

VACOFLUX 48

COMPOSITION (in wt%)

49 Co – 49 Fe – 2 V
IEC 60404-8-6 F11
ASTM A801-09 Alloy Type 1

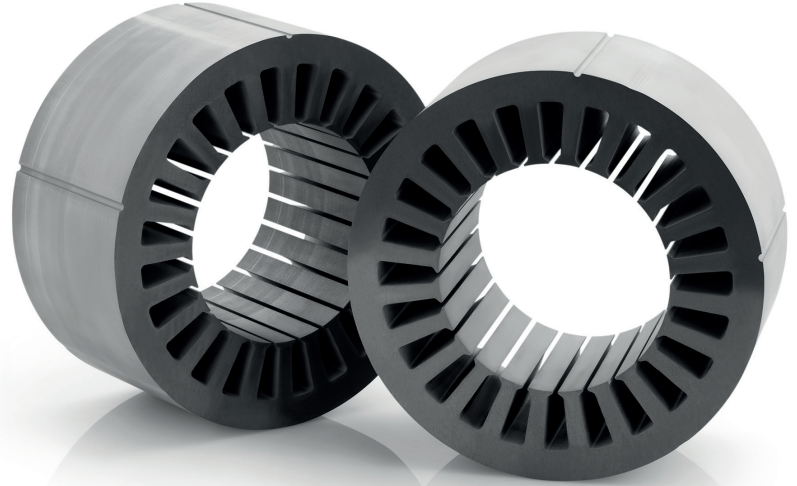
PRODUCT DESCRIPTION

The high purity CoFe alloy VACOFLUX® 48 is signified by low coercive field strength, high permeabilities and low magnetization losses p_{Fe} .

Supplied as thin strips it is considered the fully optimized solution for low-loss laminated stacks made of cobalt iron. Combined with its high magnetic saturation VACOFLUX 48 is ideally suited for applications where size and weight reductions are of paramount importance such as aviation, spacecraft applications, or motor racing.

MAIN PROPERTIES

- Saturation polarization of $J_s = 2.30$ T
- Low specific iron losses
- Low coercivity $H_c \sim 35$ A/m
- Max. permeability $\mu_{max} \sim 21,000$



Stators produced as VACSTACK® from VACOFLUX 48 strip material

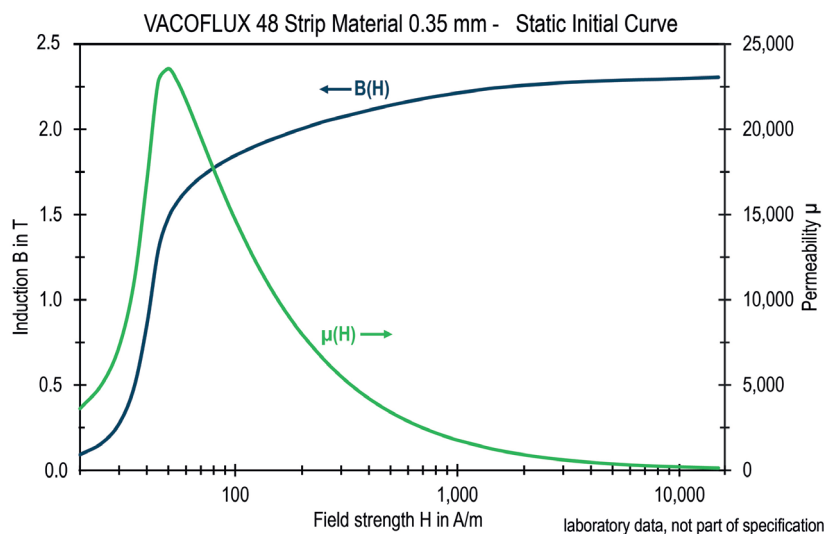
TYPICAL APPLICATIONS

Motors and generators with high power density and lowest losses, special transformers with low losses at high flux densities

FORMS OF SUPPLY

- Strip material, thickness 0.05 – 1 mm, width 120 – 280 mm
- Stamped parts, laminations, and laminated assemblies

Other dimensions and tolerances upon request



STRIP MATERIAL 0.35 mm - TYPICAL VALUES

PHYSICAL PROPERTIES	Unit				
Mass density ρ	g/cm ³	8.12			
Thermal conductivity (25 °C) λ	W/(m · K)	33			
Thermal expansion coefficient (20 – 100 °C) α	10 ⁻⁶ /K	9.7			
Electrical resistivity ρ_e	$\mu\Omega\text{m}$	0.42			
STATIC MAGNETIC PROPERTIES					
Coercivity H_c	A/m	35			
Saturation polarization J_s	T	2.30			
Saturation magnetization B_s at $H = 40$ kA/m	T	2.35			
Maximum permeability μ_{max}		21,000			
Magnetostriction constant λ_s	ppm	+70			
Curie temperature T_c	°C	950			
SPECIFIC IRON LOSSES OF STRIP MATERIAL AFTER FINAL HEAT TREATMENT		STRIP THICKNESS			
		0.05 mm	0.10 mm	0.20 mm	0.35 mm
p_{Fe} 1.5 T 50 Hz	W/kg	1.0	1.0	1.2	1.5
p_{Fe} 1.5 T 400 Hz	W/kg	9.3	11	17	30
p_{Fe} 1.5 T 1,000 Hz	W/kg	28	38	69	145
p_{Fe} 2.0 T 50 Hz	W/kg	1.7	1.7	1.8	2.2
p_{Fe} 2.0 T 400 Hz	W/kg	16	19	30	58
p_{Fe} 2.0 T 1,000 Hz	W/kg	48	69	138	335
MECHANICAL PROPERTIES (final annealed)					
Young's modulus E	GPa	200			
Yield strength $R_{p0.2}$	MPa	190			
Tensile strength R_m	MPa	220			
Elongation A	%	2			
Hardness	HV	180			
MECHANICAL PROPERTIES (cold rolled)					
Yield strength $R_{p0.2}$	MPa	1,230			
Tensile strength R_m	MPa	1,300			
Elongation A	%	1			
Hardness	HV	380			
RECOMMENDED PARAMETERS FOR THE FINAL HEAT TREATMENT					
Atmosphere		hydrogen			
Temperature	°C	880			
Annealing time	h	10			
Cooling rate	K/h	100 – 200			

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