

Sintered Neodymium Magnets (NdFeB)

Sintex a/s supplies both sintered and polymer-bonded permanent magnets. All magnets are customised - or in other words - magnets are developed and manufactured on the basis of a customers sketch.

Material and production

Sintered NdFeB magnets are the most powerful magnets known. Maximum allowed temperature varies, but is up to 240°C for some grades. This max temperature is important, because the price of the magnet increase with temperature.

Magnets consists of powder compacted in a magnetic field therefore they have process-fixed and limited magnetizing directions. Usually the magnetic field-lines have to be parallel.

Magnetic properties

Name	Remanens Br		Hcb		Hci	(BH) max		Work. Temp.		Temp. Coeff.		Myr
	Typ.	Tol.	Typ.	Tol.	Min.	Typ.	Min.	Min.	Max.	of Br	of Hc	
	[T]	[T]	[T]	[kA/m]	[kA/m]	[kJ/m³]	[kJ/m³]	[°C]	[°C]	[%/K]	[%/K]	
N50	1.450	0.040	907	79	876	398	382	-100	70	-0.11	-0.60	1.05
N52	1.480	0.040	907	79	876	414	394	-100	70	-0.11	-0.60	1.05
N27	1.060	0.040	836	71	955	215	199	-100	80	-0.11	-0.60	1.01
N30	1.120	0.040	836	56	955	239	223	-100	80	-0.11	-0.60	1.07
N33	1.160	0.030	876	56	955	263	247	-100	80	-0.11	-0.60	1.05
N35	1.210	0.040	892	32	955	279	263	-100	80	-0.11	-0.60	1.08
N37	1.240	0.040	915	55	955	295	279	-100	80	-0.11	-0.60	1.08
N38	1.260	0.040	923	47	955	303	287	-100	80	-0.11	-0.60	1.09
N40	1.290	0.040	915	71	955	318	303	-100	80	-0.11	-0.60	1.12
N42	1.330	0.030	926	50	955	334	318	-100	80	-0.11	-0.60	1.14
N43	1.330	0.030	836	40	876	342	326	-100	80	-0.11	-0.60	1.10
N45	1.370	0.040	836	40	876	350	342	-100	80	-0.11	-0.60	1.10
N48	1.420	0.060	926	50	955	382	358	-100	80	-0.11	-0.60	1.10
N50M	1.440	0.030	980	121	1114	398	382	-100	90	-0.12	-0.60	1.17
N30M	1.120	0.040	836	56	1114	239	223	-100	100	-0.11	-0.60	1.07
N33M	1.170	0.040	876	56	1114	263	247	-100	100	-0.11	-0.60	1.06
N35M	1.210	0.040	892	32	1114	279	263	-100	100	-0.11	-0.60	1.08
N37M	1.240	0.040	915	55	1114	295	279	-100	100	-0.11	-0.60	1.08
N38M	1.260	0.040	931	24	1114	303	287	-100	100	-0.11	-0.60	1.08
N40M	1.290	0.040	915	71	1114	318	303	-100	100	-0.11	-0.60	1.12
N42M	1.330	0.030	947	40	1114	334	318	-100	100	-0.11	-0.60	1.12
N45M	1.370	0.040	955	48	1114	358	334	-100	100	-0.11	-0.60	1.14

Possibilities and advantages

The advantages of the sintered neodymium magnets are:

- Highest magnet strength available
- High resistance to demagnetization
- Operating temperature up to 240°C
- Good at withstanding low temp. (down to –100°C)

Corrosion protection is however always recommended for sintered neodymium magnets, because of the materials low corrosion resistance. The corrosion resistance can be compared to pure untreated iron. A range of different coatings are available but sometimes complete encapsulation in i.e. stainless steel is preferable..

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Name	Remanens Br		Hcb		Hci	(BH) max		Work. Temp.		Temp. Coeff.		Myr [-]
	Typ.	Tol.	Typ.	Tol.	Min.	Typ.	Min.	Min.	Max.	of Br	Of Hc	
	[T]	[T]	[T]	[kA/m]	[kA/m]	[KJ/m ³]	[KJ/m ³]	[°C]	[°C]	[%/K]	[%/K]	
N48M	1.420	0.060	955	48	1114	382	358	-100	100	-0.11	-0.60	1.18
N44H	1.360	0.030	947	40	1274	350	334	-100	110	-0.11	-0.60	1.14
N27H	1.060	0.040	836	71	1353	215	199	-100	120	-0.11	-0.60	1.01
N30H	1.120	0.040	836	56	1353	239	223	-100	120	-0.11	-0.60	1.07
N32H	1.150	0.030	876	56	1353	255	239	-100	120	-0.11	-0.60	1.04
N33H	1.170	0.030	876	56	1353	263	247	-100	120	-0.11	-0.60	1.06
N35H	1.210	0.040	892	32	1353	279	263	-100	120	-0.11	-0.60	1.08
N37H	1.240	0.040	915	55	1353	295	279	-100	120	-0.11	-0.60	1.08
N38H	1.260	0.040	947	40	1353	303	287	-100	120	-0.11	-0.60	1.06
N40H	1.290	0.040	915	71	1353	318	303	-100	120	-0.11	-0.60	1.12
N42H	1.330	0.030	947	40	1353	334	318	-100	120	-0.11	-0.60	1.12
N46H	1.380	0.020	980	121	1353	366	350	-100	120	-0.12	-0.60	1.12
N48H	1.410	0.030	980	121	1353	382	366	-100	120	-0.12	-0.60	1.14
N42SH	1.330	0.030	947	40	1512	334	318	-100	140	-0.11	-0.60	1.12
N27SH	1.060	0.040	836	71	1595	215	199	-100	150	-0.11	-0.60	1.01
N30SH	1.120	0.040	836	56	1595	239	223	-100	150	-0.11	-0.60	1.07
N32SH	1.150	0.030	876	56	1595	255	239	-100	150	-0.11	-0.60	1.04
N33SH	1.170	0.030	876	56	1592	263	247	-100	150	-0.11	-0.60	1.06
N35SH	1.210	0.040	891	31	1595	279	263	-100	150	-0.11	-0.60	1.08
N38SH	1.260	0.040	947	40	1592	303	287	-100	150	-0.11	-0.60	1.06
N40SH	1.290	0.030	947	40	1592	318	303	-100	150	-0.11	-0.60	1.08
N44SH	1.360	0.030	915	46	1592	350	334	-100	150	-0.11	-0.55	1.18
N45SH	1.350	0.030	1053	50	1600	366	342	-100	150	-0.11	-0.55	1.02
N25UH	1.020	0.050	764	16	1910	199	183	-100	160	-0.11	-0.60	1.06
N28UH	1.080	0.040	812	32	1910	223	207	-100	160	-0.11	-0.60	1.06
N30UH	1.120	0.040	844	40	1910	239	223	-100	160	-0.11	-0.60	1.06
N33UH	1.170	0.030	876	56	1990	263	247	-100	180	-0.11	-0.60	1.06
N35UH	1.210	0.040	907	47	1990	279	263	-100	180	-0.11	-0.60	1.06
N38UH	1.260	0.040	947	40	1990	303	287	-100	180	-0.11	-0.60	1.06
N40UH	1.300	0.040	980	50	1989	318	303	-100	180	-0.11	-0.60	1.06
N42UH	1.330	0.040	957	50	1900	326	318	-100	180	-0.11	-0.60	1.11
N28EH	1.080	0.040	812	32	2388	223	207	-100	200	-0.11	-0.60	1.06
N30EH	1.120	0.040	844	40	2388	239	223	-100	200	-0.11	-0.60	1.06
N33EH	1.170	0.030	876	56	2388	263	247	-100	200	-0.11	-0.60	1.06
N35EH	1.210	0.040	907	47	2388	279	263	-100	200	-0.11	-0.60	1.06
N38EH	1.260	0.040	907	47	2388	303	287	-100	200	-0.11	-0.60	1.11
N30AH	1.120	0.040	844	40	2786	239	223	-100	240	-0.11	-0.60	1.06

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Mechanical properties

Name	Density	Vickers Hardness	Coeff. of thermal expansion	Electrical resistivity
	[g/cm ³]	[Hv]	[1/K]	[Ωcm]
All grades	7.40	600	4E-6	1.14E-4

Characterising magnets

The most important properties to take into consideration for characterising the magnets are:

- Magnetic properties such as remanence Br, coercivity Hcb, intrinsic coercivity Hci and max. energy product (BH) max.
- Dimensions and tolerances
- Force (for holding magnets), Torque (for motors), Field strength (for sensors)
- Minimum and maximum operation / working temp.
- Area of application usage - e.g. aquatic environment
- Requirements concerning surface coating

Results

The magnetic and mechanical data shown in this data sheet are the result of tests and calculations done on untreated magnet blocks.

Before you use the information and results, you are encouraged to seek personal assistance and advice from our magnet specialists.

Please contact us for more information.

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