

## **ChenYang Bonded Magnets (Bonded Hard Ferrite and NdFeB Magnets)**

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## General Information



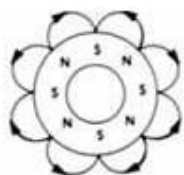
Bonded magnet is one of the most important magnetic materials. Bonded magnets can be made from either Ceramic/Hard Ferrite or NdFeB materials. They are manufactured using both injection molding and compression bonding techniques which are fully automated and are particularly suited to high volume production. Injection molded magnets can be formed into complex shapes and be insert molded directly onto other components to produce assembly parts. Compression bonded magnets offer higher magnetic output than injection-molded magnets but are limited to more simple geometries.

One of the greatest advantages of the injection molding process is that a high degree of shape complexity is possible, i.e. gears, snap fits and undercuts. It is also possible to incorporate shafts, bushes and other inserts into the process, simplifying the magnetic assembly manufacturing process.

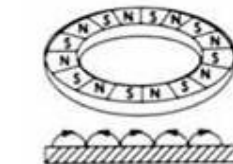
ChenYang Technologies GmbH & Co. KG supplies various kinds of Bonded NdFeB and Bonded Hard Ferrite (Ceramic) magnets in specific sizes and shapes according to the customers' requirements. It also allows its customers to customize characteristics of their magnets. The shapes can be discs, rings, blocks, slabs, cylinders, tiles and other specific shapes.



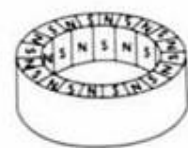
a) Multipoles on outer circumference



b) Multipoles on inner circumference



c) Multipoles in segments on one face



d) Complex multipoles

## Bonded NdFeB Magnets



- Composition of NdFeB magnet powders is embedded in thermoplastic and formed on injection moulding machine.
- Possible incorporation of shafts or other insert to the magnet during manufacturing process
- Varieties of shapes, gears, thin ring and many other complicated forms
- Good resistance to corrosion and chips
- Partly and fully magnetizable of magnets

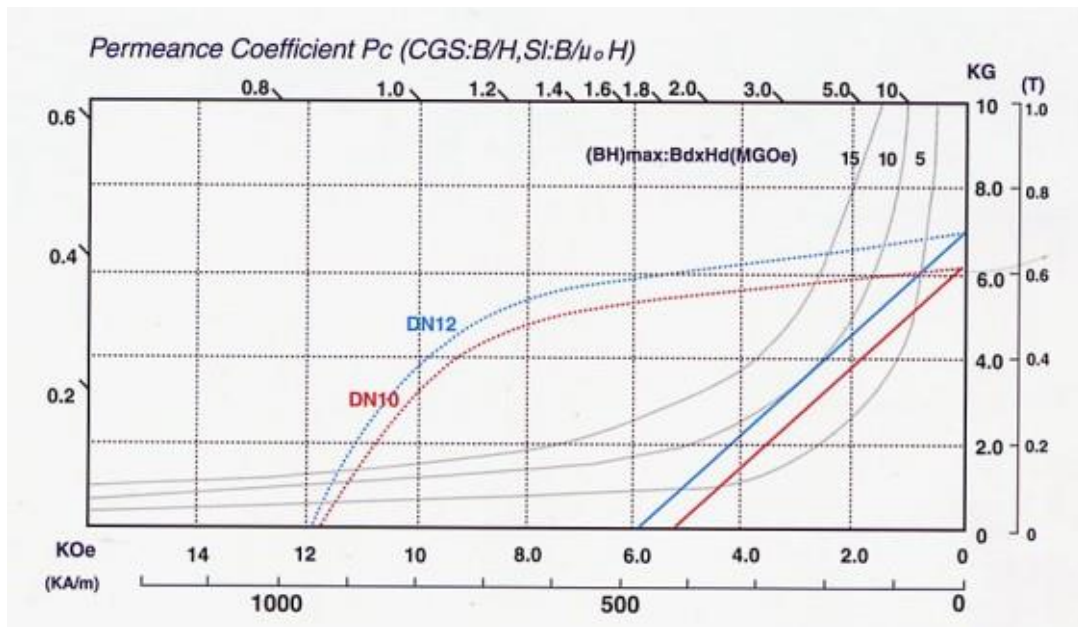
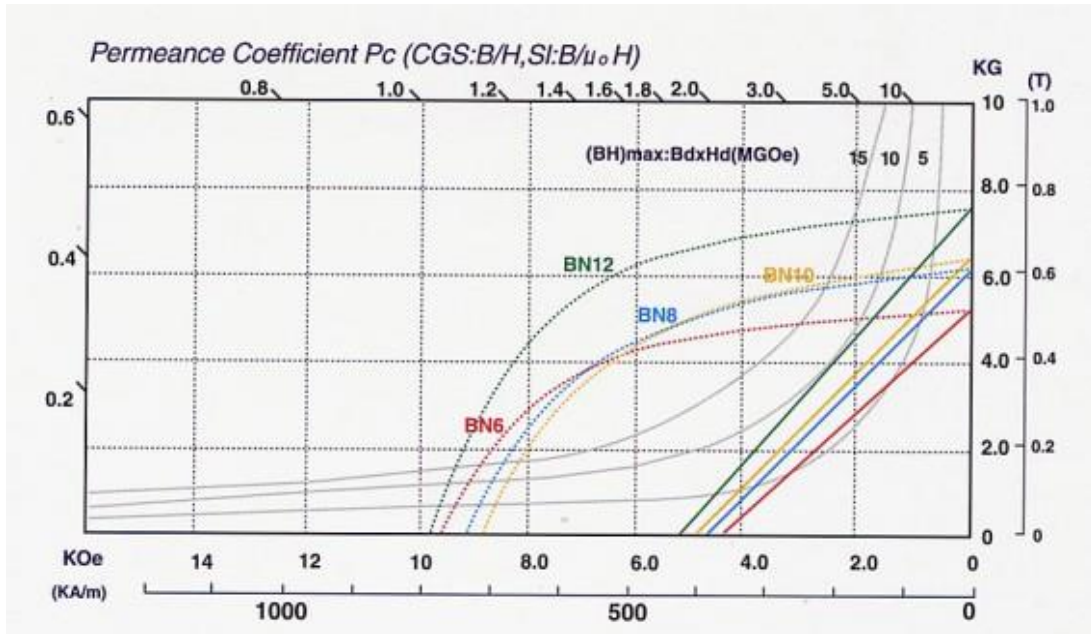
### Typical Physical Properties

Parameter	CY-BN6, 8, 10, 12	CY-DN10, CY-DN12	CY-PN72, 80, 96, 104, 111
Curie Temperature (°C)	310	310	350
Maximum Operating Temperature (°C)	110-120	130	150
Density (g/cm <sup>3</sup> )	5.3 - 6.6	5.8 - 6.6	5.8 - 6.0
Relative Recoil Permeability ( $\mu_{rec}$ )	1.17-1.25	1.15-1.22	1.10-1.20
Saturation Field Strength KOe(KA/m)	25-40 (2000-3200)	25-41 (2000-3280)	25-42 (2000-3360)
Temperature Coefficient of Br(%/°C)	-0.075 ~ -0.13	-0.075 ~ -0.13	-0.075 ~ -0.13

### Magnetic Properties

Material	Remanence		Coercivity		Intrinsic Coercivity		Max. Energy Product	
	Br (mT)	Br (kGs)	bHc (kA/m)	bHc (kOe)	iHc (kA/m)	iHc (kOe)	(BH)max (KJ/m <sup>3</sup> )	(BH)max (MGOe)
CY-BN6	520-620	5.2-6.2	302-366	3.80-4.60	637-800	8.00-10.0	40-56	5.0-7.0
CY-BN8	600-660	6.0-6.6	358-406	4.5-5.1	637-800	8.0-10.0	60-68	7.5-8.5
CY-BN10	620-690	6.2-6.9	360-438	4.5-5.5	637-860	8.0-10.8	64-80	8.0-10.0
CY-BN12	690-780	6.9-7.8	422-462	5.3-5.8	637-860	8.0-10.8	80-96	10.0-12.0
CY-DN10	600-680	6.0-6.8	414-446	5.2-5.6	800-1020	10.0-12.8	64-80	8.0-10.0
CY-DN12	680-760	6.8-7.6	438-470	5.5-5.9	800-1020	10.0-12.8	80-96	10.0-12.0
CY-PN72	620-650	6.2-6.5	415-440	5.2-5.5	720-960	9.0-12.0	64-72	8.0-9.0
CY-PN80	650-690	6.5-6.9	440-460	5.5-5.8	640-960	8.0-12.0	72-80	9.0-10.0
CY-PN96	700-760	7.0-7.6	420-470	5.3-5.9	640-864	8.0-10.0	81-96	10.0-12.0
CY-PN104	800	8.0	565	7.1	640	8.0	104	13.0
CY-PN111	860	8.6	640	8.0	715	9.0	111	14.0

## Typical Demagnetization Curves of Bonded NdFeB Magnets



## Bonded Ceramic/Hard Ferrite Magnets



- Composition of hard ferrite magnet powders is embedded in thermoplastic and formed on injection moulding machine.
- Possible incorporation of shafts or other insert to the magnet during manufacturing process
- Varieties of shapes, gears, thin ring and many other complicated forms
- Good resistance to corrosion and chips
- Partly and fully magnetizable of magnets

### Typical Physical Properties

Parameter	CY-RB8, CY-RB10, CY-RB14, CY-RB16	CY-PB8, CY-RB12, CY-RB15
Curie Temperature (°C)	450	450
Maximum Operating Temperature (°C)	85	120
Density (g/cm <sup>3</sup> )	3.6 - 3.7	2.6 - 3.7
Relative Recoil Permeability ( $\mu_{rec}$ )	1.3	1.3
Saturation Field Strength KOe(KA/m)	10 (800)	10 (800)
Temperature Coefficient of Br(%/°C)	-0.2	-0.2

### Magnetic Properties

Material	Remanence		Coercivity		Intrinsic Coercivity		Max. Energy Product	
	Br (mT)	Br (kGs)	bHc (kA/m)	bHc (kOe)	iHc (kA/m)	iHc (kOe)	(BH) <sub>max</sub> (KJ/m <sup>3</sup> )	(BH) <sub>max</sub> (MGOe)
CY-RB8	130-180	1.30-1.80	80-120	1.00-1.50	100-160	1.25-2.00	4.00-6.40	0.50-0.80
CY-RB10	180-210	1.80-2.10	100-140	1.25-1.75	120-190	1.50-2.38	6.40-8.00	0.80-1.00
CY-RB14	210-240	2.10-2.40	140-160	1.75-2.00	152-200	1.90-2.50	8.00-11.2	1.00-1.40
CY-RB16	240-260	2.40-2.60	160-199	2.00-2.50	199-240	2.50-3.00	11.2-12.8	1.40-1.60
CY-PB8	87	0.87	63	0.79	215	2.70	1.36	0.17
CY-PB12	220-230	2.20-2.30	132-148	1.65-1.85	176-192	2.20-2.40	8.80-9.70	1.10-1.20
CY-PB15	240-250	2.40-2.50	167-179	2.10-2.25	239-251	3.00-3.15	10.7-11.5	1.30-1.50

## Typical Demagnetization Curves of Bonded Ceramic/Hard Ferrite Magnets

