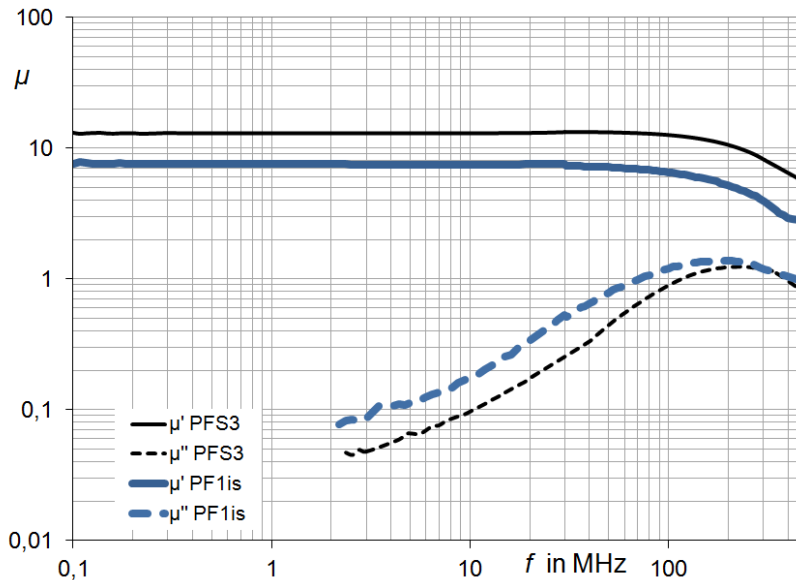


Image 2: Magnetic permeability μ' and losses μ'' of the soft magnetic composite materials PF1is and PFS3 from NEOSID.

The composite materials PF1is and PFS3 are significantly more flexible than ferrites or magnetic alloys. As a result, previously unthinkable applications, e.g. bendable inductivities, open up as possibilities.

PF1is contains a high resistance soft magnetic ferrite and therefore suitable in the production of inductors through direct winding, without additional insulation.

PFS3 contains a soft magnetic alloy and serves in many cases as a replacement for e.g. carbonyl iron, sendust or powder cores. Through its extremely high saturation magnetisation of over one tesla, PFS3 allows e.g. the construction of sensors that can hardly be influenced by external magnetic fields. This means that completely new and diverse applications arise, especially for the ever more important business areas of smart metering, smart factory and industry 4.0.

With these materials new possibilities open up for the design of your components. Further information can be found at www.neosid.de. The NEOSID expert team will gladly advise you if you have questions or comments.

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We manufacture intricate ferrites in a special injection-molding process, which opens up far more options when it comes to shaping. This means that a multitude of shapes is feasible, depending on the application envisaged and the design concept. This enables us to produce customized antenna-transponder coils.

The benefits are obviously shown in your application

- Insulation of magnetic particles, thus very low eddy current losses at frequencies up to several MHz (see Image 2).
- Composite material with a “dispersed air gap”, thus a high current carrying capacity.
- Shaping by injection moulding enables the production of complex shapes and extremely thin walls.
- Very close tolerances, even without mechanical reworking.

Composit PF1is

Features

- ✓ contains a high resistance soft magnetic ferrite
- ✓ production of inductors through direct winding, without additional insulation
- ✓ can be produced as a bendable Material as well

Applications

- ✓ shielding
- ✓ chokes for high currents
- ✓ flexible antennas
- ✓ connectors

Composit PFS3

Features

- ✓ contains a soft magnetic alloy powder
- ✓ extremely high saturation magnetisation of over one tesla
- ✓ can hardly be influenced by external magnetic fields

Applications

- ✓ sensors that can hardly be influenced by external magnetic fields
- ✓ replacement for e.g. carbonyl iron, sendust or powder cores

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