NdFeB (REN)

Sintered Neodymium-Iron-Boron was introduced in 1980. This material offers the highest Energy Product (BHmax) commercially available today, in a wide range of shapes, sizes and grades. Typical applications include high performance sensors and ignition coils, miniaturized DC motors, linear actuators, MRI, wind energy turbines, magnetic separation and lifting devices. The latest grades have reached Energy Product levels of 53MGOe (422kJ/m^3) and HcJ values greater than 35kOe (2786kA/m), permitting applications up to 200°C and more. But even at lower temperatures, depending on the magnet's geometry and the magnetic circuit design, a certain level of irreversible losses may occur during the very first operating cycles, in addition to the reversible losses given by the Temperature Coefficient of Br. Despite constant improvement, NdFeB remains susceptible to corrosion, therefore a protective coating is always recommended. Depending on the operating environment, CIBAS can offer the more appropriate coatings such as Passivation, Zn, Ni+Cu+Ni, Epoxy resin and many others. NdFeB magnets follow a powder metallurgy manufacturing process where the alloy is melted from the raw materials, crushed, milled, pressed under orientation field, sintered, machined to the final shape then coated and magnetized.
CIBAS provides a complete range of sintered NdFeB grades, both standard and fully customized. You can also find the latest developments in the compression (C-REN) or injection bonded (I-REN) NdFeB magnets in our dedicated datasheet.

Curie temperature	°C	> 310
Recoil Permeability (μ_r)	-	1,1
Saturation field	kOe	> 25
Electrical Resistivity	Ω m	150 x 10^{-8}
Compressive strength	N/mm^2	~ 1050
Density	g/cm^3	7,5 - 7,6
Flexural strength	N/mm^2	250
Tensile strength	N/mm^2	75
Vickers Hardness	HV	~ 600
Young's modulus	N/mm^2	160 x 10^3
Specific Heat	kcal/kg.°C	0,12
Thermal Conductivity	kcal/m/hr/°C	~ 7,7
Thermal Expansion coef //	10^{-6}/°C	-1,5
Thermal Expansion coef ⊥	10^{-6}/°C	5

Characterization of physical and mechanical properties have been done on standard sample with dimensions > (10 x 10 x 10) for magnetic proprties and > (10 x 10 x 5) for mechanical properties . Because of permanent losses after temperature exposure, depending on B/H value, specially in NdFeB material, consult us for more details.

The validity of the reported data is referred to the date of issue.
04/2009

GRADES	REMANENCE		COERCIVITY				MAXIMUM ENERGY PRODUCT		AVERAGE TEMPERATURE COEFFICIENTS (20 ~ 100°C)		SUGGESTED MAXIMUM OPERATING TEMPERATURE
	Br		HcB		HcJ		BHmax		Tk		B/H> 0,7
	kG	T	kOe	kA/m	kOe	kA/m	MGOe	kJ/m^3	%/°C (Br)	%/°C (HcJ)	°C
REN 35	11,8 - 12,5	1,18 - 1,25	≥ 10,8	≥ 860	≥ 12	≥ 955	33 - 38	263 - 302	- 0,12	- 0,70	80 °C
REN 38	12,3 - 13,0	1,23 - 1,30	≥ 10,8	≥ 860	≥ 12	≥ 955	36 - 41	286 - 326	- 0,12	- 0,70	
REN 42	13,0 - 13,5	1,30 - 1,35	≥ 10,8	≥ 860	≥ 12	≥ 955	40 - 44	318 - 350	- 0,12	- 0,70	
REN 45	13,2 - 13,8	1,32 - 1,38	≥ 10,8	≥ 860	≥ 12	≥ 955	42 - 46	334 - 366	- 0,12	- 0,70	
REN 50	13,9 - 14,6	1,39 - 1,46	≥ 10,5	≥ 836	≥ 11	≥ 875	47 - 51	374 - 406	- 0,12	- 0,70	
REN 52	14,2 - 14,8	1,42 - 1,48	≥ 10,5	≥ 836	≥ 11	≥ 875	49 - 53	390 - 422	- 0,12	- 0,70	
REN 35M	11,8 - 12,5	1,18 - 1,25	≥ 11,0	≥ 876	≥ 14	≥ 1114	33 - 38	263 - 302	- 0,12	- 0,70	100 °C
REN 50M	13,9 - 14,6	1,39 - 1,46	≥ 12,5	≥ 995	≥ 13	≥ 1035	47 - 52	374 - 414	- 0,12	- 0,70	
REN 35H	11,8 - 12,5	1,18 - 1,25	≥ 11,0	≥ 876	≥ 17	≥ 1353	33 - 38	263 - 302	- 0,12	- 0,70	120 °C
REN 42H	12,8 - 13,4	1,28 - 1,34	≥ 12,0	≥ 955	≥ 16	≥ 1273	39 - 43	310 - 342	- 0,12	- 0,70	
REN 46H	13,4 - 14,0	1,34 - 1,40	≥ 12,5	≥ 995	≥ 16	≥ 1273	43 - 48	342 - 382	- 0,12	- 0,70	
REN 48H	13,6 - 14,2	1,36 - 1,42	≥ 12,7	≥ 1011	≥ 16	≥ 1273	45 - 50	358 - 398	- 0,12	- 0,70	
REN 30SH	10,9 - 12,2	1,09 - 1,22	≥ 10,2	≥ 812	≥ 20	≥ 1592	28 - 36	223 - 287	- 0,11	- 0,65	140 °C
REN 33SH	11,4 - 12,2	1,14 - 1,22	≥ 10,7	≥ 851	≥ 20	≥ 1592	31 - 36	247 - 287	- 0,11	- 0,65	
REN 35SH	11,8 - 12,5	1,18 - 1,25	≥ 11,1	≥ 883	≥ 20	≥ 1592	33 - 38	263 - 302	- 0,11	- 0,65	
REN 38SH	12,3 - 13,0	1,23 - 1,30	≥ 11,6	≥ 923	≥ 20	≥ 1592	36 - 41	287 - 326	- 0,11	- 0,65	
REN 42SH	12,8 - 13,4	1,28 - 1,34	≥ 12,0	≥ 955	≥ 19	≥ 1512	39 - 44	310 - 350	- 0,11	- 0,65	
REN 45SH	13,2 - 13,8	1,32 - 1,38	≥ 12,4	≥ 987	≥ 19	≥ 1512	42 - 47	334 - 374	- 0,11	- 0,65	
REN 28UH	10,4 - 11,3	1,04 - 1,13	≥ 9,8	≥ 780	≥ 25	≥ 1990	26 - 31	207 - 247	- 0,11	- 0,60	160 °C
REN 33UH	11,4 - 12,2	1,14 - 1,22	≥ 10,8	≥ 859	≥ 25	≥ 1990	31 - 36	247 - 287	- 0,11	- 0,60	
REN 35UH	11,8 - 12,5	1,18 - 1,25	≥ 11,2	≥ 891	≥ 25	≥ 1990	33 - 38	263 - 302	- 0,11	- 0,60	
REN 38UH	12,2 - 12,8	1,22 - 1,28	≥ 11,6	≥ 923	≥ 25	≥ 1990	36 - 41	287 - 326	- 0,11	- 0,60	
REN 40UH	12,6 - 13,2	1,26 - 1,32	≥ 12,0	≥ 955	≥ 25	≥ 1990	38 - 42	302 - 334	- 0,11	- 0,60	
REN 42UH	12,8 - 13,4	1,28 - 1,34	≥ 12,2	≥ 971	≥ 25	≥ 1990	39 - 44	310 - 350	- 0,11	- 0,65	
REN 30EH	10,9 - 11,7	1,09 - 1,17	≥ 10,3	≥ 820	≥ 30	≥ 2388	28 - 33	223 - 263	- 0,11	- 0,55	180 °C
REN 33EH	11,4 - 12,0	1,14 - 1,20	≥ 10,8	≥ 859	≥ 30	≥ 2388	31 - 36	247 - 287	- 0,11	- 0,55	
REN 35EH	11,7 - 12,3	1,17 - 1,23	≥ 11,1	≥ 883	≥ 30	≥ 2388	33 - 37	263 - 295	- 0,11	- 0,55	
REN 30EHS	10,9 - 11,7	1,09 - 1,17	≥ 10,3	≥ 820	≥ 35	≥ 2786	28 - 33	223 - 263	- 0,10	- 0,50	200 °C
REN 33EHS	11,3 - 12,0	1,13 - 1,20	≥ 10,7	≥ 852	≥ 35	≥ 2786	31 - 36	247 - 287	- 0,10	- 0,50	

Other grades available on request.

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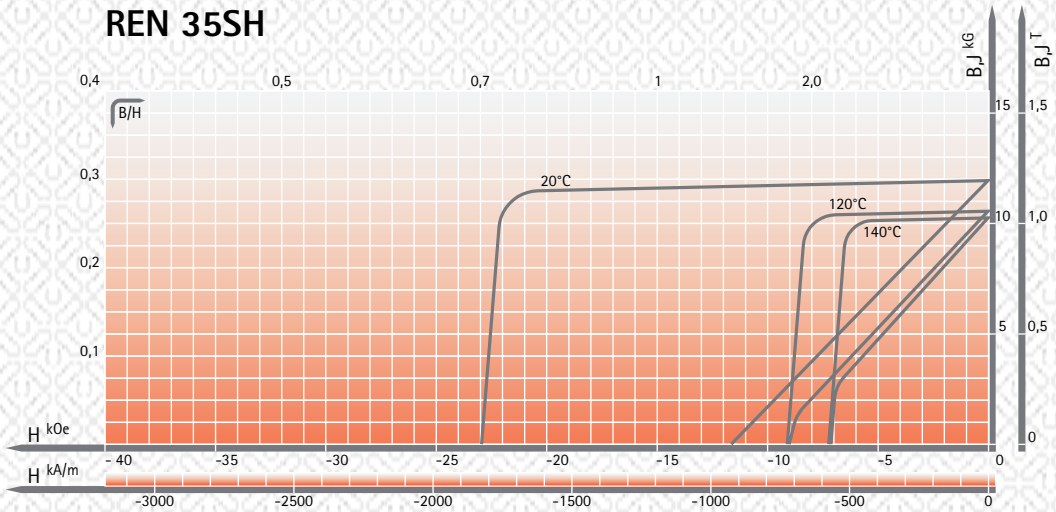
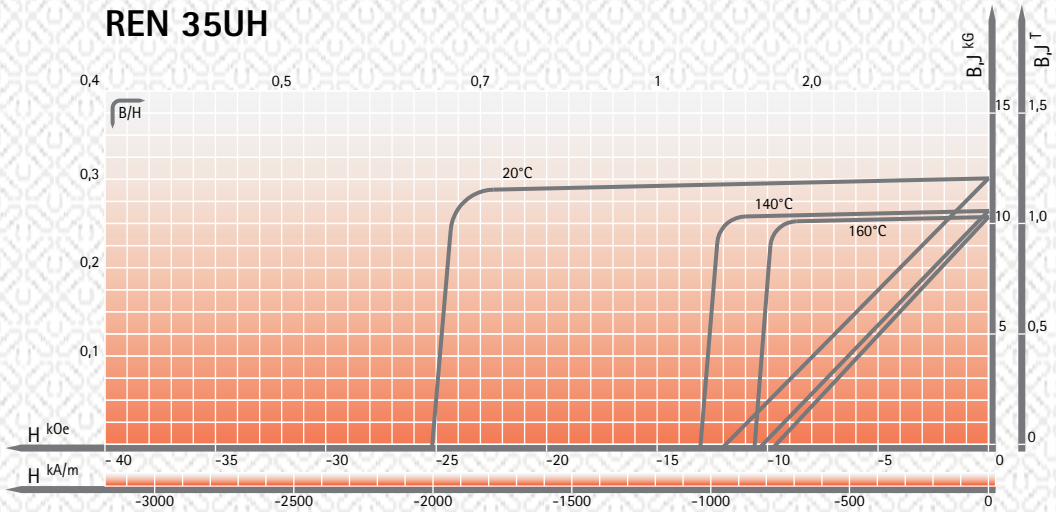
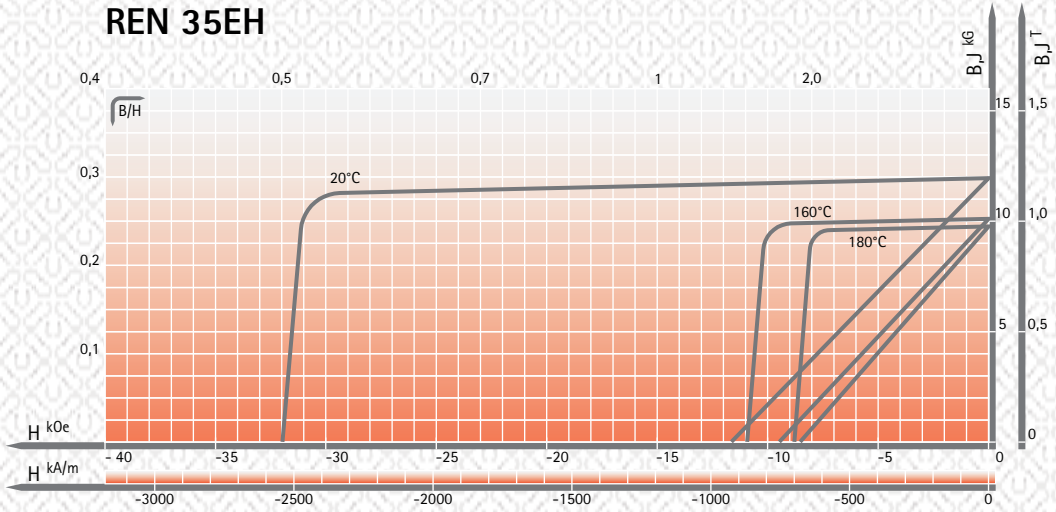
REN 35SH



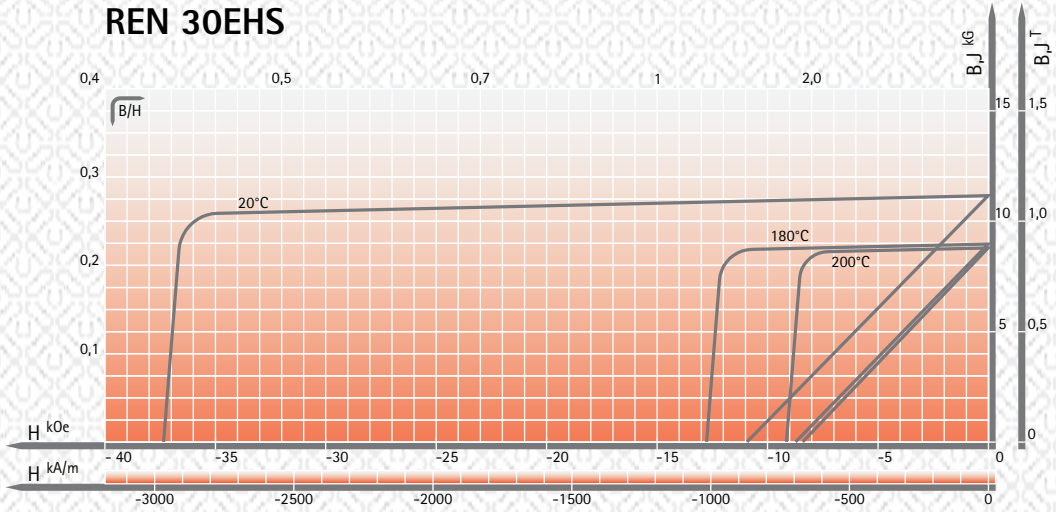
REN 35UH



REN 35EH



REN 30EHS



Measured samples data.

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