

NdFeB & SmCo Magnets (Rare Earth Magnets)

NdFeB Neodymium Magnets and SmCo samarium cobalt Magnets

Both of these magnets can be referred to as Rare Earth Magnets

These magnets can be produced in a variety of grades, shapes and sizes, and can be coated in a variety of ways to suit customer applications. They can be manufactured either 'Bonded' or 'Sintered'.

The main benefits of NdFeB magnets are:

- Best magnetic field strength of any permanent magnet
- High resistance to demagnetization
- Very affordable magnet

The main benefits of SmCo magnets are:

- High resistance to demagnetization
- Can operate at higher temperatures than NdFeB
- High corrosion resistance

Typical Applications which can use NdFeB and SmCo Magnets include:

- Compute Hard Drives
- Speakers
- Motors
- Generators
- Sensors



Typical Magnetic Performance Range for Sintered NdFeB Magnet

Grade	Br		Hcb		Hcj		BHmax		Density	Tw Max
	kGs	mT	kOe	kA/m	kOe	kA/m	KJ/m3	MGOe	g/cm3	°C
N35	11.7-12.2	1170-1220	≥10.9	≥868	≥12	≥955	263-287	33-36	7.5	80
N38	12.2-12.5	1220-1250	≥11.3	≥899	≥12	≥955	287-310	36-39	7.5	80
N40	12.5-12.8	1250-1280	≥11.4	≥907	≥12	≥955	302-326	38-41	7.5	80
N42	12.8-13.2	1280-1320	≥11.5	≥915	≥12	≥955	318-342	40-43	7.5	80
N45	13.2-13.8	1320-1380	≥11.6	≥923	≥12	≥955	342-366	43-46	7.5	80
N48	13.8-14.2	1380-1420	≥10.5	≥836	≥12	≥876	366-390	46-49	7.5	80
N50	14.0-14.5	1400-1450	≥10.5	≥836	≥11	≥876	382-406	48-51	7.5	80
N52	14.3-14.8	1430-1480	≥10.5	≥836	≥11	≥876	398-422	50-53	7.5	60
N55	14.5-15.0	1450-1500	≥10.5	≥836	≥11	≥876	414-438	52-55	7.5	60
35M	11.7-12.2	1170-1220	≥10.9	≥868	≥14	≥1114	263-287	33-36	7.5	100
38M	12.2-12.5	1220-1250	≥11.3	≥899	≥14	≥1114	287-310	36-39	7.5	100
40M	12.5-12.8	1250-1280	≥11.6	≥923	≥14	≥1114	302-326	38-41	7.5	100
42M	12.8-13.2	1280-1320	≥12.0	≥955	≥14	≥1114	318-342	40-43	7.5	100
45M	13.2-13.8	1320-1380	≥11.6	≥923	≥14	≥1114	342-366	43-46	7.5	100
48M	13.6-14.3	1360-1430	≥12.9	≥1027	≥14	≥1114	366-390	46-49	7.5	100
50M	14.0-14.5	1400-1450	≥13.1	≥1043	≥14	≥1114	382-406	48-51	7.5	100
52M	14.2-14.6	1420-1460	≥13.1	≥1043	≥14	≥1114	390-422	49-53	7.5	100

Typical Magnetic Performance Range for Sintered NdFeB Magnet continued

Grade	Br		Hcb		Hcj		BHmax		Density	Tw Max
	kGs	mT	kOe	kA/m	kOe	kA/m	KJ/m3	MGOe	g/cm3	°C
33H	11.3-11.7	1130-1170	≥10.5	≥836	≥17	≥1353	247-271	31-34	7.5	120
35H	11.7-12.2	1170-1220	≥10.9	≥868	≥17	≥1353	263-287	33-36	7.5	120
38H	12.2-12.5	1220-1250	≥11.3	≥899	≥17	≥1353	287-310	36-39	7.5	120
40H	12.5-12.8	1250-1280	≥11.6	≥923	≥17	≥1353	302-326	38-41	7.5	120
42H	12.8-13.2	1280-1320	≥12.0	≥955	≥17	≥1353	318-342	40-43	7.5	120
45H	13-13.6	1300-1360	≥12.1	≥963	≥17	≥1353	326-358	43-46	7.5	120
48H	13.7-14.3	1370-1430	≥12.8	≥1090	≥16	≥1270	366-390	46-49	7.5	120
50H	13.9-14.4	1390-1440	≥12.8	≥1090	≥16	≥1270	385-408	48-51	7.5	120
52H	14.2-14.6	1420-1460	≥12.8	≥1090	≥16	≥1270	368-425	50-53	7.5	120
30SH	10.8-11.3	1080-1130	≥10.1	≥804	≥20	≥1592	223-247	28-31	7.5	150
33SH	11.3-11.7	1130-1170	≥10.6	≥844	≥20	≥1592	247-271	31-34	7.5	150
35SH	11.7-12.2	1170-1220	≥11.0	≥876	≥20	≥1592	263-287	33-36	7.5	150
38SH	12.2-12.5	1220-1250	≥11.0	≥907	≥20	≥1592	287-310	36-39	7.5	150
40SH	12.5-12.8	1240-1280	≥11.0	≥939	≥20	≥1592	302-326	38-41	7.5	150
42SH	12.8-13.2	1280-1320	≥11.5	≥915	≥20	≥1592	318-342	40-43	7.5	150
45SH	13.2-13.8	1320-1380	≥11.5	≥915	≥20	≥1592	342-366	43-46	7.5	150
48SH	13.5-14.0	1350-1400	≥11.5	≥915	≥20	≥1592	366-390	46-49	7.5	150
28UH	10.2-10.8	1020-1080	≥9.6	≥764	≥25	≥1990	207-231	26-29	7.5	180
30UH	10.8-11.3	1080-1130	≥10.2	≥812	≥25	≥1990	223-247	28-31	7.5	180
33UH	11.3-11.7	1130-1170	≥10.7	≥852	≥25	≥1990	247-271	31-34	7.5	180
35UH	11.8-12.2	1180-1220	≥10.8	≥860	≥25	≥1990	263-287	33-36	7.5	180
38UH	12.2-12.5	1220-1250	≥11.0	≥876	≥25	≥1990	287-310	36-39	7.5	180
40UH	12.5-12.8	1240-1280	≥11.0	≥876	≥25	≥1990	302-326	38-41	7.5	180
42UH	12.8-13.2	1280-1320	≥11.0	≥876	≥25	≥1990	318-350	40-43	7.5	180
45UH	13.2-13.6	1320-1360	≥11.0	≥876	≥24	≥1990	350-366	44-46	7.5	160
28EH	10.4-11.9	1040-1100	≥9.8	≥780	≥30	≥2388	207-231	26-29	7.5	200
30EH	10.8-11.4	1080-1140	≥10.2	≥812	≥30	≥2388	223-247	28-31	7.5	200
33EH	11.2-11.8	1120-1180	≥10.5	≥836	≥30	≥2388	247-271	31-34	7.5	200
35EH	11.7-12.2	1170-1220	≥11.0	≥876	≥30	≥2388	263-287	33-36	7.5	200
38EH	12.2-12.6	1220-1260	≥11.3	≥899	≥30	≥2388	287-310	36-39	7.5	200
30AH	10.8-11.5	1080-1150	≥10.1	≥804	≥35	≥2786	223-255	28-32	7.5	220
35AH	11.6-12.5	1160-1250	≥10.7	≥852	≥35	≥2786	255-287	32-36	7.5	220

Typical Magnetic Performance Range for Bonded NdFeB Magnet

Grade	Br		Hcb		Hcj		BHmax		Density	Tw Max
	kGs	mT	kOe	kA/m	kOe	kA/m	KJ/m3	MGOe	g/cm3	°C
BN-2	3.5	350	2.5	200	7	560	20	2.5	4.8	160
BN-4	4.5	450	3.5	280	8	640	40	5	5.5	160
BN-6	5.5	550	4.5	360	8	640	52	6.5	5.8	160
BN-8	6.5	650	5	400	9	720	64	8	6	160
BN-8H	6.3	630	5.5	440	15	560	64	8	6	160
BN-8SR	6.3	630	5.5	440	12	560	64	8	6	180
BN-8L	6.5	650	5.5	440	9	560	68	8.5	6	160
BN-10	7	700	5.5	440	9	560	80	10	6	160
BN-10H	7.3	730	5.5	440	9	560	84	10.5	6.2	160
BN-12	7.5	750	6	480	10	560	92	11.5	6.2	160
BN-12D	7.5	750	6	480	10	560	92	11.5	6.2	170
BN-12L	7.8	780	5.5	440	7	560	92	11.5	6.2	150
BN-13L	8	800	5.5	440	7	560	96	12	6.3	150

Typical Magnetic Performance Range for Sintered SmCo

Grade	Br		Hcb		Hcj		BHmax		Density	Tw Max
	kGs	mT	kA/m	kOe	kA/m	kOe	KJ/m3	MGOe	g/cm3	°C
SmCo16	8.3	830	640	8	1430	18	128	16	8.3	250
SmCo18	8.8	880	680	8.5	1430	18	144	18	8.3	250
SmCo20	9.2	920	700	8.7	1430	18	160	20	8.3	250
SmCo22	9.4	940	730	9.1	1450	18	176	22	8.3	250
SmCo24	9.8	980	750	9.4	1450	18	192	24	8.3	250
SmCo24	9.8	980	730	9.1	1450	18	192	24	8.4	300
SmCo26	10.3	1030	760	9.5	1450	18	208	26	8.4	300
SmCo28	10.5	1050	780	9.7	1450	18.5	224	28	8.4	300
SmCo30	11	1100	810	10.1	1450	18.5	240	30	8.4	300
SmCo26M	10.3	1030	760	9.5	1100	15	208	26	8.4	300
SmCo28M	10.5	1050	780	9.7	1100	15	224	28	8.4	300
SmCo30M	11	1100	810	10.1	1100	15	240	30	8.4	300
SmCo28L	10.5	1050	550	6.9	700	8	224	28	8.4	250
SmCo30L	11	1100	550	6.9	700	8	240	30	8.4	250
SmCo24H	10	1000	720	9	2000	25	192	24	8.4	350
SmCo26H	10.3	1030	760	9.5	2000	25	208	26	8.4	350
SmCo28H	10.5	1050	770	9.6	2000	25	224	28	8.4	350
SmCo30H	10.8	1080	810	10.1	2000	25	240	30	8.4	350

Typical Magnetic Performance for Bonded SmCo

Grade	Br		Hcb		Hcj		BHmax		Density	Tw Max
	kGs	mT	kA/m	kOe	kA/m	kOe	KJ/m3	MGOe	g/cm3	°C
BS6A	4	400	278	3.5	800	10	32	4	4.5	120
BS8A	5	500	318	4	800	10	48	6	4.5	120
BS10B	6	600	358	4.5	800	10	64	8	5	120
BS12B	7	700	318	4	400	5	80	10	5	120
BS12HB	7	700	398	5	800	10	80	10	5	100