

# VACOFLUX 50

## COMPOSITION (in wt%)

49 Co – 49 Fe – 2V  
IEC 60404-8-6 F11

## PRODUCT DESCRIPTION

The CoFe alloy VACOFLUX®50 offers high permeabilities and magnetic saturation paired with an intermediate electrical resistivity of  $\rho_e = 0.42 \mu\Omega\text{m}$ . It is mainly supplied as solid material.

VACOFLUX 50 is used to work out complex shaped solid parts with the purpose of guiding particularly high and often also varying magnetic flux densities.

## MAIN PROPERTIES

- Saturation polarization of  $J_s = 2.30 \text{ T}$
- Coercivity  $H_c \sim 100 \text{ A/m}$
- Max. permeability  $\mu_{\text{max}} \sim 7,000$
- Electrical resistivity of  $\rho_e = 0.42 \mu\Omega\text{m}$



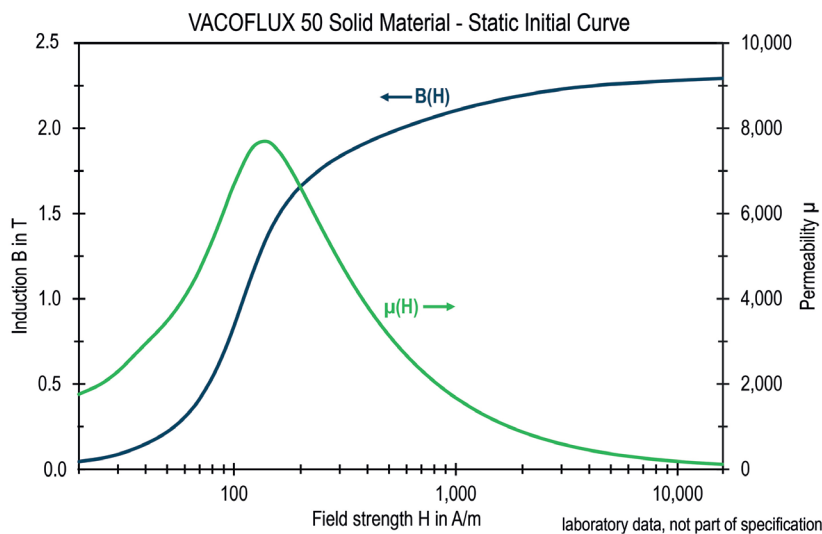
## TYPICAL APPLICATIONS

Actuators with the highest forces/torques, yoke parts, pole shoes for very high flux densities, magnetic lenses, relay parts

## FORMS OF SUPPLY

- Solid rods, diameters 12.5 – 182 mm

Other diameters, square profile material and tolerances upon request



## SOLID MATERIAL - TYPICAL VALUES

<b>PHYSICAL PROPERTIES</b>	<b>Unit</b>	
Mass density $\rho$	g/cm <sup>3</sup>	8.12
Thermal conductivity (25 °C) $\lambda$	W/(m · K)	30
Thermal expansion coefficient (20 – 100 °C) $\alpha$	10 <sup>-6</sup> /K	9.4
Electrical resistivity $\rho_e$	$\mu\Omega\text{m}$	0.42
<b>STATIC MAGNETIC PROPERTIES</b>		
Coercivity $H_c$	A/m	100
Saturation polarization $J_s$	T	2.30
Saturation magnetization $B_s$ at $H = 40$ kA/m	T	2.35
Maximum permeability $\mu_{\text{max}}$		7,000
Magnetostriction constant $\lambda_s$	ppm	+70
Curie temperature $T_c$	°C	950
<b>MECHANICAL PROPERTIES (final annealed)</b>		
Young's modulus $E$	GPa	215
Yield strength $R_{p0.2}$	MPa	250
Tensile strength $R_m$	MPa	350
Elongation $A$	%	< 3
Hardness	HV	205
<b>MECHANICAL PROPERTIES (hot rolled)</b>		
Elongation $A$	%	< 1
Hardness	HV	230
<b>RECOMMENDED PARAMETERS FOR THE FINAL HEAT TREATMENT</b>		
Atmosphere		hydrogen
Temperature	°C	820
Annealing time	h	10
Cooling rate	K/h	100 – 200