

PERMENORM 5000 H2

solid material

COMPOSITION (in wt%)

47,5 Ni – bal. Fe
IEC 60404-8-6 E31
DIN 17405 (1979) RNi8 / RNi12

PRODUCT DESCRIPTION

PERMENORM® 5000 H2 is a soft magnetic standard Ni-Fe alloys with about 50 % Ni content, combining both a high saturation induction and high maximum permeabilities. Machined into complex shapes PERMENORM 5000 H2 develops its signifying magnetic properties after final high temperature annealing in protective atmosphere.

MAIN PROPERTIES

- Saturation induction $J_s = 1.55$ T
- Coercivity $H_C \approx 5$ A/m
- Max. permeability $\mu_{\max} \approx 75,000$



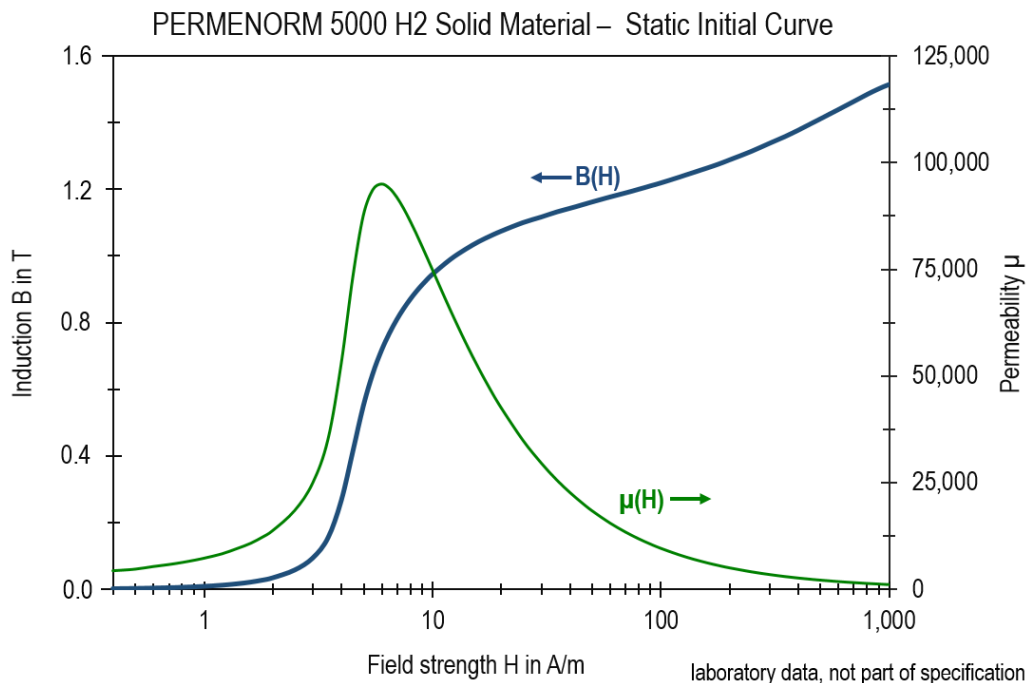
TYPICAL APPLICATIONS

Magnetic lenses/charged particle guiding, positioning sensors, magnetic flux guiding, magnetic actuators

FORMS OF SUPPLY

- Solid rods, diameters 12.5 – 182 mm
- Wire material, diameters ≤ 13.5 mm

Other diameters, square profile material and tolerances upon request. For strip material, see brochure PERMENORM 5000 H2 / V5 strip material.



SOLID MATERIAL – TYPICAL VALUES

PHYSICAL PROPERTIES	Unit	
Mass density ρ	g/cm ³	8.25
Thermal conductivity (25 °C) λ	W/(m·K)	18 – 21
Thermal expansion coefficient (20 – 100 °C) α	10 ⁻⁶ /K	10
Electrical resistivity ρ_e	$\mu\Omega\text{m}$	0.45

STATIC MAGNETIC PROPERTIES		
Coercivity H_C	A/m	5
Saturation polarization J_S	T	1.55
Saturation magnetization B_S at $H = 40$ kA/m	T	1.60
Maximum permeability $\mu_{\max}$		75,000
Magnetostriction constant λ_S	ppm	+25
Curie temperature T_C	°C	440

MECHANICAL PROPERTIES (finally heat treated)		
Young's modulus E	GPa	140
Yield strength $R_{p0.2}$	MPa	160
Tensile strength R_m	MPa	470
Elongation A	%	40
Hardness	HV	100

MECHANICAL PROPERTIES (hot rolled)		
Yield strength $R_{p0.2}$	MPa	250
Tensile strength R_m	MPa	500
Elongation A	%	40
Hardness	HV	150

RECOMMENDED PARAMETERS FOR HEAT TREATMENT		
Atmosphere		hydrogen
Temperature	°C	1,150
Annealing time	h	5
Cooling rate	K/h	100 – 300