



HEGAO MAGTECH




PROCESS FLOW

General Information

Collectively known as Rare Earth magnets, Neodymium Iron Boron (NdFeB) and Samarium Cobalt (SmCo) magnets are alloys of the Lanthanide group of elements. Rare Earth magnets are the most advanced commercialized permanent magnet materials today.

The bonded NdFeB Magnets material can be produced with close tolerances off tool, with little or no finishing required. The energy product of the bonded form is much lower than that of the sintered form - up to 10 MGOe.

the bonded NdFeB is isotropic and can be magnetized in any direction, and with multiple poles.

Manufacturing Methods

Compression - this is a technique whereby a special form of NdFeB powder is blended with a plastic carrier material, die pressed and then heated. The resulting parts have energy products in the 5 MGOe range, but can be made with extremely intricate shapes.

Injection - NdFeB powder is blended with a plastic material and injection molded. The resulting parts have energy products in the 5 MGOe range, but can be made with extremely intricate shapes.

Assemblies

We are able to manufacture metal and other components of finished sub assemblies using our CNC machining facilities.

Assemblies can be fabricated by adhering magnets with adhesives to suit a range of environments, by mechanically fastening magnets, or by a combination of these methods. Due to the relatively brittle nature of these magnet materials, press fits are not recommended.

When multiple magnets are assembled in repelling positions, it is advisable to use mechanical fastening in addition to adhesives, since if adhesives were to give way, repelling magnets may dislodge and endanger personnel using them. Our design engineering team will be happy to assist you in designing housings for your magnet assemblies.

Surface Treatments

Epoxy coating is mostly common used for bonded NdFeB magnets

Machining

Bonded NdFeB is easily machined. Coolants must be used while machining this material in order to avoid spontaneous combustion of powder. Machining this material removes a layer of protective coating, and re-coating for corrosion resistance may be necessary.

Magnetizing and Handling

Isotropic bonded NdFeB materials can be magnetized in any direction, or with multiple poles. Special magnetizing fixtures are required in order to achieve multiple pole magnetization. Such multiple pole fixtures may cost several thousand dollars depending on complexity of design and production rate requirements.

Temperature Effects

Magnetic properties of NdFeB deteriorate rapidly above about 130 Centigrade, depending on the grade of material, and the permeance coefficient of the magnet in operation. The higher the permeance coefficient the magnet operates at, the higher the temperature it will withstand. High Hci NdFeB materials operating at a high permeance coefficient can operate to about 210 Centigrade.

Shapes, Sizes, and Grades Available

Isotropic bonded NdFeB can be specially formulated to meet special requirements, with energy products from 1 to 10MGOe, as required.



粘结钕铁硼的磁性能

Magnetic Properties of Bonded Compression Moulding NdFeB

牌号 Grade	剩磁 Remanence		矫顽力 Normal Coercivity		内禀矫顽力 Intrinsic Coercivity		最大磁能积 Max. Energy Product (BH)Max		工作温度 Operating Temp.	密度 Density ρ	可逆磁导率 μ_r	可逆温度系数 α (Br)
	Br		Hcb		Hcj		MGOe	KJ/m ³				
	KGs	T	KOe	KA/m	KOe	KA/m						
BNP-8	6.2-6.9	0.62-0.69	4.8-5.6	385-445	8-10	640-800	8.0-9.0	64-72	120	5.8-6.1	1.15	-0.13
BNP-8SR	6.2-6.6	0.62-0.66	5.2-5.8	410-465	11-14	880-1120	8.0-9.0	64-72	150	5.8-6.1	1.13	-0.13
BNP-8H	6.1-6.5	0.61-0.65	5.2-5.7	410-455	15-18	1190-1140	8.0-9.0	64-72	125	5.9-6.2	1.15	-0.07
BNP-9	6.5-7.0	0.65-0.70	5.0-5.5	400-440	8-10	640-800	8.8-9.5	70-76	120	5.8-6.1	1.22	-0.12
BNP-10	6.8-7.2	0.68-0.72	5.3-5.9	420-470	8-10	640-800	9.5-10.5	76-84	120	5.8-6.1	1.22	-0.11
BNP-11	7.0-7.4	0.70-0.74	5.6-6.0	445-480	8.5-10	680-800	10.0-11.0	80-88	120	5.8-6.1	1.22	-0.11
BNP-11L	7.0-7.4	0.70-0.74	5.0-5.5	400-440	6.5-8	520-640	6.5-8	78-84	110	5.8-6.1	1.26	-0.11
BNP-12L	7.4-8.0	0.74-0.80	5.3-5.7	420-455	6.5-7.5	520-600	10.5-11.5	84-92	110	5.8-6.1	1.26	-0.08

粘结钕铁硼的磁性能

Magnetic Properties of Bonded Injection Moulding NdFeB

牌号 Grade	剩磁 Remanence		矫顽力 Normal Coercivity		内禀矫顽力 Intrinsic Coercivity		最大磁能积 Max. Energy Product (BH)Max		工作温度 Operating Temp.	密度 Density ρ	可逆磁导率 μ_r	可逆温度系数 α (Br)
	Br		Hcb		Hcj		MGOe	KJ/m ³				
	KGs	T	KOe	KA/m	KOe	KA/m						
BNI-4	4.0-4.6	0.40-0.46	3.1-4.2	250-335	7.2-9.2	575-735	3.5-4.5	28-36	110	4.2-4.9	1.2	-0.13
BNI-5	4.5-5.1	0.45-0.51	3.5-4.5	280-360	8-10	640-800	4.6-5.5	37-44	120	4.5-5.0	1.2	-0.13
BNI-6	5.1-5.6	0.51-0.56	3.7-4.7	295-375	8-10	640-800	5.5-6.5	44-52	120	4.7-5.1	1.13	-0.11
BNI-6H	4.8-5.6	0.48-0.56	4.2-5.0	335-400	13-17	1035-1355	5.0-6.5	40-52	130	4.8-5.2	1.13	-0.15
BNI-7	5.4-6.4	0.54-0.64	4.0-5.0	320-400	8-10	640-800	6.5-7.5	51-59	120	5.0-5.5	1.13	-0.11
BNI-5SR(PPS)	4.5-5.0	0.45-0.50	3.8-4.5	300-360	11-14	875-1115	4.5-5.5	36-44	150	4.9-5.4	1.13	-0.13

粘结钕铁硼的物理性能

Physical Properties of Bonded NdFeB

平均温度系数 Average Reversible Temperature Coefficient	0.09-0.1%/C
热膨胀系数 Coefficient of Thermal Expansion[25-200℃]	4.8X10 ⁻⁶ /℃
压力 Compressive Strength	96Kg/cm
居里温度 Curie Temperature Tc	400℃
电阻系数 Electrical Resistivity	14000 μ Ω -cm
硬度 Hardness	35-38HRB(NEOBMS/10/12)40-45HRB(NEOBM4/6)
充磁场强 Required Magnetizing Force[open Circuit]	>25KOe