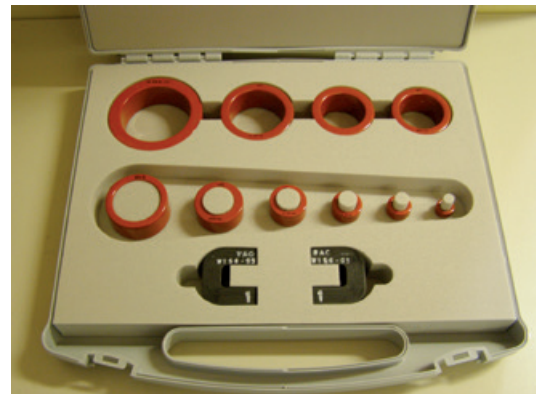


VAC[®] VITROPERM[®] Cores Sample Kit for efficient, low-noise power transformers

VACUUMSCHMELZE



Applications

- Efficient high frequency, high power transformers for converters in drives, traction, power supplies for welding, medical applications, induction heating, lasers, ...
- Low-loss, low noise interphase transformers in multi-phase parallel inverters, e.g. for wind turbines, large motor drives or UPS.

VITROPERM[®] – typical data

Saturation flux density	$B_S = 1.2 \text{ T}$
Coercivity (static)	$H_C < 3 \text{ A/m}$
Saturation magnetostriction	$\lambda_S = 10^{-8} \dots 10^{-6}$
Electrical resistivity	$\rho \sim 115 \mu\Omega\text{cm}$
Curie temperature	$T_C > 580 \text{ }^\circ\text{C}$
Material permeability	$\mu_i = 20000 \dots 50000^*$
Core losses (2500Hz, 0.5 T)	$P_{Fe} \leq 1 \text{ W/kg}^*$
Tape thickness	approx. 18 μm
Material Composition	$(\text{FeSi})_{89}(\text{BNbCu})_{11} \text{ At.-%}$

* Toroidal core without air gap

The Samples Kit contains 10 nanocrystalline toroidal tape-wound cores and one cut core made of VITROPERM[®]. For details see reverse page. The diameters of the toroidal cores range between 16mm and 80mm*.

The Kit is intended for power supply and/or transformer developers for building high-frequency, high-efficiency power transformers (up to approx.. 15kW). The cores feature high saturation induction (1.2 T) compared to ferrite cores (0.3...0.4 T), approx.. 10...30% lower losses, and lower temperature dependence of permeability. A 20kHz / 15kW transformer may be 30% smaller in size and weight than a ferrite solution. VITROPERM has extremely low magnetostriction, making it suitable for transformers in applications where low noise is desired, such as power supplies in railway auxiliary/main power or medical technology.

In addition to standard ranges of tape-wound and cut cores, VAC also supplies custom solutions including rectangular tape-wound cores on request. The sample kit is available at our distributors.

* Data sheets and larger cores are available on VAC's website or on request.

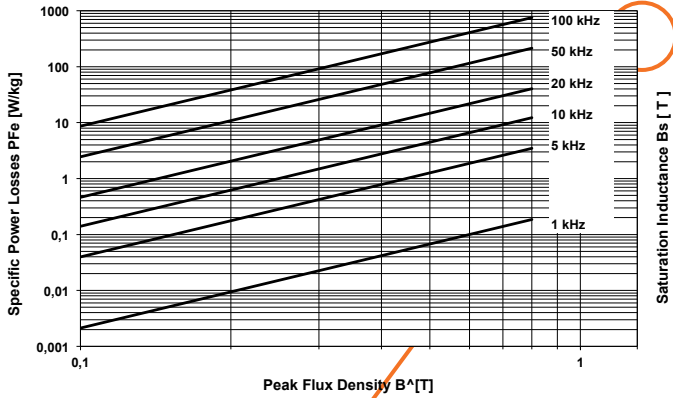


Fig. 1: Core losses vs. frequency of a VITROPERM toroidal ungapped core and a cut core (airgap closed), typical data.

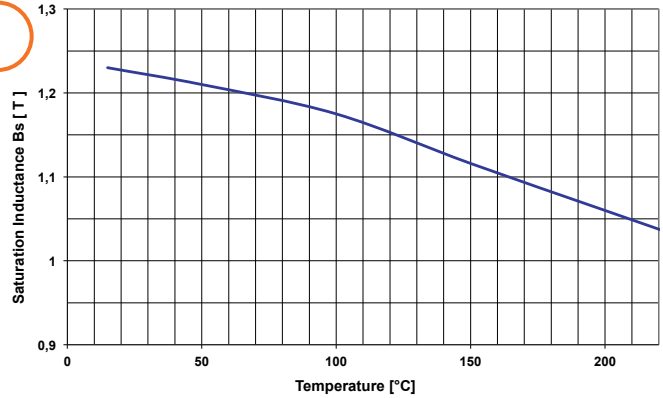


Fig. 2: Saturation induction vs. Temperature of VITROPERM.

Cut core Part number	Core mass m / g	Effective cross section			Mean path length l _{Fe} / cm	Limit dimensions (for 2 U-shaped halves)					
		A _{Fe} / cm ²				Length a / mm	Width b / mm	Window length e / mm	Window width g / mm	Leg width c / mm	Height f / mm
T60102-L2083-W156	378	2.83			18.2	83.7	48.4	50.5	16	15.8	26.6

Toroidal cores Part number	Core dimensions D _o x D _i x H	Limit dimensions (incl. case or coating)			Effective cross section A _{Fe}	Mean path length l _{Fe}	Core mass m _{Fe}	A _L at 10 kHz typically	Effective winding space A _{Cu}	Turn length l _{Cu}	Heat transfer R _{th}
		D _o	D _i	H							
		mm	mm	mm							
T60004-L2016-W373	16 x 10 x 6	17.6	8.3	8.0	0.14	4.08	4.3	11	0.20	3.18	33.0
T60004-L2020-W374	20 x 12.5 x 8	22.0	10.5	10.0	0.24	5.11	9.0	14	0.32	3.97	23.0
T60004-L2025-W375	25 x 16 x 10	27.0	14.0	12.0	0.36	6.44	17.0	17	0.58	4.80	16.0
T60004-L2030-W376	30 x 20 x 15	32.3	17.8	17.8	0.57	7.85	33.0	20	0.93	6.41	11.0
T60004-L2040-W433	40 x 25 x 15	42.3	22.5	17.3	0.86	10.20	64.0	23	1.49	7.21	7.5
T60004-L2050-W434	50 x 40 x 20	52.3	37.1	22.8	0.76	14.10	79.0	15	4.05	9.00	4.5
T60004-L2052-W827	52 x 40 x 25	54.3	37.1	27.8	1.14	14.50	121.0	22	4.05	10.20	4.1
T60004-L2055-V045	55 x 40 x 25	57.5	37.1	27.8	1.43	14.90	156.0	26	4.05	10.50	3.9
T60004-L2063-W435	63 x 50 x 25	65.6	46.6	27.8	1.24	17.80	161.0	19	6.40	11.10	3.1
T60004-L2080-W436	80 x 63 x 25	83.5	59.3	27.8	1.62	22.50	267.0	20	10.40	12.60	2.2

VACUUMSCHMELZE GmbH & Co. KG

Europe, Africa, Middle East: Post Box 2253, D-63412 Hanau, Germany, ☎ (+49) 6181 / 38-0, Fax (+49) 6181 / 38-2780
 Americas: VAC Sales USA LLC, 2935 Dolphin Drive, Ste. 102, 42701 Elizabethtown, KY USA, ☎ (+1) 270 769-1333, Fax (+1) 270 765-3118
 Asia/Pacific: VAC Office Singapore Pte, 1 Tampines Central 5, #06-10/11, CPF Tampines Building, Singapore 529508,
 ☎ (+65) 63 91 26 00, Fax: (+65) 63 91 26 01
 Email: Info_kb@vacuumschmelze.com, http://www.vacuumschmelze.com