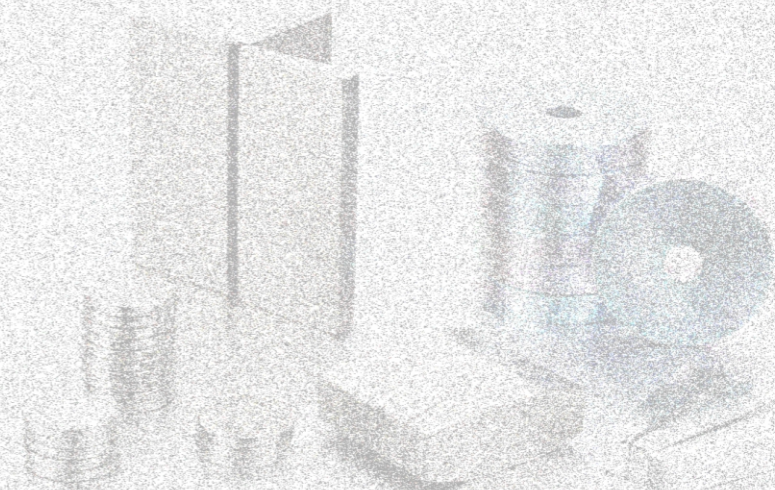
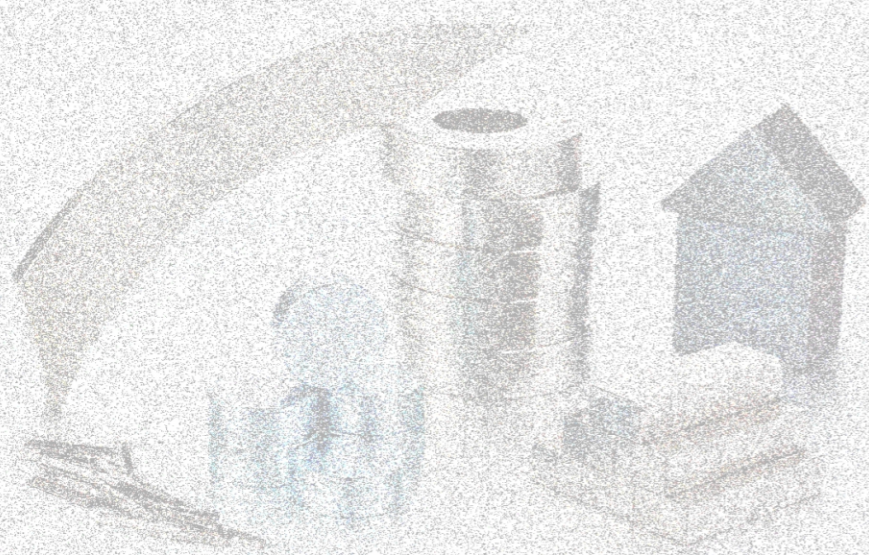
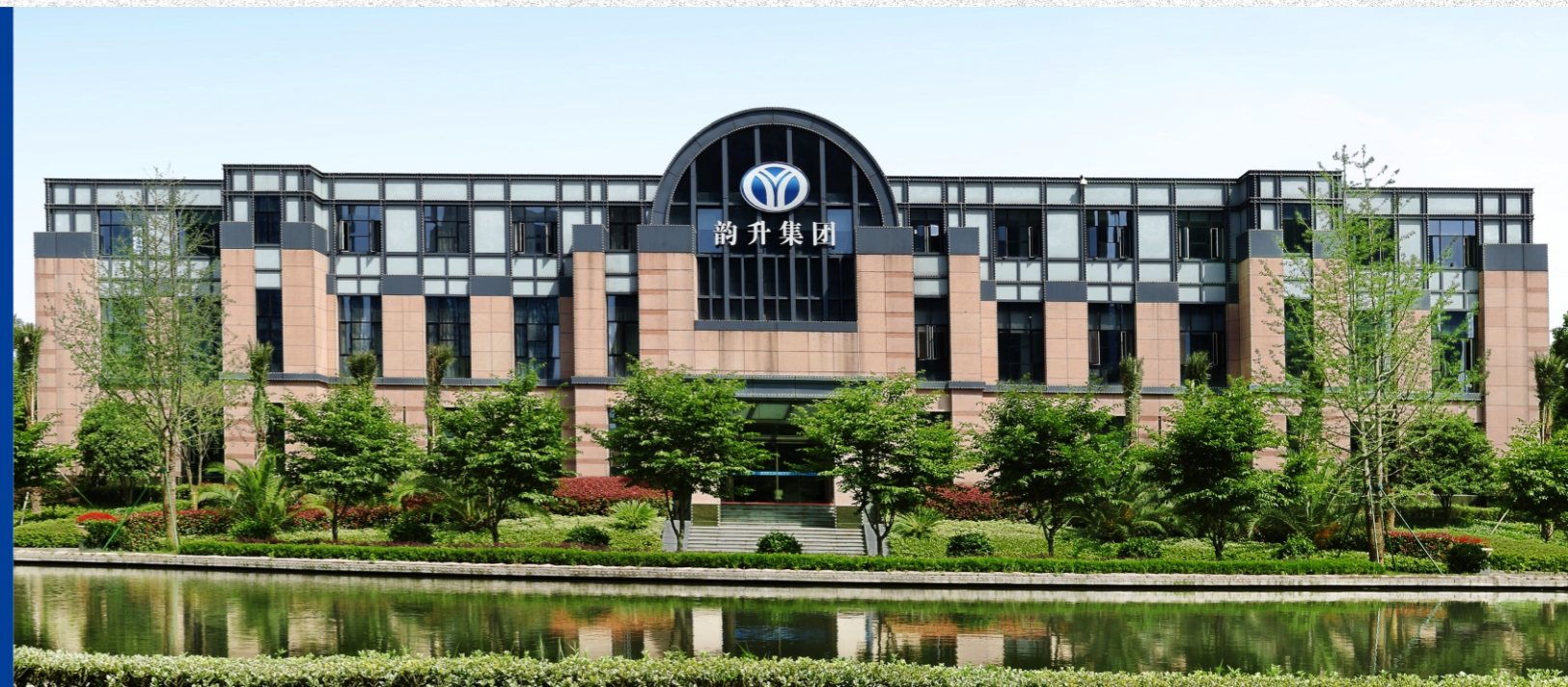


ALFA



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■ 韵升简介

宁波韵升股份有限公司自1995年以来专业从事稀土永磁材料的研发、制造和销售，是国家高新技术企业。公司在宁波、包头建有坯料生产基地，拥有达到国际一流水平的磁钢坯料生产、机械加工及表面处理生产线，具有年产坯料21000吨的生产能力，是全球最大的稀土永磁材料制造商之一。

公司依靠先进装备保障产品品质，通过加大技术创新力度，持续改进稀土永磁材料的工艺与装备，成为中国少数掌握稀土永磁材料全套装备制造技术的企业之一，使主要产品的品质一致性达到国际先进水平。截至2022年年底，公司依靠自主研发在稀土永磁材料领域获得94项发明专利、24项实用新型专利，并先后实施完成了5项国家863课题；公司的研发项目先后荣获国家科学技术进步奖二等奖2项、浙江省科学技术进步奖一等奖1项、宁波市科学技术奖一等奖5项。高性能稀土永磁材料产业化项目被评为国家重大科技成果转化项目，硬盘音圈电机磁体被认定为国家制造业单项冠军产品。

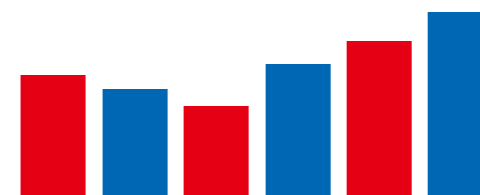
公司是一家在行业内有重大影响力的企业，下辖VCM磁钢事业部、新能源汽车磁钢事业部、欧洲磁钢事业部、消费电子产业部、工业电机产业部、美洲产业部、磁组件事业部、材料制造部、包头强磁、材料研究院、粘结磁体公司等，致力于发展欧洲、美洲、亚洲及国内市场，已与众多国际知名企业建立了战略合作关系，产品广泛应用于汽车、航空航天、信息储存、移动智能、工业电机、伺服电机、医疗保健、白色家电、高级音响等领域。

■ Company Profile

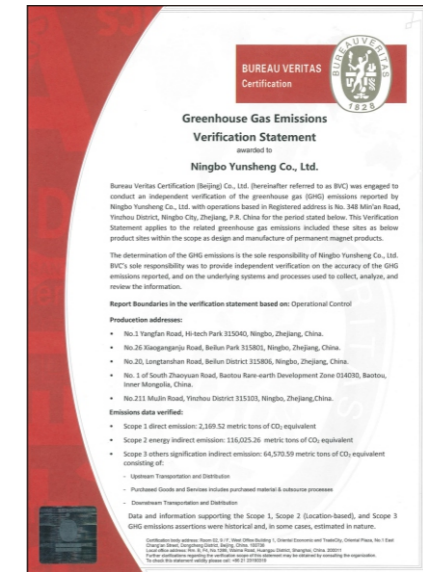
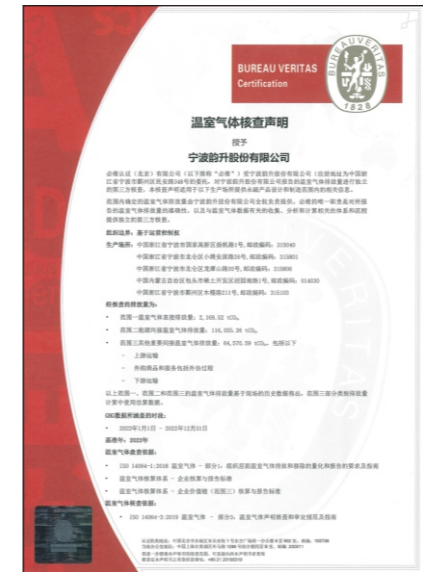
Ningbo Yunsheng Co., Ltd. is a national high-tech enterprise specialized in research & develop, manufacture, sales of rare earth permanent magnets since 1995. Ningbo Yunsheng is one of the largest manufacturers of rare earth permanent magnets in the world, with annual capacity of 21,000 tons. Ningbo Yunsheng has 2 production bases located in Ningbo and Baotou with advanced block production, machining and surface treatment.

Ningbo Yunsheng pays great attention to equipment upgrading and quality control. By technical innovation and continuous improvement, it possesses full range of equipment manufacturing capability and its quality control has been leading in the industry. By the end of 2022, the company has obtained 94 patents for invention and 24 patents for utility models and has fulfilled 5 national 863 projects. The company has won 2 Second Prizes for National Scientific & Technological Progress, 1 First Prize for Zhejiang Provincial Scientific & Technological Progress and 5 First Prizes for Ningbo Municipal Science & Technology. The high-performance rare earth permanent magnets project has been awarded key national scientific & technological achievement, and the Hard disk voice coil motor magnet has been identified as the national manufacturing single champion products.

Yunsheng is a leading manufacturer in this industry. It has subsidiary divisions such as Magnetics VCM Division, New Energy Vehicles Magnetics Division, Magnetics Europe Division, 3C Industrial Division, Industrial Motor's Magnet Business Unit, Americas Industrial Division, Magnet Assembly Division, Block Manufacturing Divisions in Ningbo and Baotou, Bonded Division and Institute of Magnetic Materials, etc... It has been devoted to the development of the markets in Europe, America, Asia and China, and has established strategic cooperative relationship with various well-known enterprises worldwide. The products are widely used in automobile, aerospace, information storage, mobile intelligence, industrial motor, servo motor, medical care, household appliances, advanced audio and other fields.



- ◆ **质量方针：更优、更快、不断满足顾客的需求**
Quality Policy: Better, Faster, Customer Orientation
- ◆ **环境方针：守法减污降耗，韵升磁体环保**
Environmental Policy: Legal Compliance, Pollution Reduction, Less Consumption, Environmental Friendly
- ◆ **职业健康安全方针：遵守法规，持续改进，关爱员工，安全生产**
Occupational Health & Safety Policy: Legal Compliance, Continuous Improvement, Staff Care, Safe Production



产品应用广泛，涉及多方领域
Products are widely used in various fields.

消费电子 | Consumer Electronics



硬盘驱动器
Hard Disk Driver

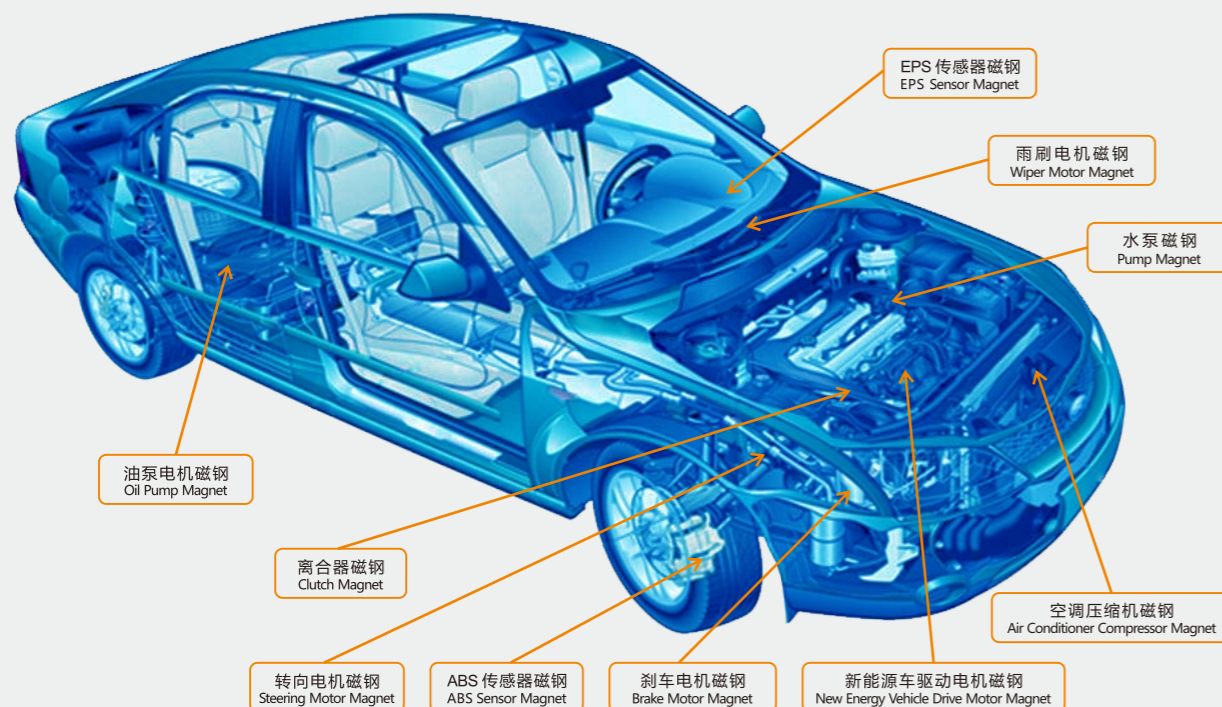


音响
Audio



手机
Mobile Phone

汽车 | Automobile



工业电机 | Industrial Motor

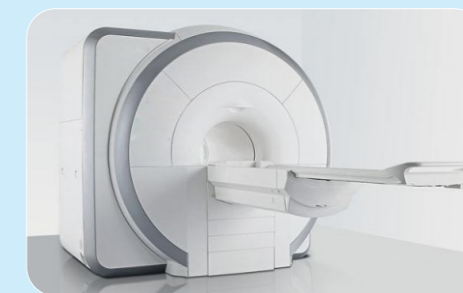


伺服电机
Servo Motor



工业自动化
Industrial Automation

医疗及能源 | Medical & Energy



磁共振
MRI



风力发电
Wind Power

家用电器 | Household Appliance



洗衣机
Washing Machine



空调
Air Conditioner



原料准备 Raw Material Preparation



铸片速凝 Strip Casting



氢碎 (HD) Hydrogen Decrepitation (HD)



气流磨制粉 Jet Milling



磁场取向压型 Orientation & Pressing



烧结与时效 Sintering & Annealing



性能检测 Properties Testing



机械加工 Machining



涂覆 Coating



热处理 Heat Treatment



表面处理-清洗 Surface Treatment - Cleaning



表面处理-电镀 Surface Treatment - Plating



成品检验 Final Inspection



充磁 Magnetization



包装 Packaging



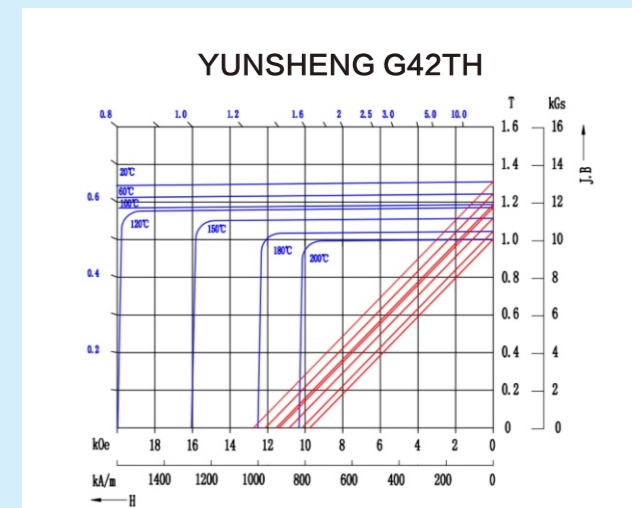
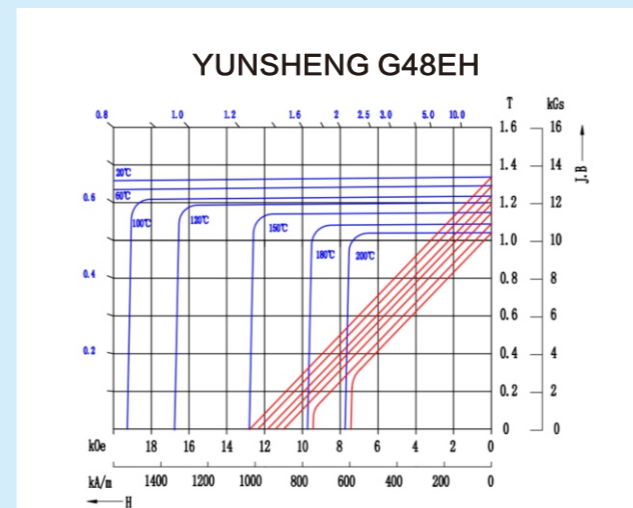
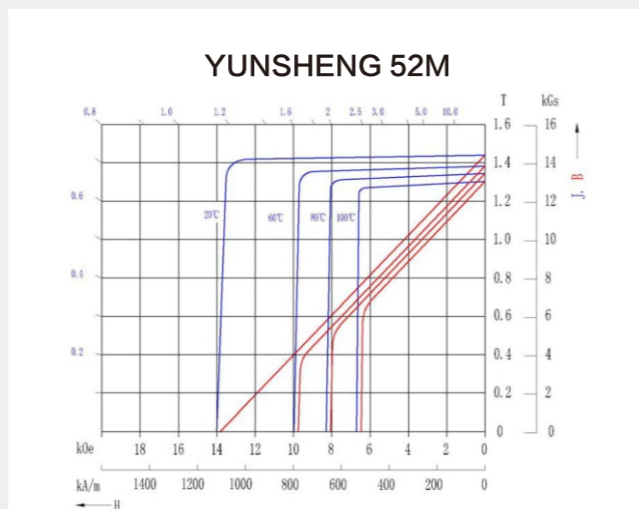
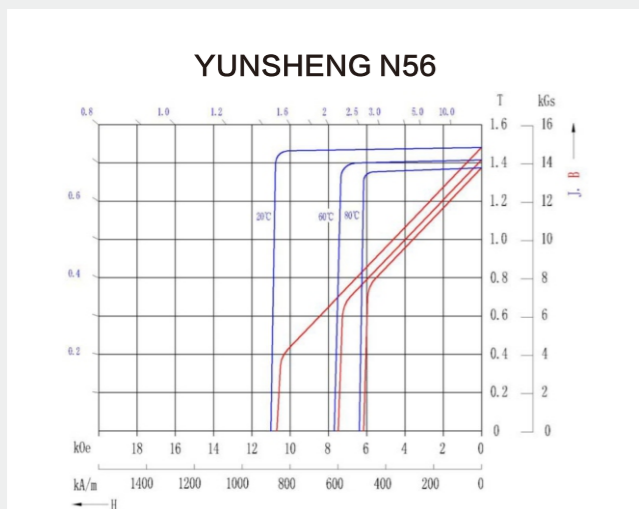
出货 Shipping

烧结钕铁硼永磁材料室温 (20°C) 下的磁性能
Magnetic performance of sintered NdFeB permanent magnets at room temperature (20°C)

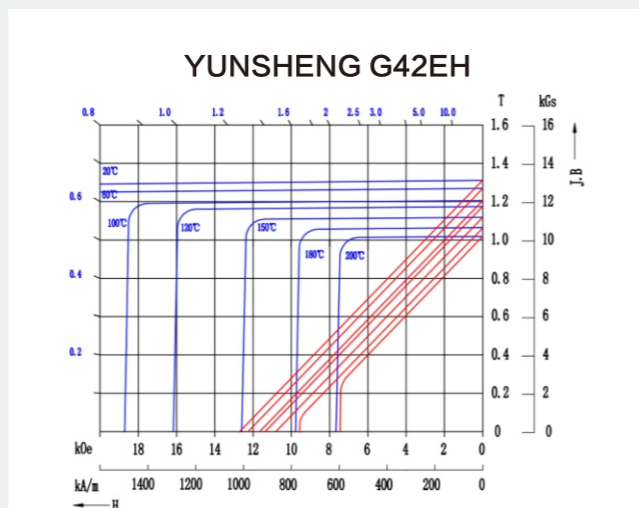
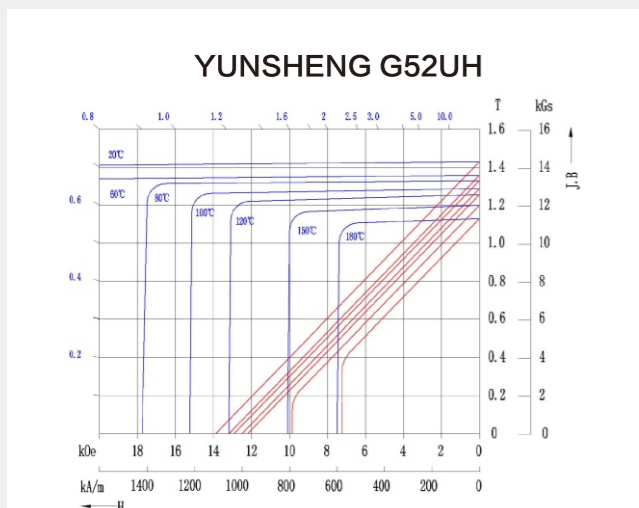
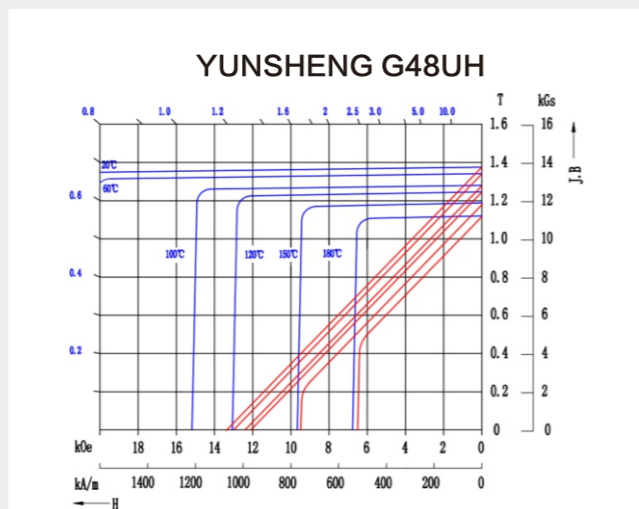
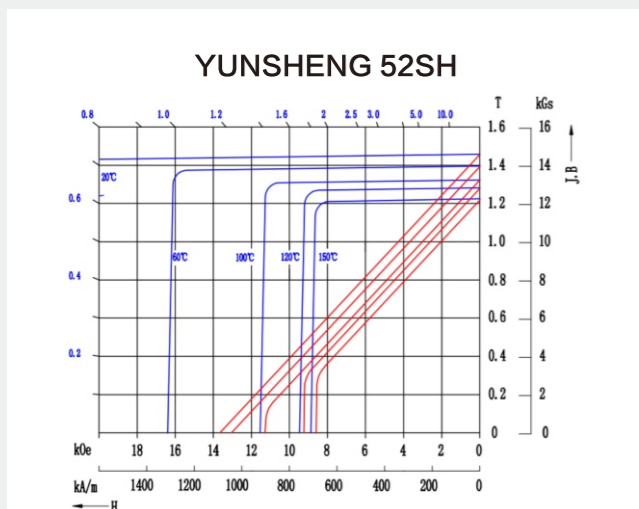
材料 Material		主要磁性能 Main Magnetic Performance							
序号 S/N	牌号 Grade	B _r		H _{cj}		H _{cB}		(BH) _{max}	
		T	kGs	kA/m	kOe	kA/m	kOe	kJ/m ³	MGOe
		范围 Range		最小值 Min		最小值 Min		范围 Range	
1	N48	1.38~1.42	13.8~14.2	960	12	915	11.5	362~390	45.5~49.0
2	N50	1.39~1.45	13.9~14.5	960	12	915	11.5	370~406	46.5~51.0
3	N52	1.43~1.48	14.3~14.8	960	12	915	11.5	386~422	48.5~53.0
4	N54	1.45~1.50	14.5~15.0	960	12	915	11.5	398~430	50.0~54.0
5	N56	1.47~1.52	14.7~15.2	960	12	915	11.5	410~446	51.5~56.0
6	N58	1.49~1.55	14.9~15.5	876	11	836	10.5	422~462	53.0~58.0
7	45M	1.33~1.38	13.3~13.8	1114	14	995	12.5	338~366	42.5~46.0
8	48M	1.37~1.42	13.7~14.2	1114	14	1019	12.8	358~390	45.0~49.0
9	50M	1.39~1.45	13.9~14.5	1114	14	1035	13	370~406	46.5~51.0
10	52M	1.42~1.48	14.2~14.8	1114	14	1035	13	386~422	48.5~53.0
11	55M	1.45~1.52	14.5~15.2	1035	13	971	12.2	398~446	50.0~56.0
12	45H	1.33~1.38	13.3~13.8	1353	17	1003	12.6	338~366	42.5~46.0
13	48H	1.37~1.42	13.7~14.2	1353	17	1035	13	358~390	45.0~49.0
14	50H	1.39~1.44	13.9~14.4	1353	17	1043	13.1	370~398	46.5~50.0
15	52H	1.42~1.47	14.2~14.7	1274	16	1075	13.5	382~414	48.0~52.0
16	42SH	1.29~1.33	12.9~13.3	1592	20	971	12.2	318~342	40.0~43.0
17	45SH	1.33~1.38	13.3~13.8	1592	20	1003	12.6	338~366	42.5~46.0
18	48SH	1.37~1.42	13.7~14.2	1592	20	1035	13	358~390	45.0~49.0
19	50SH	1.39~1.44	13.9~14.4	1592	20	1043	13.1	366~398	46.0~50.0
20	52SH	1.42~1.47	14.2~14.7	1512	19	1075	13.5	382~414	48.0~52.0
21	35UH	1.18~1.23	11.8~12.3	1990	25	884	11.1	267~291	33.5~36.5
22	38UH	1.23~1.28	12.3~12.8	1990	25	923	11.6	291~314	36.5~39.5
23	40UH	1.26~1.30	12.6~13.0	1990	25	947	11.9	302~326	38.0~41.0
24	42UH	1.29~1.33	12.9~13.3	1990	25	971	12.2	318~342	40.0~43.0
25	44UH	1.32~1.36	13.2~13.6	1990	25	995	12.5	334~358	42.0~45.0
26	45UH	1.33~1.38	13.3~13.8	1910	24	1003	12.6	338~366	42.5~46.0
27	35EH	1.18~1.22	11.8~12.2	2388	30	884	11.1	267~291	33.5~36.5
28	38EH	1.22~1.27	12.2~12.7	2388	30	923	11.6	287~314	36.0~39.5
29	40EH	1.25~1.30	12.5~13.0	2388	30	947	11.9	302~326	38.0~41.0
30	42EH	1.28~1.33	12.8~13.3	2308	29	971	12.2	318~342	40.0~43.0
31	33TH	1.14~1.19	11.4~11.9	2786	35	860	10.8	251~275	31.5~34.5
32	35TH	1.18~1.22	11.8~12.2	2786	35	891	11.2	267~291	33.5~36.5
33	38TH	1.22~1.27	12.2~12.7	2706	34	923	11.6	287~314	36.0~39.5

34	N42C	1.29~1.33	12.9~13.3	960	12	915	11.5	318~342	40.0~43.0
35	N45C	1.33~1.38	13.3~13.8	960	12	915	11.5	338~366	42.5~46.0
36	N48C	1.38~1.42	13.7~14.2	960	12	915	11.5	362~390	45.5~49.0
37	N50C	1.39~1.45	13.9~14.5	960	12	915	11.5	370~406	46.5~51.0
38	38MC	1.22~1.27	12.2~12.7	1114	14	915	11.5	287~310	36.0~39.0
39	40MC	1.26~1.30	12.6~13.0	1114	14	940	11.8	302~326	38.0~41.0
40	42MC	1.29~1.33	12.9~13.3	1114	14	964	12.1	318~342	40.0~43.0
41	45MC	1.33~1.38	13.3~13.8	1114	14	995	12.5	338~366	42.5~46.0
42	35HC	1.17~1.22	11.7~12.2	1353	17	873	11	263~287	33.0~36.0
43	38HC	1.22~1.27	12.2~12.7	1353	17	915	11.5	287~310	36.0~39.0
44	40HC	1.26~1.30	12.6~13.0	1353	17	940	11.8	302~326	38.0~41.0
45	42HC	1.29~1.33	12.9~13.3	1353	17	964	12.1	318~342	40.0~43.0
46	35SHC	1.17~1.22	11.7~12.2	1592	20	873	11	263~287	33.0~36.0
47	38SHC	1.22~1.27	12.2~12.7	1592	20	915	11.5	287~310	36.0~39.0
48	40SHC	1.26~1.30	12.6~13.0	1592	20	940	11.8	302~326	38.0~41.0
49	42SHC	1.29~1.33	12.9~13.3	1592	20	964	12.1	318~342	40.0~43.0
50	G55H	1.470~1.525	14.70~15.25	1353	17	1106	13.9	414~446	52~56
51	G57H	1.495~1.550	14.95~15.50	1353	17	1122	14.1	430~462	54~58
52	G48SH	1.365~1.425	13.65~14.25	1592	20	1027	12.9	358~390	45~49
53	G50SH	1.395~1.455	13.95~14.55	1592	20	1051	13.2	374~406	47~51
54	G52SH	1.425~1.480	14.25~14.80	1592	20	1067	13.4	390~422	49~53
55	G55SH	1.470~1.525	14.70~15.25	1592	20	1106	13.9	414~446	52~56
56	G40UH	1.255~1.305	12.55~13.05	1990	25	939	11.8	302~326	38~41
57	G42UH	1.285~1.335	12.85~13.35	1990	25	963	12.1	318~342	40~43
58	G45UH	1.320~1.380	13.20~13.80	1990	25	995	12.5	334~366	42~46
59	G48UH	1.365~1.425	13.65~14.25	1990	25	1027	12.9	358~390	45~49
60	G50UH	1.395~1.455	13.95~14.55	1990	25	1051	13.2	374~406	47~51
61	G52UH	1.425~1.480	14.25~14.80	1990	25	1067	13.4	390~422	49~53
62	G54UH	1.455~1.510	14.55~15.10	1990	25	1090	13.7	406~438	51~55
63	G35EH	1.170~1.220	11.70~12.20	2388	30	883	11.1	263~287	33~36
64	G38EH	1.220~1.270	12.20~12.70	2388	30	916	11.5	287~310	36~39
65	G40EH	1.255~1.305	12.55~13.05	2388	30	939	11.8	302~326	38~41
66	G42EH	1.270~1.335	12.70~13.35	2388	30	955	12.0	310~342	39~43
67	G45EH	1.320~1.380	13.20~13.80	2388	30	995	12.5	334~366	42~46
68	G48EH	1.365~1.425	13.65~14.25	2388	30	1027	12.9	358~390	45~49
69	G50EH	1.395~1.455	13.95~14.55	2388	30	1051	13.2	374~406	47~51
70	G35TH	1.170~1.220	11.70~12.20	2786	35	891	11.2	263~287	33~36
71	G38TH	1.220~1.270	12.20~12.70	2786	35	931	11.7	287~310	36~39
72	G40TH	1.240~1.305	12.40~13.05	2786	35	947	11.9	295~326	37~41
73	G42TH	1.270~1.335	12.70~13.35	2786	35	963	12.1	310~342	39~43
74	G45TH	1.320~1.380	13.20~13.80	2786	35	995	12.5	334~366	42~46

说明：含字母C的牌号表示含铯烧结钕铁硼永磁材料；含字母G的牌号表示晶界扩散钕铁硼永磁材料。
Description: The Grade with a C is for sintered NdFeB permanent magnets containing Cesium, and the Grade with a G is for GBD NdFeB permanent magnets.



技术水平 Technology



■ 无重稀土工艺 HRE Free
■ 常规工艺 Conventional Process
■ 晶界扩散工艺 GBD

$(BH)_{max} / \text{MGoe}$	N	M	H	SH	UH	EH	TH
58	Green	Brown	Brown				
56	Green	Orange	Brown				
54	Green	Orange	Brown	Brown			
52	Green	Orange	Brown	Brown	Brown		
50	Green	Orange	Brown	Brown	Brown	Brown	
48	Green	Orange	Brown	Brown	Brown	Brown	
45	Green	Orange	Brown	Brown	Brown	Brown	
42	Green	Orange	Brown	Brown	Brown	Brown	Brown
40	Green	Orange	Brown	Brown	Brown	Brown	Brown
38	Green	Orange	Brown	Brown	Brown	Brown	Brown
35	Green	Orange	Brown	Brown	Brown	Brown	Brown
33	Green	Orange	Brown	Brown	Brown	Brown	Brown
30	Green	Orange	Brown	Brown	Brown	Brown	Brown
28	Green	Orange	Brown	Brown	Brown	Brown	Brown
H_{c2} 范围 /kOe	12~14	14~17	17~20	20~25	25~30	30~35	35~40

说明: Description:

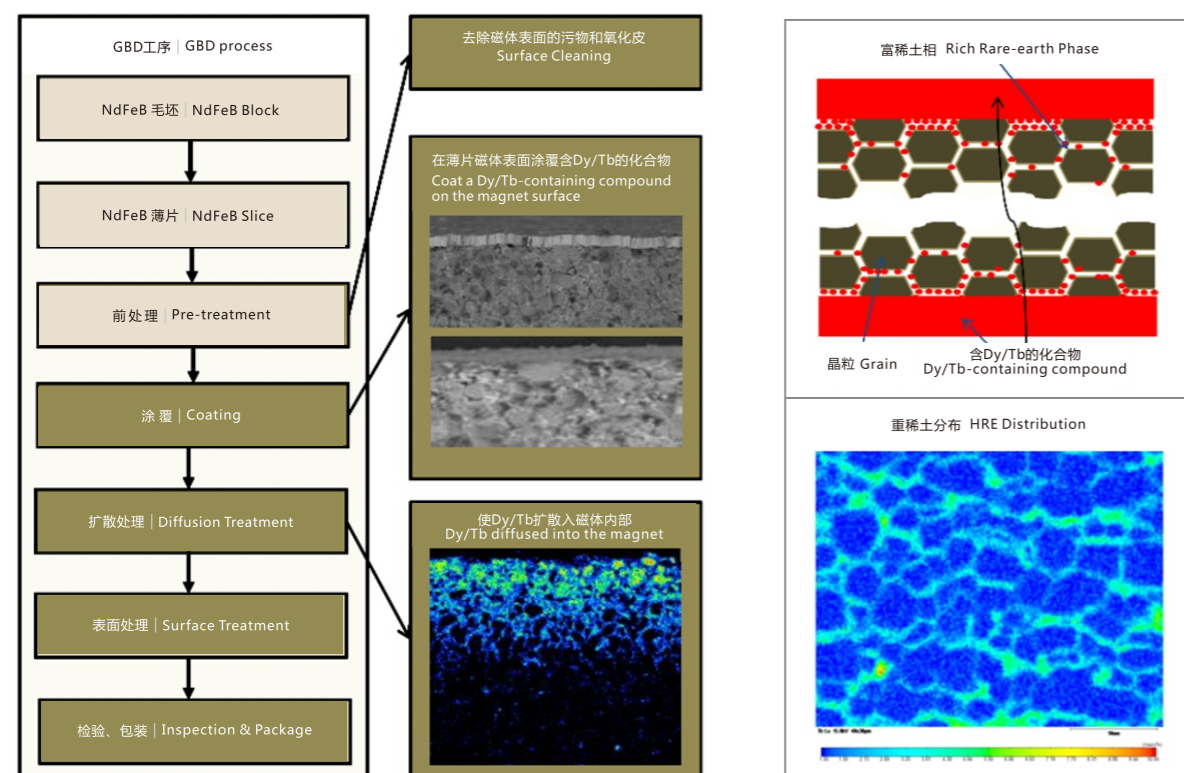
- 列举的无重稀土工艺牌号磁体可通过常规工艺实现。
The listed HRE free magnets can be manufactured by conventional processes.
- 列举的常规工艺牌号也可通过晶界扩散工艺实现。
The listed conventional process grades can also be manufactured by GBD.
- 通过晶界扩散工艺制备磁体的性能与磁体的规格密切相关, 请咨询专业人员。
The performance of GBD magnets is closely related to the dimensions of magnet. Please consult the professional team.

晶界扩散工艺简介

在钕铁硼磁体的表面附着Dy、Tb重稀土元素，经适宜温度的热处理，使重稀土元素沿晶界扩散进入磁体，显著提高磁体的矫顽力，同时避免剩磁过多降低。通过扩散工艺可以降低烧结钕铁硼磁体中的重稀土用量，同时可以制备出更高综合性能的磁体。

GBD Introduction

Heavy rare earth elements (HREE) such as Dy and Tb, are coated on the surface of magnets. After heat treatment at a suitable temperature, HREE are diffused into the magnet along the grain boundary, which increases coercivity significantly and decreases remanence slightly. GBD can reduce the consumption of HREE in magnets and enable the possibility to manufacture higher performance magnets meanwhile.

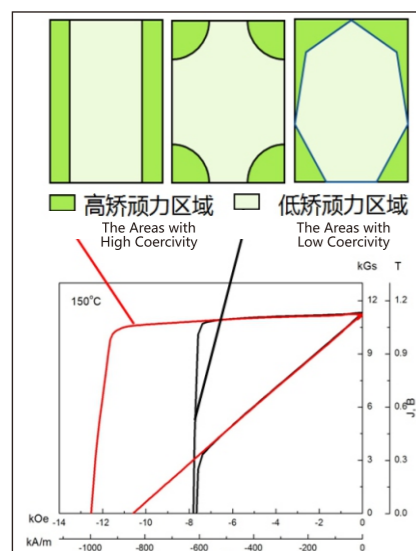


选区扩散工艺简介

根据电机中磁体不同位置抗退磁能力的要求，在同一片磁体的不同区域涂覆不同量的重稀土元素，获得不同区域具有不同矫顽力的磁体。在磁体边角的易退磁区域获得高的矫顽力，在磁体中心不易退磁的区域获得较低的矫顽力。高矫顽力区域的形状可根据电机设计要求确定。此工艺能在晶界扩散工艺基础上进一步减少重稀土的用量。

Sectional GBD Introduction

With the different requirements of demagnetization ability of magnets at different positions, specific amounts of heavy rare earth are coated on the specific areas of the same magnet to achieve one magnet with different coercivity. The shape of the high/low coercivity areas can be designed as the motor requirements. The amount of HRE can be further reduced based on the general GBD technology.

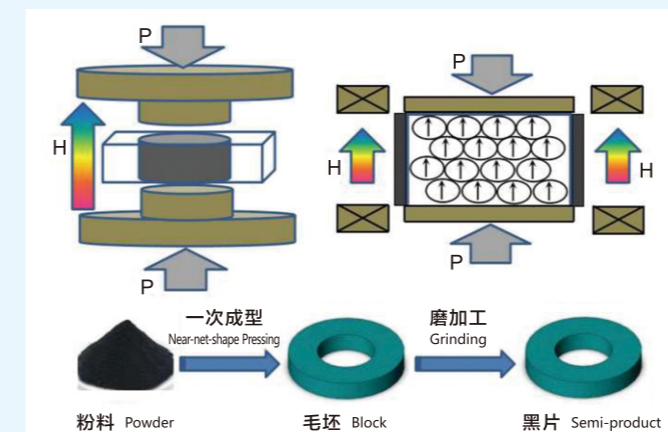


平行压一次成型工艺简介

是指取向方向与压制方向平行的成型生产方式。此工艺取向成型时生产的压坯形状近似于最终产品，且不需要等静压工序，烧结出的毛坯接近于最终产品的形状和尺寸。

Near-net-shape Pressing Introduction

Orientation is parallel to the direction of pressing, without isostatic pressing. Both green block and sintered block are near net shape as the finished product.



平行压一次成型示意图
Schematic Diagram of Near-net-shape Pressing

(BH)max / MGOe	B _r / kGs	N	M	H	SH	UH	EH	AH
55	1.46~1.52							
52	1.42~1.47							
50	1.39~1.44							
48	1.37~1.42							
45	1.32~1.36							
42	1.28~1.32							
40	1.25~1.29							
38	1.22~1.26							
35	1.17~1.22							
33	1.13~1.17							
30	1.08~1.13							
28	1.04~1.09							
H _{cj} 最小值 / kOe		12	14	17	20	25	30	34

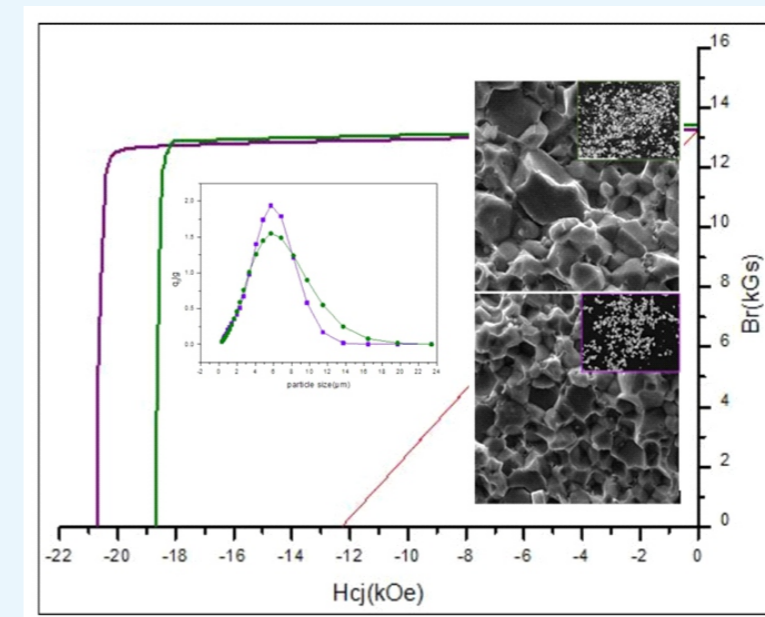
平行压一次成型适合的牌号 (蓝色区域)
Applicable Grade for Near-net-shape Pressing (blue area)

特点

产品磁偏角小，可达到 $\leq 2^\circ$ ；坯料尺寸精度高、加工工序少、生产周期短；材料利用率高；仅适合薄片产品，压制时生产效率较低；产品剩磁比垂直压产品低5%。

Characteristics

Less angular deviation-less than 2 degrees, higher accuracy of block size, less machining processes, reduced lead time and higher yielding rate. Only applicable for slice magnets. Lower pressing productivity. 5% remanence less compared with vertical pressing based on the same powder.



无重稀土工艺简介

合理地设计烧结钕铁硼磁体的成分，调控磁粉粒度大小及分布，控制磁体的晶粒尺寸、晶界相分布等微观结构及成分，实现高性能的无重稀土烧结钕铁硼磁体。

HRE Free Introduction

HRE free magnets with high performance are achieved by reasonable composition design, particle size and distribution control, and microscopic structure and composition optimization (such as grain size control and grain boundary phase distribution etc.).

常见粘结永磁体室温下 (20°C)磁性能

Magnetic performance of bonded magnets at room temperature(20°C)

压制成型NdFeB磁性能 Magnetic Properties of press molding NdFeB															
牌号 Grade		BNP-3	BNP-4	BNP-5	BNP-6	BNP-7	BNP-8	BNP-8A	BNP-9	BNP-9H	BNP-10	BNP-11	BNP-12D	BNP-12L	BNP-13L
剩余磁感应强度Br Residual Induction	mT	400-510	460-520	470-550	550-600	570-650	620-670	620-680	650-700	650-700	670-720	680-740	720-770	730-770	780-830
	KGs	4.0-5.1	4.6-5.2	4.7-5.5	5.5-6.0	5.7-6.5	6.2-6.7	6.2-6.8	6.5-7.0	6.5-7.0	6.7-7.2	6.8-7.4	7.2-7.7	7.3-7.7	7.8-8.3
矫顽力Hcb Coercive Force	KA/m	240-320	240-320	240-360	320-376	320-408	400-456	400-480	416-456	432-488	424-480	400-480	440-520	368-448	400-480
	KOe	3.0-4.0	3.0-4.0	3.0-4.5	4.0-4.7	4.0-5.1	5.0-5.7	5.0-6.0	5.2-5.7	5.4-6.1	5.3-6.0	5.0-6.0	5.5-6.5	4.6-5.6	5.0-6.0
内禀矫顽力Hcj Intrinsic Coercive Force	kA/m	504-720	504-720	520-720	560-720	560-720	640-800	1040-1280	680-800	920-1040	640-800	640-800	720-880	520-640	480-640
	KOe	6.3-9.0	6.3-9.0	6.5-9.0	7.0-9.0	7.0-9.0	8.0-10.0	13.0-16.0	8.5-10.0	11.5-13.0	8.0-10.0	8.0-10.0	9.0-11.0	6.5-8.0	6.0-8.0
最大磁能积(BH)max Max. Energy Product	KJ/m³	24-34	32-38	40-50	45-54	52-64	64-76	65-73	68-76	72-82	76-84	80-88	88-96	80-88	88-104
	MGOe	3.0-4.2	4.0-4.8	5.0-6.2	5.8-6.8	6.5-8.0	8.0-9.5	8.2-9.2	8.5-9.5	9.0-10.2	9.5-10.5	10.0-11.0	11.0-12.0	10.0-11.0	11.0-13.0

注射成型NdFeB磁性能 Magnetic Properties of injection molding NdFeB											
牌号 Grade		BNI-2.5	BNI-3	BNI-4	BNI-5	BNI-6	BNI-7	BNI-5SR	BNI-6	BNI-6SR	
基体 Resin Binder		尼龙十二 PA12					聚苯硫醚 PPS				
剩余磁感应强度Br Residual Induction	mT	350-400	350-450	400-500	450-550	500-600	550-650	450-550	500-550	500-600	
	KGs	3.5-4.0	3.5-4.5	4.0-5.0	4.5-5.5	5.0-6.0	5.5-6.5	4.5-5.5	5.0-5.5	5.0-6.0	
矫顽力Hcb Coercive Force	KA/m	200-280	224-304	240-320	304-360	328-384	360-416	320-440	320-400	320-440	
	KOe	2.5-3.5	2.8-3.8	3.0-4.0	3.8-4.5	4.1-4.8	4.5-5.2	4.0-5.5	4.0-5.0	4.0-5.5	
内禀矫顽力Hcj Intrinsic Coercive Force	kA/m	320-520	400-656	560-720	640-800	640-800	640-800	880-1040	720-800	880-1040	
	KOe	4.0-6.5	5.0-8.2	7.0-9.0	8.0-10.0	8.0-10.0	8.0-10.0	11.0-13.0	9.0-10.0	11.0-13.0	
最大磁能积(BH)max Max. Energy Product	KJ/m³	20-28	22-30	29-37	38-46	46-54	52-60	36-44	40-48	44-52	
	MGOe	2.5-3.5	2.7-3.7	3.6-4.6	4.7-5.7	5.7-6.7	6.5-7.5	4.5-5.5	5.0-6.0	5.5-6.5	

注射成型各向异性铁氧体&钕铁硼磁性能 Magnetic Properties of injection molding anisotropic Ferrite & NdFeB								
牌号 Grade		AFI-1.5	AFI-1.8	AFI-1.9	AFI-2.0	ANI-12	ANI-15	
基体 Resin Binder		PA6 + Ferrite				Pa12 + NdFeB		
剩余磁感应强度Br Residual Induction	mT	225-265	260-300	265-305	275-315	700-800	770-850	
	KGs	2.25-2.65	2.60-3.00	2.65-3.05	2.75-3.15	7.0-8.0	7.7-8.5	
矫顽力Hcb Coercive Force	KA/m	160-200	175-215	180-220	185-225	445-500	480-560	
	KOe	2.00-2.50	2.19-2.69	2.25-2.75	2.31-2.81	5.6-6.3	6.0-7.0	
内禀矫顽力Hcj Intrinsic Coercive Force	kA/m	230-270	215-250	220-255	225-260	915-995	1040-1200	
	KOe	2.87-3.37	2.69-3.15	2.75-3.20	2.81-3.25	11.5-12.5	13-15	
最大磁能积(BH)max Max. Energy Product	KJ/m³	11.2-12.8	14.4-16.0	15.2-16.8	16-17.6	92-100	104-116	
	MGOe	1.40-1.60	1.8-2.0	1.9-2.1	2.0-2.2	11.5-12.5	13-14.5	

压制粘结磁体工艺流程及产品展示 Compression Process and Products



注塑粘结磁体工艺流程及产品展示 Injection Process and Products



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Address: No. 211 Mujin Road, Ningbo, Zhejiang Province.

拼接磁钢组件

Laminated magnet assembly

特点：绝缘电阻 $\geq 1M\Omega$
 粘接强度 $\geq 8MPa$
 胶层厚度 $0.05\sim 0.2mm$
 磁钢单元厚度 $\geq 1mm$

应用：新能源汽车驱动电机
 轨道交通驱动电机
 高功率力矩电机

Features: Resistance $\geq 1M\Omega$
 Shear strength $\geq 8MPa$
 Bonding gap $0.05\sim 0.2mm$
 Laminated thickness $\geq 1mm$

Application: EV traction motor
 Mass Rail Transit motor
 High torque motor



3C磁钢组件

3C magnet assembly

特点：Halbach阵列或N/S交替排列
 粘接强度 $\geq 4Mpa$
 重量 $0.2\sim 10g$

应用：3C产品震动马达
 声学元件
 3C产品磁吸件

Features: Halbach array or Alternate N/S array
 Shear strength $\geq 4MPa$
 $0.2\sim 10g$ in weight

Application: 3C product vibration motor
 Acoustic components
 3C product magnetic suction parts



直线电机磁钢组件

Linear motor magnet assembly

特点：粘接强度 $\geq 8MPa$
 平面度 $\leq 0.15mm/300mm$
 位置度 $\leq 0.2mm$

应用：半导体加工设备
 包装机械
 数控机床

Features: Shear strength $\geq 8MPa$
 Flatness $\leq 0.15\text{ mm} / 300\text{ mm}$
 Position tolerance $\leq 0.2mm$

Application: Semiconductor processing equipment
 Packaging machinery
 CNC machine tools



转子磁钢组件

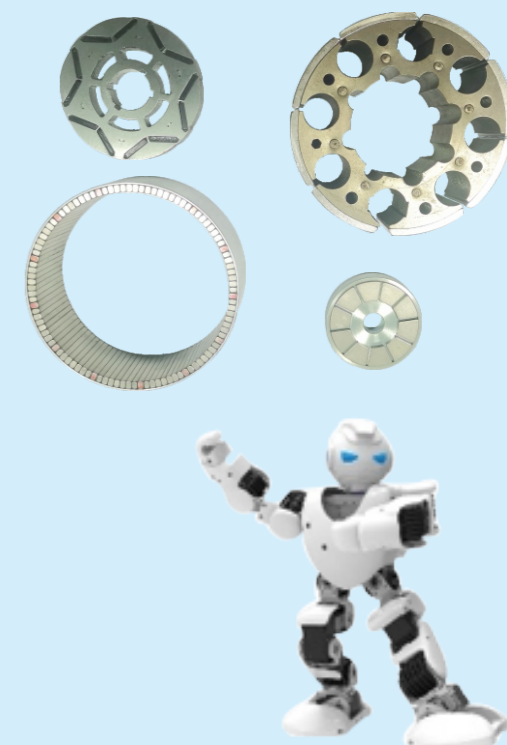
Motor rotor magnet assembly

特点：Halbach阵列或N/S交替排列
 同轴度 $\leq 0.1mm$
 粘接强度 $\geq 8Mpa$
 位置度 $\leq 0.15mm$

应用：伺服电机
 机器人关节电机
 力矩电机/航空电机

Features: Halbach array or Alternate N/S array
 Concentricity $\leq 0.1mm$
 Shear strength $\geq 8Mpa$
 Position tolerance $\leq 0.15mm$

Application: Servo motor
 Robot joint motor
 Torque motor/Aviation motor



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公司拥有国家企业技术中心、浙江省重点企业研究院和博士后工作站等科研平台，拥有浙江省企业重点技术创新团队“韵升高性能稀土永磁材料及应用创新团队”，团队包括博士9人、硕士30人、高级职称21人，是一支以博士、硕士、高级工程师为核心，经验丰富的烧结钕铁硼永磁材料专业研发队伍，不断开发高性能烧结铁硼永磁产品。公司配备了各类世界先进的检测设备：电感耦合等离子体发射光谱仪、氢氧分析仪、电子扫描显微镜、永磁材料精密测量系统、脉冲场磁测仪、薄片磁测仪、高度加速老化试验箱、电子万能试验机、高精度光栅测长仪等。

The company has certain research platforms such as National Enterprise Technology Center, Zhejiang Key Enterprise Research Institute, Postdoctoral Workstation, and has a provincial innovation team named "Yunsheng Innovation Team for High-performance Rare Earth Permanent Magnets and Application". This team is rich-experienced and professional, mainly consisting of doctors, masters and senior engineers (9 doctors, 30 masters and 21 senior titles), which are devoted to the continuous development of high-performance magnets. The company is equipped with the world's advanced testing equipment: ICP-OES, Hydrogen & Oxygen Analyzer, Scanning Electron Microscopy (SEM), Variable Temperature Hystersigraph, Pulsed Field Magnetometer, Magnetometer for Slice Magnet, Highly Accelerated Stress Tester (HAST), Electromechanical Universal Testing Machine and High Precision Calibration System, etc.



研发团队 The R&D Team



电感耦合等离子体发射光谱仪
ICP-OES



氢氧分析仪
Hydrogen & Oxygen Analyzer



电子扫描显微镜
Scanning Electron Microscopy (SEM)



变温磁测仪
Variable Temperature Hystersigraph



电子万能试验机
Electromechanical Universal Testing Machine



高精度光栅测长仪
High Precision Calibration System



脉冲场磁测仪
Pulsed Field Magnetometer



薄片磁测仪
Pulsed Field Magnetometer for thin magnet



高速老化试验箱
Highly Accelerated Stress Tester (HAST)



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