SCHRAMBERG
Magnet- und Kunststofftechnik

Overview of magnetic characteristics

According to DIN IEC 60404-8-1

Hard ferrite magnets [1]			Energy product (B*H)max.		Remanence B_r		Rev. temp. coeff. of B_r	Coercivity				Rev. temp. coeff. of H_{cJ}	Curie temperature	Magnetising field strength	Max. operating temperature			Density
			kJ/m³ (typ.)	kJ/m³ (min.)	mT (typ.)	mT (min.)	approx. %/K	H_{cB} kA/m (typ.)	H_{cB} kA/m (min.)	H_{cJ} kA/m (typ.)	H_{cJ} kA/m (min.)	approx. %/K	approx. °C	min. kA/m	approx. °C			approx. g/cm³
HF 8/22	**Ba isotropic**	**dry pressed**	8.5	8	220	215	-0.19	140	135	230	220	+0.3	450	>1000	250			4.8
HF 24/16	**Ba anisotropic**	**dry pressed**	25.5	24	365	350	-0.19	175	155	180	160	+0.3	450	>800	250			5.0
HF 8/26 Sr	**Sr isotropic**	**dry pressed**	8.5	8	220	215	-0.19	140	135	270	260	+0.3	450	>1000	250			4.7
HF 24/23	**Sr anisotropic**	**dry pressed**	25.5	24	365	350	-0.19	220	210	240	230	+0.3	450	>1000	250			4.8
HF 26/24	**Sr anisotropic**	**dry pressed**	27	26	380	370	-0.19	230	220	250	240	+0.3	450	>1000	250			4.8
HF 28/26	**Sr anisotropic**	**wet pressed**	30	28	395	385	-0.19	255	240	275	260	+0.3	450	>1000	250			4.85
HF 28/28	**Sr anisotropic**	**wet pressed**	30	28	395	385	-0.19	270	260	290	280	+0.3	450	>1000	250			4.85
HF 30/26	**Sr anisotropic**	**wet pressed**	31.5	30	405	395	-0.19	250	240	270	260	+0.3	450	>1000	250			4.85

Rare earth magnets [1]		kJ/m³ (typ.)	kJ/m³ (min.)	mT (typ.)	mT (min.)	approx. %/K	H_{cB} kA/m (typ.)	H_{cB} kA/m (min.)	H_{cJ} kA/m (typ.)	H_{cJ} kA/m (min.)	approx. %/K	approx. °C	min. kA/m	approx. °C			approx. g/cm³
$SmCo_5$ 143/143	**anisotropic**	151	143	920	900	-0.045 [2]	700	680	1600	1433	-0.28 [2]	720	>3500	250 [3]			8.3
$SmCo_5$ 160/143	**anisotropic**	167	160	940	920	-0.045 [2]	730	710	1600	1433	-0.28 [2]	720	>3500	250 [3]			8.3
Sm_2Co_{17} 180/160 w	**anisotropic**	200	180	1040	980	-0.032 [2]	750	700	1800	1600	-0.19 [2]	800	>4300	350 [3]			8.3
Sm_2Co_{17} 195/160 h	**anisotropic**	220	195	1100	1040	-0.032 [2]	800	720	1800	1600	-0.19 [2]	800	>4300	350 [3]			8.3
NdFeB 180/250 w*	**anisotropic**	210	180	1050	1000	-0.08 [2]	790	720	2800	2500	-0.5 [2]	350	>2000	220 [3]			7.6
NdFeB 200/220 w*	**anisotropic**	230	200	1110	1050	-0.08 [2]	850	790	2500	2200	-0.5 [2]	350	>2000	190 [3]			7.6
NdFeB 230/175 w*	**anisotropic**	260	230	1190	1130	-0.09 [2]	890	840	1900	1750	-0.6 [2]	340	>2400	160 [3]			7.6
NdFeB 250/125 w*	**anisotropic**	280	250	1230	1170	-0.10 [2]	890	840	1400	1250	-0.6 [2]	330	>2400	130 [3]			7.5
NdFeB 210/250 h*	**anisotropic**	240	210	1110	1050	-0.08 [2]	860	800	2800	2500	-0.5 [2]	350	>2000	220 [3]			7.6
NdFeB 230/220 h*	**anisotropic**	255	230	1160	1100	-0.08 [2]	890	840	2500	2200	-0.5 [2]	350	>2000	190 [3]			7.6
NdFeB 250/175 h*	**anisotropic**	295	250	1240	1180	-0.09 [2]	920	860	1900	1750	-0.6 [2]	340	>2400	160 [3]			7.6
NdFeB 270/125 h*	**anisotropic**	300	270	1280	1220	-0.10 [2]	920	870	1400	1250	-0.6 [2]	330	>2400	130 [3]			7.5
NdFeB 300/125 h*	**anisotropic**	330	300	1320	1260	-0.10 [2]	950	900	1400	1250	-0.6 [2]	330	>2400	130 [3]			7.5
NdFeB 342/135 h*	**anisotropic**	366	342	1380	1320	-0.11 [2]	1000	955	1500	1353	-0.6 [2]	330	>2400	120 [3]			7.5

Plastic-bonded, pressed NdFeB magnets [1]		kJ/m³ (typ.)	kJ/m³ (min.)	mT (typ.)	mT (min.)	approx. %/K	H_{cB} kA/m (typ.)	H_{cB} kA/m (min.)	H_{cJ} kA/m (typ.)	H_{cJ} kA/m (min.)	approx. %/K	approx. °C	min. kA/m	approx. °C			approx. g/cm³
NdFeB 55/100 pw	**isotropic**	65	55	620	580	-0.12 [2]	400	380	1100	1000	-0.4 [2]	310	>3200	130 [3]			6.0
NdFeB 65/85 pw	**isotropic**	72	65	650	610	-0.13 [2]	460	420	950	850	-0.4 [2]	305	>2800	140 [3]			6.0
NdFeB 72/70 pw	**isotropic**	80	72	700	660	-0.11 [2]	470	440	770	700	-0.4 [2]	310	>2800	130 [3]			6.0

Plastic-bonded, injection-moulded hard ferrite magnets [1]		kJ/m³ (typ.)	kJ/m³ (min.)	mT (typ.)	mT (min.)	approx. %/K	H_{cB} kA/m (typ.)	H_{cB} kA/m (min.)	H_{cJ} kA/m (typ.)	H_{cJ} kA/m (min.)	approx. %/K	approx. °C	min. kA/m	approx. °C PA 6 [4]	approx. °C PA 12	approx. °C PPS [5] [6]	approx. g/cm³
HF 2.5/19 p	**isotropic**	2.5	2.3	120	114	-0.19	80	75	210	190	+0.3	450	>800	120-160 [3]	120-140 [3]	220 [3]	3.2
HF 3/19 p	**isotropic**	3.0	2.9	130	125	-0.19	85	80	210	190	+0.3	450	>800	120-160 [3]	120-140 [3]	220 [3]	3.5
HF 10/22 p	**anisotropic**	11.0	10.0	235	225	-0.19	170	160	230	220	+0.3	450	>800	120-160 [3]	120-140 [3]	220 [3]	3.3
HF 12/22 p	**anisotropic**	13.0	12.0	250	240	-0.19	180	170	230	220	+0.3	450	>800	120-160 [3]	120-140 [3]	220 [3]	3.4
HF 14/22 p	**anisotropic**	14.5	14.0	275	265	-0.19	190	180	230	220	+0.3	450	>800	120-160 [3]	120-140 [3]	220 [3]	3.6

Plastic-bonded, injection-moulded rare earth magnets [1]		kJ/m³ (typ.)	kJ/m³ (min.)	mT (typ.)	mT (min.)	approx. %/K	H_{cB} kA/m (typ.)	H_{cB} kA/m (min.)	H_{cJ} kA/m (typ.)	H_{cJ} kA/m (min.)	approx. %/K	approx. °C	min. kA/m		approx. °C PA 12	approx. °C PPS [5] [6]	approx. g/cm³
NdFeB 30/60 p	**isotropic**	33.0	30.0	435	420	-0.11 [2]	305	290	700	600	-0.4 [2]	310	>2800		120-140 [3]	120-160 [3]	4.1
NdFeB 37/60 p	**isotropic**	39.0	37.0	475	465	-0.11 [2]	330	320	700	600	-0.4 [2]	310	>2800		120-140 [3]	120-160 [3]	4.5
NdFeB 42/60 p	**isotropic**	44.0	42.0	510	490	-0.11 [2]	355	335	700	600	-0.4 [2]	310	>2800		120-140 [3]	120-160 [3]	4.7
NdFeB 48/60 p	**isotropic**	50.0	48.0	540	530	-0.11 [2]	375	360	700	600	-0.4 [2]	310	>2800		120-140 [3]	120-160 [3]	4.8
NdFeB 55/60 p	**isotropic**	57.0	55.0	570	560	-0.11 [2]	390	375	700	600	-0.4 [2]	310	>2800		120-140 [3]	120-160 [3]	5.2
NdFeB 27/80 p	**isotropic**	29.0	27.0	410	400	-0.13 [2]	285	270	900	800	-0.4 [2]	305	>2800		120-140 [3]	140-180 [3]	4.1
NdFeB 32/80 p	**isotropic**	34.0	32.0	445	435	-0.13 [2]	310	295	900	800	-0.4 [2]	305	>2800		120-140 [3]	140-180 [3]	4.4
NdFeB 38/80 p	**isotropic**	41.5	38.0	485	470	-0.13 [2]	340	320	900	800	-0.4 [2]	305	>2800		120-140 [3]	140-180 [3]	4.7
NdFeB 43/80 p	**isotropic**	46.0	43.0	515	505	-0.13 [2]	355	340	900	800	-0.4 [2]	305	>2800		120-140 [3]	140-180 [3]	5.0
NdFeB 46/80 p	**isotropic**	48.0	46.0	530	515	-0.13 [2]	365	350	900	800	-0.4 [2]	305	>2800		120-140 [3]	140-180 [3]	5.2
NdFeB 49/80 p	**isotropic**	52.0	49.0	555	545	-0.13 [2]	375	365	900	800	-0.4 [2]	305	>2800		120-140 [3]	140-180 [3]	5.3
NdFeB 27/100 p	**isotropic**	29.0	27.0	410	390	-0.12 [2]	290	270	1150	1000	-0.4 [2]	310	>3200		120-140 [3]	120-160 [3]	4.3
NdFeB 32/100 p	**isotropic**	34.0	32.0	440	430	-0.12 [2]	310	295	1150	1000	-0.4 [2]	310	>3200		120-140 [3]	120-160 [3]	4.6
NdFeB 38/100 p	**isotropic**	41.5	38.0	485	465	-0.12 [2]	340	320	1150	1000	-0.4 [2]	310	>3200		120-140 [3]	120-160 [3]	4.9
NdFeB 43/100 p	**isotropic**	46.0	43.0	515	500	-0.12 [2]	360	340	1150	1000	-0.4 [2]	310	>3200		120-140 [3]	120-160 [3]	5.2
NdFeB 49/100 p	**isotropic**	51.0	49.0	540	525	-0.12 [2]	375	355	1150	1000	-0.4 [2]	310	>3200		120-140 [3]	120-160 [3]	5.3
NdFeB 76/110 p	**anisotropic**	88.0	76.0	700	660	-0.13 [2]	490	460	1200	1100	-0.7 [2]	350	>2400		100-120 [3]	100-120 [3]	4.8

1) All values were determined with standard samples according to IEC 60404-5. With unusual geometries, especially with thin walls or narrow pole pitches, deviations from the material data can occur.
2) In the temperature range from 20 °C to 100 °C.
3) The max. operating temperature depends on the magnet dimension and the specific application. Please contact our application engineering for more information.
4) For binder PA 6 the magnetic values for H_{cB} min./H_{cB} typ. are reduced by -10 kA/m each and H_{cJ} min./H_{cJ} typ. by -30 kA/m each.
5) For magnets with PPS as binder, the chemical resistance to oils, grease, motor oils etc. is significantly better than for PA-bonded magnets; however this has to be checked in individual cases.
6) On request.

w: axially pressed in the die
h: highly residual materials - isostatically pressed and separated or diametrically pressed in the die
pw: plastic-bonded, pressed
p: plastic-bonded, injection-moulded
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