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.

TYPICAL APPLICATIONS

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

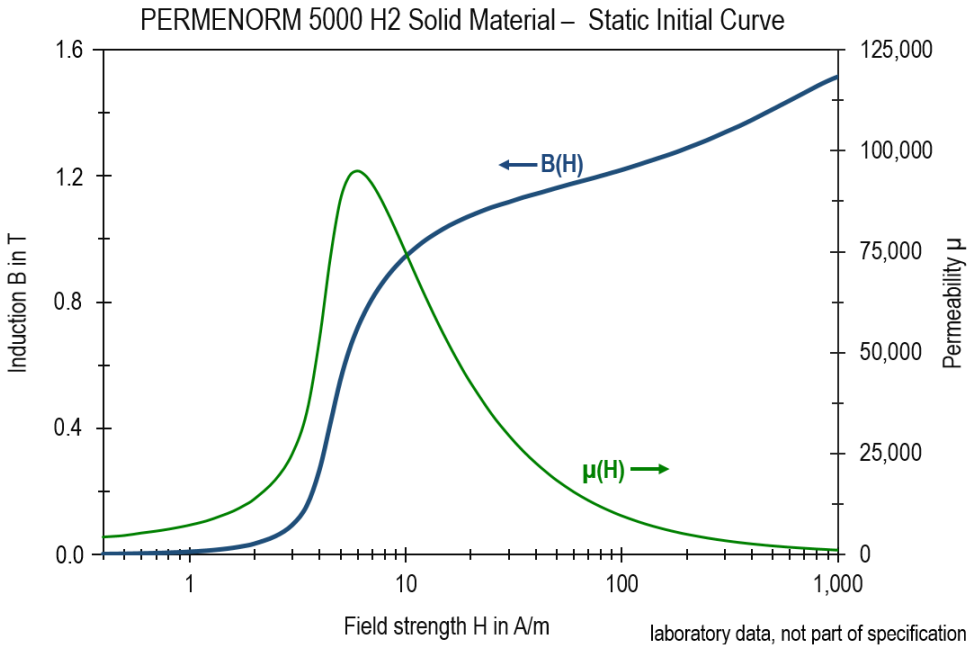
MAIN PROPERTIES

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

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.



laboratory data, not part of specification

SOLID MATERIAL – TYPICAL VALUES

PHYSICAL PROPERTIES	Unit	
Mass density ρ	g/cm³	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	μΩm	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 μ_{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 THE FINAL HEAT TREATMENT		
Atmosphere		hydrogen
Temperature	°C	1,150
Annealing time	h	5
Cooling rate	K/h	100 – 300

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