

TECHNICAL DESCRIPTION, PERMEDYN® HF2

Permedyn® HF2 is an isotropic, soft magnetic, iron based, alloy material primarily intended for medium and high frequency applications. The materials exhibit ultra-low magnetization loss, low permeability and a saturation magnetization of about 1 T. The material's outstanding production efficiency makes it perfect for mass production of complex details. It can also be produced in very large pieces with coils and other functions integrated. Due to the low permeability and extremely low loss, the material is ideal for inductor applications with high frequency signal components.

Magnetic Components AB has the production capabilities of manufacturing ranging from prototypes to regular mass-production.

Static magnetic parameters

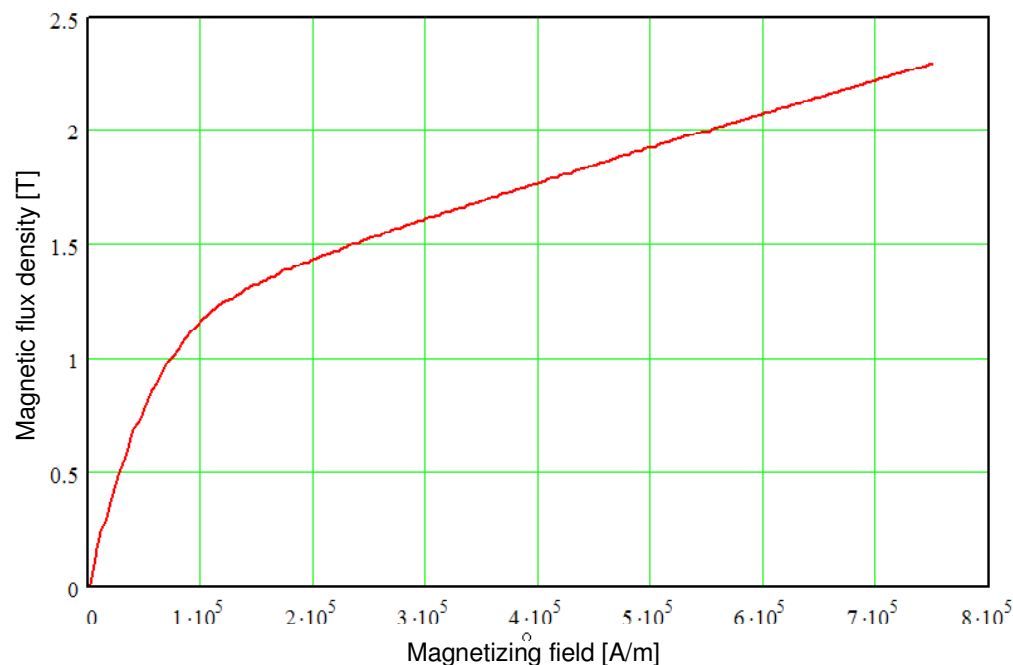



Figure 1. The magnetization curve, first quadrant, for Permedyn HF2, i.e. Magnetic flux density [T] as a function of the Magnetizing field [kA/m].

Table 1. Typical values of magnetic parameters deduced from the static magnetization curve.

Description	Symbol	HF2 typical value	Unit
Maximum relative permeability	μ_{\max}	18	-
Maximum differential permeability	μ_{diff}	18	-
Saturation magnetization (78 kA/m)	B_{sat}	1	T
Coercive force	H_c	80	A/m
Magnetic remanence [T]	B_r	0.002	T

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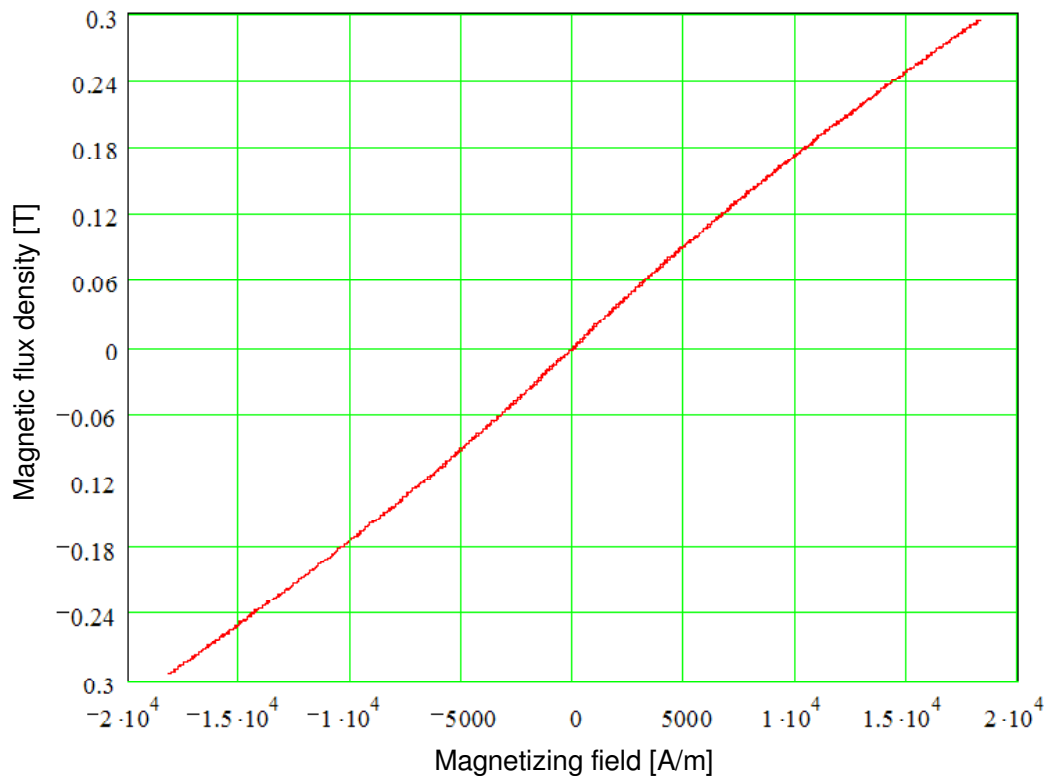


Figure 2. Magnetization loop for Permedyn HF2.

All magnetic measurements have been conducted on toroid-shaped samples with inner diameter 45 mm, outer diameter 55 mm and thickness 5 mm.

Dynamic magnetic properties


No qualitative measurements has been made to this date, however, it is likely that no eddy currents will be present up to at least 10 MHz.

Structural and thermal properties

Table 2. Typical values of structural and thermal properties.

Description	Symbol	S1 and S2 typical values	Unit
Density	ρ	5000	kg/m ³
Yield stress, tension	R_{eL}	100*)	MPa
Yield stress, compression	R_{eL}	200*)	MPa
Young's modulus	E	30*)	GPa
Heat capacity	C	300*)	J/(kg·K)
Thermal conductivity	λ	2.5	W/(m·K)
Maximum working temperature	T	200	°C

*) Preliminary data

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