THINK CHANGE
THINK MAGNETS
THINK HPMG

HANGZHOU PERMANENT MAGNET GROUP

HPMG
HEADQUARTER - CHINA

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Company

Hangzhou
Permanent Magnet
Group Co.Ltd
(HPMG)

1980

Established

100%

Ownership:
100% private owned

818

Staff: 818
(including 180
engineers)

ISO 9001: 2015
ISO 45001:2018
ISO14064-1:2018

ISO 14001:2015
IATF 16949:2016

Environmental, health and safety policy

HPMG fulfills its corporate social responsibility, promises not to use conflict minerals, does not employ child labor, does not use harmful substances, protects the environment andadheres to sustainable development.

1980 State Owned Xiaoshan Magnet Factory

1994 Found of Hangzhou Permanent Magnet Group

1998 ISO9001certified

2000 Rewarded as "National High-tech Enterprise"

2002 ISO/TS 16949 certified

2009 Introduction of Plastic injection Bonded Magnets in HPMG

2014 HPMG European Sales and Service GmbH founded

2016 NdFeB production line expanded GBD in mass production

2018 ISO 14064-1:2018 certified "greenhouse gas verification"

2020

1996 The production of Sintered NdFeB started

1999 Production of SmCostarted

2001 Management buyout, 100% privatised

2006 QS 9000 certified

2009 ISO 14000 certified WonThe "Zhejiang Province Class Technology Center"

2014 Certified by OHSAS 18001:2007 Assembly &Overmolding plant established

2015 Clean Room completed New standard for EV,HEV, 48 V prdoucts

2017 R&D Center founded Post-Doctoral Research Center founded Coating line started

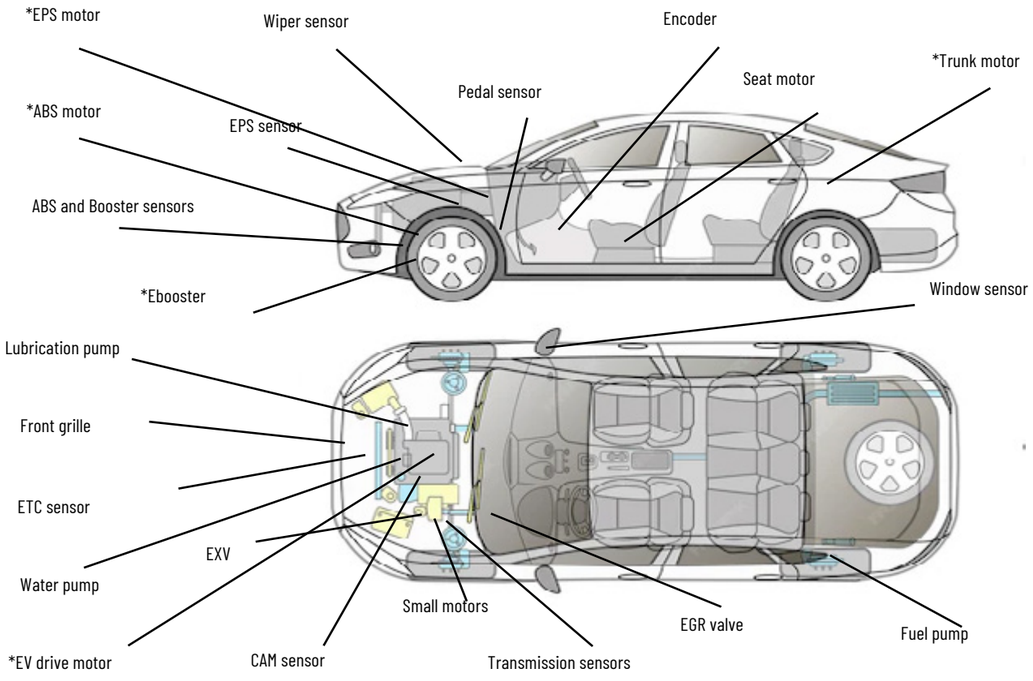
2019 GBD Automatic Production line started

2023

Application Introduction: NdFeB permanent magnetic material is widely used in various fields, including wind power, automotive manufacturing, energy-saving variable frequency air conditioner, energy-saving elevator, robotics and intelligent manufacturing, etc.

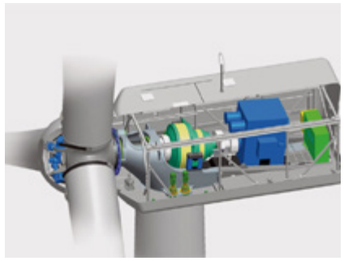
ELECTRIC VEHICLES AND AUTO PARTS

NdFeB permanent magnets can improve motor power density and therefore have a higher operating efficiency. They are widely used in NEV (New Energy Vehicles) Drivetrains, ABS (Anti-lock Braking Systems) and EPS (Electronic Power Steering) applications. Bonded Magnets are typically used in small power actuators and various magnetic sensors.



Remark: the one marked with * use sintered magnet

ENERGY-SAVING VARIABLE FREQUENCY AIR CONDITIONER



WIND POWER

ENERGY SAVING ELEVATOR.

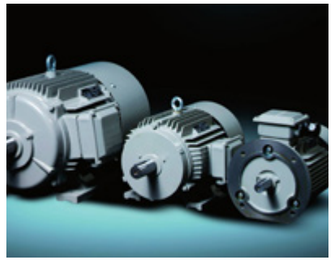
INDUSTRIAL ENERGY-SAVING MOTOR

3C

RAIL TRANSIT

Nuclear magnetic resonance (Equipment motor)

Aerospace



Motor

Magnetic Component Applications

Magnetic components









Magnet overmolding/injection molding









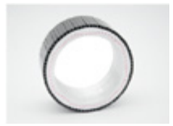
Magnetic Assembly

Overmolding

Help customer to save supply chain management cost by offering magnet and plastic housing together.
Competences: angle deviation control, cleanness control, magnetization control.

Gluing

Experienced in gluing magnets with varieties of customized materials.
Competences: master in offering appropriate gluing solutions.
Self-designed automatic production line, including assembly, inspection, packaging.
Competences: Customized designed, control the amount of glue and gluing position accurately.

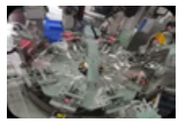



Cleaning Standard Service

Implemented by automatic ultrasonic cleaning, dying, cleanliness test in clean room.
All the products available.

Automatic production line design and production development ability

The design of automatic production line needs to be familiar with the product production process and product characteristics on the basis of the design of automatic production line, while the product production process is also a complete embodiment of the product assembly process, each process in the product production process will be detailed requirements and descriptions of each step of the product production, and the corresponding specifications and standards.



Excellent processing ability

We have industry-leading processing equipment, CNC machining has higher precision. With computer-controlled machines, human error can be minimized, resulting in a consistent and accurate final product. CNC machining has a wide range of uses and can produce complex shapes and complex design products to meet customer needs.

Rich experience in metal assembly (hot pressing, cold pressing, laser welding, etc.)

The fitting of hole and shaft interference is a practical problem often encountered in the installation and maintenance of mechanical equipment. In order to meet our customers' various shaft types for different purposes, we constantly test and develop solutions. For the installation of interference fit parts, we choose different methods such as pressing assembly, low temperature assembly and heating assembly.

Professional product planning ability (magnetic circuit simulation, mode flow analysis)

For the initial design of customers' products, we have professional technical engineers, who are familiar with various digital simulation software, and cooperate with customers to solve magnetic problems.

Third party procurement supporting capability

In the production process of customers' component products, we have accumulated a number of excellent supply chain enterprises, which can purchase reliable quality spare parts.


Inconel 718 Sleeve


Carbon Sleeve

MATERIAL TYPE

Plastic (PA6 PA12 PPS)

SURFACE PROTECTION

Not necessary

ORIENTATION & MAGNETIZATION

Single Pole / Multiple Poles (Halbach,Sinusoidal, Skewed, Trapezoidal, Discrete)

TEMPERATURE BEHAVIOR

Br TEMPERATURE COEFFICIENT	%/℃	~-0.19
HcJ TEMPERATURE COEFFICIENT	%/℃	~-0.13

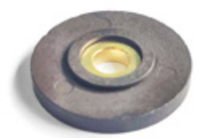
*The temperature coefficients are nominal reference values only.

They can vary for different temperatures and don't need to be linear.

"*The maximum operating temperature is depending on the magnet shape, size and on the specific application.

PHYSICAL AND MECHANICAL TYPICAL PROPERTIES .

CURIE TEMPERATURE	℃	450
RELATIVE PERMEABILITY	μr	n.a.
SATURATION FIELD	kOe	n.a.
ELECTRICAL RESISTIVITY	Ωm	n.a.
FLEXURAL STRENGTH	MPa	92-165
TENSILE STRENGTH	MPa	45-99
IMPACT STRENGTH	kJ/m^2	12-23.1
ROCKWELL HARDNESS	HV	~65
FLEXURAL TEMPERATURE	℃	n.a.
THERMAL CONDUCTIVITY	kcal/m/hr/℃	n.a.



Typical Magnetic Properties of Injected Ferrite Magnet Grades at 20℃

Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
	mT	kGs	kA/m	kOe	kA/m	kOe	kJ/m^3	MGOe	α Br %/℃	β Hcj %/℃	℃
ZF10/22 PA6	230	2.300	169	2.120	224	2.810	10.50	1.31	-0.19	0.13	-40-120
ZF15/21 PA6	278	2.780	182	2.280	218	2.740	15.20	1.90	-0.19	0.13	-40-120
ZF16/24PA6	285	2.85	190	2.405	233	2.929	16	2.01	-0.19	0.13	-40-120
ZF18/20 PA6	308	3.080	183	2.300	207	2.600	18.70	2.35	-0.19	0.13	-40-120
ZF10/26 PA12	227	2.270	172	2.150	260	3.250	10.20	1.277	-0.19	0.13	-40-120
ZF15/23 PA12	278	2.780	190	2.386	238	2.985	15.20	1.902	-0.19	0.13	-40-120
ZF16/22 PA12	289	2.890	190	2.390	229	2.880	16.40	2.06	-0.19	0.13	-40-120
ZF16/23 PA12	293	2.932	187	2.335	228	2.852	16.80	2.109	-0.19	0.13	-40-120
ZF13/20 PPS	265	2.650	226	1.800	220	2.750	13.80	1.725	-0.19	0.13	-40-150

Note: Magnetic properties given are for reference only. Actual properties of a magnet depend on geometry and dimensions of the magnet.

Working temperatures given are for reference only. Maximum working temperature of a material depends on duration also.

Please contact us for more information.

MATERIAL TYPE

Plastic (PA6 PA12 PPS)

SURFACE PROTECTION

Not necessary

ORIENTATION & MAGNETIZATION

Single Pole / Multiple Poles (Halbach, Sinusoidal, Skewed, Trapezoidal, Discrete)

TEMPERATURE BEHAVIOR

Br TEMPERATURE COEFFICIENT	%/℃	~-0.14
HcJ TEMPERATURE COEFFICIENT	%/℃	~-0.4-0.52

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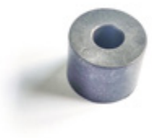
They can vary for different temperatures and don't need to be linear.

"*The maximum operating temperature is depending on the magnet shape, size and on the specific application.

PHYSICAL AND MECHANICAL TYPICAL PROPERTIES.

CURIE TEMPERATURE	℃	310
RELATIVE PERMEABILITY	μr	n.a.
SATURATION FIELD	kOe	n.a.
ELECTRICAL RESISTIVITY	Ωm	n.a.
FLEXURAL STRENGTH	MPa	71.9-119.6
TENSILE STRENGTH	MPa	36.6-63.4
IMPACT STRENGTH	kJ/m^2	5.6-26.4
ROCKWELL HARDNESS	HV	~65
FLEXURAL TEMPERATURE	℃	n.a.
THERMAL CONDUCTIVITY	kcal/m/hr/℃	n.a.



Typical Magnetic Properties of Injected NdFeB Magnet Grades at 20℃

Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
	mT	kGs	kA/m	kOe	kA/m	kOe	kJ/m^3	MGOe	α Br %/℃	β Hcj %/℃	℃
ZN27/73 PA12	390	3.900	279	3.500	736	9.250	27.10	3.40	-0.14	-0.36	-40-120
ZN35/69 PA12	454	4.540	305	3.830	691	8.680	35.00	4.40	-0.14	-0.36	-40-120
ZN43/69 PA12	507	5.070	338	4.250	693	8.710	43.00	5.40	-0.14	-0.36	-40-120
ZN50/72 PA12	556	5.563	362	4.550	717	9.010	50.10	6.300	-0.14	-0.36	-40-120
ZN55/72 PA12	582	5.815	381	4.788	718	9.028	54.90	6.900	-0.14	-0.36	-40-120
ZN48/95 PA12	531	5.310	368	4.623	954	11.983	48.50	6.10	-0.13	-0.4	-40-120
ZN62/74 PA12	614	6.140	409	5.140	746	9.370	62.10	7.800	-0.14	-0.44	-40-120
ZN59/70 PA12	619	6.190	385	4.840	704	8.850	59.70	7.600	-0.14	-0.44	-40-150
ZN66/53 PA12	676	6.760	363	4.566	529	6.653	66.00	8.30	-0.12	-0.52	-40-120
ZN35/67 PPS	452	4.515	300	3.767	671	8.431	35.00	4.40	-0.14	-0.44	-40-150
ZN40/69 PPS	492	4.920	322	4.050	693	8.710	39.80	5.00	-0.14	-0.44	-40-150
ZN47/69 PPS	533	5.330	347	4.360	689	8.653	46.90	5.900	-0.14	-0.44	-40-150
ZN47/89 PPS	525	5.250	358	4.500	892	11.210	47.00	5.900	-0.13	-0.4	-40-150

Note: Magnetic properties given are for reference only. Actual properties of a magnet depend on geometry and dimensions of the magnet.

Working temperatures given are for reference only. Maximum working temperature of a material depends on duration also.

Please contact us for more information.

MATERIAL TYPE

Plastic (PA6 PA12)

SURFACE PROTECTION

Not necessary

ORIENTATION & MAGNETIZATION

Single Pole / Multiple Poles (Halbach Sinusoidal, Skewed, Trapezoidal, Discrete)

TEMPERATURE BEHAVIOR

Br TEMPERATURE COEFFICIENT	℃	-0.11
HcJ TEMPERATURE COEFFICIENT	℃	-0.35

*The temperature coefficients are nominal reference values only.

They can vary for different temperatures and don't need to be linear.

"*The maximum operating temperature is depending on the magnet shape, size and on the specific application.

PHYSICAL AND MECHANICAL TYPICAL PROPERTIES .

CURIE TEMPERATURE	℃	n.a.
RELATIVE PERMEABILITY	μr	n.a.
SATURATION FIELD	kOe	n.a.
ELECTRICAL RESISTIVITY	Ωm	n.a.
FLEXURAL STRENGTH	MPa	60-78
TENSILE STRENGTH	MPa	30-47.5
IMPACT STRENGTH	kJ/m^2	8-16.5
ROCKWELL HARDNESS	HV	~65
FLEXURAL TEMPERATURE	℃	n.a.
THERMAL CONDUCTIVITY	kcal/m/hr/℃	n.a.

Typical Magnetic Properties of Injected SmFeN Magnet Grades at 20℃

Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
	mT	kGs	kA/m	kOe	kA/m	kOe	kJ/m^3	MGOe	α Br %/℃	β Hcj %/℃	℃
ZS31/43 PA12	435	4.35	224	2.80	437.5	5.00	31.50	3.95	-0.11	-0.35	-40-120
ZS51/47 PA12	565	5.65	348	4.00	473	6.05	51.50	6.40	-0.04	-0.44	-40-120
ZS70/47 PA12	610	6.10	310	3.80	471	5.85	69.70	7.50	-0.04	-0.44	-40-120
ZS84/58 PA12	700	7.00	444	5.50	580	7.55	84.00	10.00	-0.07	-0.5	-40-120

Note: Magnetic properties given are for reference only. Actual properties of a magnet depend on geometry and dimensions of the magnet.

Working temperatures given are for reference only. Maximum working temperature of a material depends on duration also.

Please contact us for more information.

MATERIAL TYPE

Metallic Alloy

SURFACE PROTECTION

Ni / NiCuNi / NiCuSn / Zinc / Epoxy / Passivation / Rilsan / SSR / Aluminum / Parylene

ORIENTATION

Axial / Diametral / Radial

MAGNETIZATION

Single or multiple poles on the functional surface

TEMPERATURE BEHAVIOR

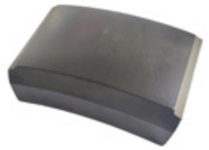
Br TEMPERATURE COEFFICIENT*	%/℃	-0.090/-0.124
HcJ TEMPERATURE COEFFICIENT*	%/℃	-0.45/-0.82

*The temperature coeffcients are nominal reference values only. They can vary for different temperatures and don't need to be linear.

**The maximum operating temperature is depending on the magnet shape, size and on the specific application.

PHYSICAL AND MECHANICAL TYPICAL PROPERTIES

CURIE TEMPERATURE	℃	> 310
RECOIL PERMEABILITY	μr	~1.05
SATURATION FIELD	kOe	30~60
ELECTRICAL RESISTIVITY	Ωm	~150x10^{-8} 10^{-8}
COMPRESSIVE STRENGTH	N/mm^2	~1.050
DENSITY	g/cm^2	~7.5
FLEXURAL STRENGTH	N/mm^2	~250
TENSILE STRENGTH	N/mm^2	~75
VICKERS HARDNESS	HV	~600
YOUNG'S MODULUS	N/mm^2	~160x10^2
SPECIFIC HEAT	kcal/kg/℃	~0.12
THERMAL CONDUCTIVITY	kcal/m/hr/℃	~7.7
THERMAL EXPANSION COEF ⊥ c	10-6/℃	~-1.5
THERMAL EXPANSION COEF //c	10-6/℃	~6.5

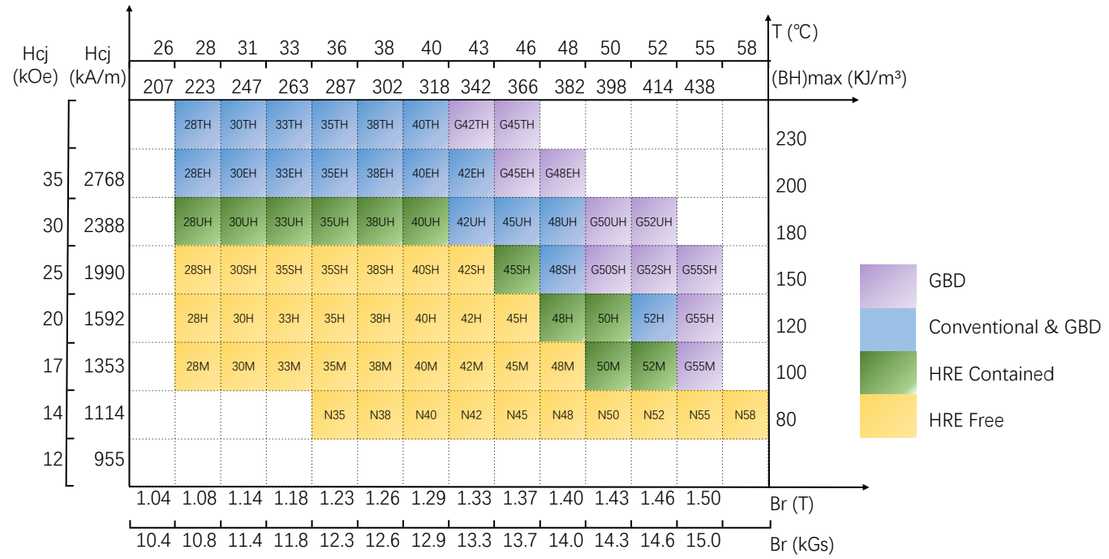


Typical Magnetic Properties of NdFeB Magnet Grades at 20℃

GB/T 13560-2017 Nomenclature	Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kA/m	kOe	kJ/m^3	MGOe	α Br %/℃	β Hcj %/℃	℃
S-NdFeB 240/135	30H	1.08-1.14	10.8-11.4	≥827	≥10.4	≥1353	≥17	223-247	28-31	0.09-0.120	0.55-0.70	120
S-NdFeB 260/135	33H	1.14-1.18	11.4-11.8	≥860	≥10.8	≥1353	≥17	247-271	31-34	0.09-0.120	0.55-0.70	120
S-NdFeB 280/135	35H	1.18-1.23	11.8-12.3	≥899	≥11.3	≥1353	≥17	263-287	33-36	0.09-0.120	0.55-0.70	120
S-NdFeB 300/135	38H	1.23-1.26	12.3-12.6	≥923	≥11.6	≥1353	≥17	287-310	36-39	0.09-0.120	0.55-0.70	120
S-NdFeB 320/135	40H	1.26-1.29	12.6-12.9	≥947	≥11.9	≥1353	≥17	302-326	38-41	0.09-0.120	0.55-0.70	120
S-NdFeB 335/135	42H	1.29-1.33	12.9-13.3	≥971	≥12.2	≥1353	≥17	318-342	40-43	0.09-0.120	0.55-0.70	120
S-NdFeB 360/135	45H	1.33-1.37	13.3-13.7	≥1003	≥12.6	≥1353	≥17	342-366	43-46	0.09-0.120	0.55-0.70	120
S-NdFeB 380/135	48H	1.37-1.40	13.7-14.0	≥1035	≥13.0	≥1353	≥17	366-390	46-49	0.09-0.120	0.55-0.70	120
S-NdFeB 400/135	50H	1.39-1.43	13.9-14.3	≥1058	≥13.3	≥1353	≥17	374-406	47-51	0.09-0.120	0.55-0.70	120
S-NdFeB 415/127	52H	1.42-1.46	14.2-14.6	≥1074	≥13.5	≥1353	≥17	390-414	49-52	0.09-0.120	0.55-0.70	120
S-NdFeB 430/127	54H	1.45-1.49	14.5-14.9	≥1074	≥13.5	≥1274	≥16	406-438	51-55	0.09-0.120	0.55-0.70	110
S-NdFeB 240/159	30SH	1.08-1.14	10.8-11.4	≥827	≥10.4	≥1592	≥20	223-247	28-31	0.09-0.120	0.50-0.65	150
S-NdFeB 260/159	33SH	1.14-1.18	11.4-11.8	≥860	≥10.8	≥1592	≥20	247-271	31-34	0.09-0.120	0.50-0.65	150
S-NdFeB 280/159	35SH	1.18-1.23	11.8-12.3	≥899	≥11.3	≥1592	≥20	263-287	33-36	0.09-0.120	0.50-0.65	150
S-NdFeB 300/159	38SH	1.23-1.26	12.3-12.6	≥923	≥11.6	≥1592	≥20	287-310	36-39	0.09-0.120	0.50-0.65	150
S-NdFeB 320/159	40SH	1.26-1.29	12.6-12.9	≥947	≥11.9	≥1592	≥20	302-326	38-41	0.09-0.120	0.50-0.65	150
S-NdFeB 335/159	42SH	1.29-1.33	12.9-13.3	≥971	≥12.2	≥1592	≥20	318-342	40-43	0.09-0.120	0.50-0.65	150
S-NdFeB 360/159	45SH	1.33-1.37	13.3-13.7	≥1003	≥12.6	≥1592	≥20	342-366	43-46	0.09-0.120	0.50-0.65	150
S-NdFeB 380/159	48SH	1.37-1.40	13.7-14.0	≥1035	≥13.0	≥1592	≥20	366-390	46-49	0.09-0.120	0.50-0.65	150
S-NdFeB 400/159	50SH	1.39-1.43	13.9-14.3	≥1058	≥13.3	≥1592	≥20	374-406	47-51	0.09-0.120	0.50-0.65	150
S-NdFeB 415/159	52SH	1.42-1.46	14.2-14.6	≥1074	≥13.5	≥1512	≥19	390-414	49-52	0.09-0.120	0.50-0.65	140
S-NdFeB 220/199	28UH	1.04-1.09	10.4-10.9	≥780	≥9.8	≥1990	≥25	207-231	26-29	0.09-0.110	0.50-0.60	180
S-NdFeB 240/199	30UH	1.08-1.14	10.8-11.4	≥827	≥10.4	≥1990	≥25	223-247	28-31	0.09-0.110	0.50-0.60	180
S-NdFeB 260/199	33UH	1.14-1.18	11.4-11.8	≥860	≥10.8	≥1990	≥25	247-271	31-34	0.09-0.110	0.50-0.60	180
S-NdFeB 280/199	35UH	1.18-1.23	11.8-12.3	≥899	≥11.3	≥1990	≥25	263-287	33-36	0.09-0.110	0.50-0.60	180
S-NdFeB 300/199	38UH	1.23-1.26	12.3-12.6	≥923	≥11.6	≥1990	≥25	287-310	36-39	0.09-0.110	0.50-0.60	180
S-NdFeB 320/199	40UH	1.26-1.29	12.6-12.9	≥947	≥11.9	≥1990	≥25	302-326	38-41	0.09-0.110	0.50-0.60	180
S-NdFeB 335/199	42UH	1.29-1.33	12.9-13.3	≥971	≥12.2	≥1990	≥25	318-342	40-43	0.09-0.110	0.50-0.60	180
S-NdFeB 360/199	45UH	1.33-1.37	13.3-13.7	≥1003	≥12.6	≥1990	≥25	342-366	43-46	0.09-0.110	0.50-0.60	180
S-NdFeB 380/199	48UH	1.37-1.40	13.7-14.0	≥1035	≥13.0	≥1910	≥24	366-390	46-49	0.09-0.110	0.50-0.60	170

GB/T 13560-2017 Nomenclature	Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kA/m	kOe	kJ/m³	MGOe	α Br %/℃	β Hcj %/℃	℃
S-NdFeB 220/239	28EH	1.04-1.09	10.4-10.9	≥780	≥9.8	≥2388	≥30	207-231	26-29	0.09-0.110	0.45-0.55	200
S-NdFeB 240/239	30EH	1.08-1.14	10.8-11.4	≥827	≥10.4	≥2388	≥30	223-247	28-31	0.09-0.110	0.45-0.55	200
S-NdFeB 260/239	33EH	1.14-1.18	11.4-11.8	≥860	≥10.8	≥2388	≥30	247-271	31-34	0.09-0.110	0.45-0.55	200
S-NdFeB 280/239	35EH	1.18-1.23	11.8-12.3	≥899	≥11.3	≥2388	≥30	263-287	33-36	0.09-0.110	0.45-0.55	200
S-NdFeB 300/239	38EH	1.23-1.26	12.3-12.6	≥923	≥11.6	≥2388	≥30	287-310	36-39	0.09-0.110	0.45-0.55	200
S-NdFeB 320/239	40EH	1.26-1.29	12.6-12.9	≥947	≥11.9	≥2388	≥30	302-326	38-41	0.09-0.110	0.45-0.55	200
S-NdFeB 335/239	42EH	1.29-1.33	12.9-13.3	≥971	≥12.2	≥2388	≥30	318-342	40-43	0.09-0.110	0.45-0.55	200
S-NdFeB 360/231	45EH	1.33-1.37	13.3-13.7	≥1003	≥12.6	≥2308	≥29	342-366	43-46	0.09-0.110	0.45-0.55	190
S-NdFeB 220/279	28TH	1.04-1.09	10.4-10.9	≥780	≥9.8	≥2786	≥35	207-231	26-29	0.09-0.110	0.40-0.50	230
S-NdFeB 240/279	30TH	1.08-1.14	10.8-11.4	≥827	≥10.4	≥2786	≥35	223-247	28-31	0.09-0.110	0.40-0.50	230
S-NdFeB 260/279	33TH	1.14-1.18	11.4-11.8	≥860	≥10.8	≥2786	≥35	247-271	31-34	0.09-0.110	0.40-0.50	230
S-NdFeB 280/279	35TH	1.18-1.23	11.8-12.3	≥899	≥11.3	≥2786	≥35	263-287	33-36	0.09-0.110	0.40-0.50	230
S-NdFeB 300/279	38TH	1.23-1.26	12.3-12.6	≥923	≥11.6	≥2786	≥35	287-310	36-39	0.09-0.110	0.40-0.50	230
S-NdFeB 320/279	40TH	1.26-1.29	12.6-12.9	≥947	≥11.9	≥2786	≥35	302-326	38-41	0.09-0.110	0.40-0.50	230
S-NdFeB 335/270	42TH	1.29-1.33	12.9-13.3	≥971	≥12.2	≥2706	≥34	318-34	40-43	0.09-0.110	0.40-0.50	220

	Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kA/m	kOe	kJ/m³	MGOe	α Br %/℃	β Hcj %/℃	℃
S-NdFeB 415/135	G-52H	1.43-1.46	14.3-14.6	≥1074	≥13.5	≥1353	≥17	398-422	50-53	0.11-0.13	0.60-0.70	120
S-NdFeB 437/135	G-55H	1.46-1.50	14.6-15.0	≥1098	≥13.8	≥1353	≥17	421-446	53-56	0.11-0.13	0.60-0.70	120
S-NdFeB 380/159	G-48SH	1.37-1.40	13.7-14.0	≥1035	≥13.0	≥1600	≥20	366-390	46-49	0.11-0.13	0.60-0.65	150
S-NdFeB 400/159	G-50SH	1.40-1.43	14.0-14.3	≥1058	≥13.3	≥1600	≥20	374-406	47-51	0.11-0.13	0.60-0.65	150
S-NdFeB 415/159	G-52SH	1.43-1.46	14.3-14.6	≥1074	≥13.5	≥1600	≥20	398-422	50-53	0.11-0.13	0.60-0.65	150
S-NdFeB 437/159	G-55SH	1.46-1.50	14.6-15.0	≥1098	≥13.8	≥1600	≥20	421-446	53-56	0.11-0.13	0.60-0.65	150
S-NdFeB 335/199	G-42UH	1.29-1.33	12.9-13.3	≥971	≥12.2	≥1990	≥25	318-342	40-43	0.11-0.12	0.50-0.60	180
S-NdFeB 360/199	G-45UH	1.33-1.37	13.3-13.7	≥1003	≥12.6	≥1990	≥25	342-366	43-46	0.11-0.12	0.50-0.60	180
S-NdFeB 380/199	G-48UH	1.37-1.40	13.7-14.0	≥1035	≥13.0	≥1990	≥25	366-390	46-49	0.11-0.12	0.50-0.60	180
S-NdFeB 400/199	G-50UH	1.40-1.43	14.0-14.3	≥1058	≥13.3	≥1990	≥25	374-406	47-51	0.11-0.12	0.50-0.60	180
S-NdFeB 415/199	G-52UH	1.43-1.46	14.3-14.6	≥1074	≥13.5	≥1990	≥25	398-422	50-53	0.11-0.12	0.50-0.60	180
S-NdFeB 260/239	G-33EH	1.14-1.18	11.4-11.8	≥860	≥10.8	≥2388	≥30	247-271	31-34	0.10-0.12	0.45-0.55	200
S-NdFeB 280/239	G-35EH	1.18-1.23	11.8-12.3	≥899	≥11.3	≥2388	≥30	263-287	33-36	0.10-0.12	0.45-0.55	200
S-NdFeB 300/239	G-38EH	1.23-1.26	12.3-12.6	≥923	≥11.6	≥2388	≥30	287-310	36-39	0.10-0.12	0.45-0.55	200
S-NdFeB 320/239	G-40EH	1.26-1.29	12.6-12.9	≥947	≥11.9	≥2388	≥30	302-326	38-41	0.10-0.12	0.45-0.55	200



GB/T 13560-2017 Nomenclature	Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kA/m	kOe	kJ/m³	MGOe	α Br %/℃	β Hcj %/℃	℃
S-NdFeB 335/239	G-42EH	1.29-1.33	12.9-13.3	≥971	≥12.2	≥2388	≥30	318-342	40-43	0.10-0.12	0.45-0.55	200
S-NdFeB 360/239	G-45EH	1.33-1.37	13.3-13.7	≥1003	≥12.6	≥2388	≥30	342-366	43-46	0.10-0.12	0.45-0.55	200
S-NdFeB 380/239	G-48EH	1.37-1.40	13.7-14.0	≥1035	≥13.0	≥2388	≥30	366-390	46-49	0.10-0.12	0.45-0.55	200
S-NdFeB 400/239	G-50EH	1.37-1.40	13.7-14.0	≥1035	≥13.0	≥2388	≥30	366-390	46-49	0.10-0.12	0.45-0.55	200
S-NdFeB 260/279	G-33TH	1.14-1.18	11.4-11.8	≥860	≥10.8	≥2785	≥35	247-271	31-34	0.095-0.11	0.42-0.52	230
S-NdFeB 280/279	G-35TH	1.18-1.23	11.8-12.3	≥899	≥11.3	≥2785	≥35	263-287	33-36	0.095-0.11	0.42-0.52	230
S-NdFeB 300/279	G-38TH	1.23-1.26	12.3-12.6	≥923	≥11.6	≥2785	≥35	287-310	36-39	0.095-0.11	0.42-0.52	230
S-NdFeB 320/279	G-40TH	1.26-1.29	12.6-12.9	≥947	≥11.9	≥2785	≥35	302-326	38-41	0.095-0.11	0.42-0.52	230
S-NdFeB 335/279	G-42TH	1.29-1.33	12.9-13.3	≥971	≥12.2	≥2785	≥35	318-342	40-43	0.095-0.11	0.42-0.52	230
S-NdFeB 360/279	G-45TH	1.33-1.37	13.3-13.7	≥1003	≥12.6	≥2706	≥34	342-366	43-46	0.095-0.11	0.42-0.52	230

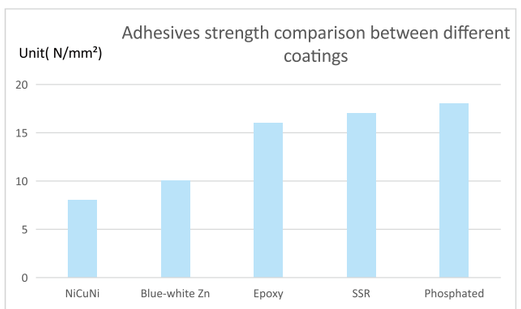
Notes :

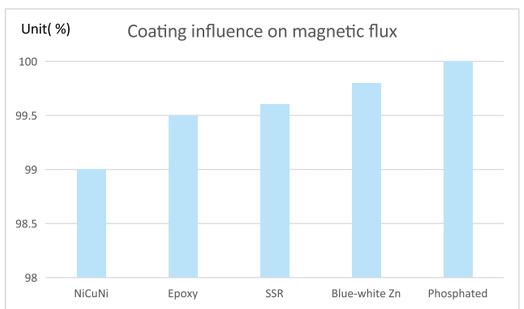
1. Conversion formula between SI&CGS: 1T=1000mT=10kGs, 1kOe=79.6kA/m, 1MGOe=7.96kJ/m³.
2. Tw refers to the temperature point, while the length/diameter ratio of the magent L/D=0.7, and the irreversible loss of the open magnetic flux ≤ 5% .
3. Testing temperture was 20℃ , the magnetic properties may vary due to product shape and size.
4. High Temperature BH curve available on demand.
5. The temperature coefficient is a typical value.
6. The above parameters are for reference only and are subject to customer requirements.

Surface Treatment Technology

Coatings of sintered NdFeB magnet

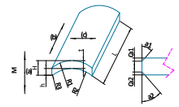
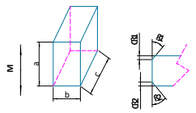
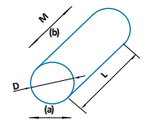
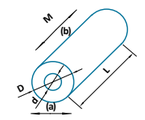
Coating types	Coating	Color	Minimum Coating Thickness	Neutral Salt Spray Test	Humidity Test	PCT Test	Recommended Temp
Galvanic NiCuNi(barrel plating)	NiCuNi	Silver	15μm	72h	500h	48h	＜ 200℃
Galvanic NiCuNi(rack plating)	NiCuNi	Silver	10μm	48h	500h	48h	＜ 200℃
Galvanic Zinc	Zn	Blue-white	4μm	48h	48h	N/A	＜ 200℃
Galvanic Color Zinc	CZn	Multi-color	4μm	48h	48h	N/A	＜ 200℃
NiCu+Sn	NiCu+Sn	Silvery white	15μm	72h	500h	96h	＜ 180℃
Chemical Ni Plating	Ni	Silver	8μm	96h	500h	48h	＜ 200℃
Black/Grey Epoxy	Black EP	Black/Gray	15μm	240h	500h	96h	＜ 200℃
Spray Epoxy	SEP	Black	10μm	240h	500h	96h	＜ 200℃
NiCu+Epoxy	NiCu+EP	Black	25μm	500h	1000h	200h	＜ 200℃
Zinc+Epoxy	Zn+EP	Black	18μm	240h	1000h	200h	＜ 200℃
SSR	SSR	Silvery white	10μm	1000h	1000h	300h	＜ 200℃
Al	Al	Silvery white	6μm	96h	500h	96h	＜ 200℃





Profile of product dimension

Size range of different shapes: Block/Cylinder/Ring/Segment(unit:mm)

β			Tolerances		Size	
(a)/(b)/(c) shows different magnetizing direction	Shape	Dimension	Generality	Special	Min[mm]	Max[mm]
	ARC	t	±0.05	±0.015	1	80-h
		H	±0.1	±0.025	1+h	80
		h	±0.1	±0.025	0	80-t
		L	±0.05	±0.015	1	120
		R1	±0.1	±0.05	3	∞
		R2	±0.1	±0.05	3	∞
		R3	±0.2	±0.1	0.2	according to customer requirement
		α 1, α 2	45±5°	–	–	according to customer requirement
		C α 1, C α 2	±0.2	–	0.2	according to customer requirement
	BLOCK	a	±0.05	±0.01	0.5	80
		b	±0.05	±0.01	1	110
		c	±0.05	±0.01	1	120
		β 1, β 2	45±5°	–	–	according to customer requirement
		C β 1, C β 2	±0.15	±0.1	0.3	according to customer requirement
	CYLINDER	D	±0.05 (a), (b)	±0.005 (a), (b)	0.8 (a), (b)	120 (a) 130(b)
		L	±0.05 (a), (b)	±0.01 (a), (b)	0.5 (a), (b)	120 (a) 80 (b)
	RING	D	±0.05 (a), (b)	±0.005 (a), (b)	4 (a), (b)	120 (a) 130 (b)
		d	±0.05 (a), (b)	±0.025 (a), (b)	1.3 (a), (b)	100(a) 126 (b)
		L	±0.05 (a), (b)	±0.01 (a), (b)	0.5 (a), (b)	110 (a) 80 (b)

Remark: Not all min./max. dimensions as well as tolerances are combinable in any way, so this document is just a rough design guideline, particular feasibility has to be agreed on case by case.

Geometric Tolerance

Tolerance Types	Tolerance Types	Basic Dimensions (mm)	Tolerance Values
Paralelism	Interface between Machining Surfaces		Half of the tolerance between two surfaces
Verticality	Interface between Sintering Surfaces	Arbitrary	90°±1°
	Interface between Machining Surface and Sintering Surface		90°±1°
	Interface between Machining Surfaces		90°±0.15°
Axiality	Interface between Sintering Surfaces	Outer Diameter ≤14	±0.35 mm
		Outer Diameter 14-24	±0.60 mm
		Outer Diameter 24-40	±0.70 mm
		Outer Diameter 40-60	±0.80 mm
		Outer Diameter 60-80	±1.00 mm
		Outer Diameter 80-180	±1.50 mm
	Interface between Machining Surface and Sintering Surface	Arbitrary	±0.05 mm

MATERIAL TYPE

Metallic Alloy

SURFACE PROTECTION

Not necessary

ORIENTATION

Axial / Diametral

MAGNETIZATION

Single or multiple poles on the functional surface

TEMPERATURE BEHAVIOR

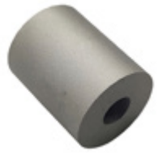
		Sm1Co5	Sm2Co17
Br TEMPERATURE COEFFICIENT*	%/℃	-0.045	-0.035
HcJ TEMPERATURE COEFFICIENT*	%/℃	-0.19	-0.24

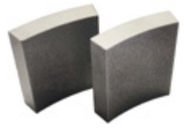
*The temperature coeffcients are nominal reference values only. They can vary for different temperatures and don't need to be linear.

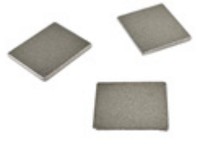
**The maximum operating temperature is depending on the magnet shape, size and on the specific application.

PHYSICAL AND MECHANICAL TYPICAL PROPERTIES

		Sm1Co5	Sm2Co17
CURIE TEMPERATURE	℃	710	770
RECOIL PERMEABILITY	μr	1.03	1.05
SATURATION FIELD	kOe	69	75
ELECTRICAL RESISTIVITY	Ωm	$60x10^{-8}$	$80x10^{-8}$
COMPRESSIVE STRENGTH	N/mm^2	605	600
DENSITY	g/cm^3	~8.3	~8.3
FLEXURAL STRENGTH	N/mm^2	90-160	90-160
TENSILE STRENGTH	N/mm^2	35	45
VICKERS HARDNESS	HV	~600	~600
YOUNG'S MODULUS	N/mm^2	$150x\ 10^3$	$180x\ 10^3$
SPECIFIC HEAT	kcal/kg/℃	0.08-0.09	0.08-0.09
THERMAL CONDUCTIVITY	kcal/m/hr/℃	~8	8-9
THERMAL EXPANSION COEF ⊥ c	10-6/℃	~7	~10
THERMAL EXPANSION COEF //c	10-6/℃	~12	~5



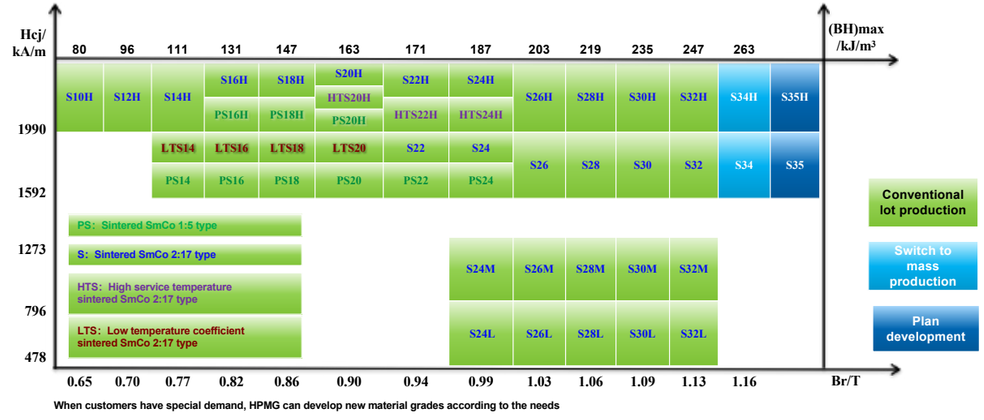




Magnetic Property parameters of Sintered Sm2Co17

GB/T 17951-2022 Nomenclature	Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kA/m	kOe	kJ/m3	MGOe	α Br %/℃	β Hcj %/℃	℃
RE2Co17 175/199	S24H	0.96-1.03	9.6-10.3	≥724	≥9.1	≥1990	≥25	175-199	22-25	0.03	0.2	350
RE2Co17 175/159	S24	0.96-1.03	9.6-10.3	≥724	≥9.1	≥1592	≥20	175-199	22-25	0.03	0.2	350
RE2Co17 175/80	S24M	0.96-1.03	9.6-10.3	597-756	7.5-9.5	796-1273	10-16	175-199	22-25	0.03	0.2	250
RE2Co17 175/44	S24L	0.96-1.03	9.6-10.3	438-716	5.5-9	478-796	6-10	175-199	22-25	0.03	0.2	200
RE2Co17 191/199	S26H	1.01-1.06	10.1-10.6	≥733	≥9.2	≥1990	≥25	191-215	24-27	0.03	0.2	350
RE2Co17 191/159	S26	1.01-1.06	10.1-10.6	≥733	≥9.2	≥1592	≥20	191-215	24-27	0.03	0.2	350
RE2Co17 191/80	S26M	1.01-1.06	10.1-10.6	597-820	7.5-10.3	796-1273	10-16	191-215	24-27	0.03	0.2	250
RE2Co17 191/44	S26L	1.01-1.06	10.1-10.6	438-716	5.5-9	478-796	6-10	191-215	24-27	0.03	0.2	200
RE2Co17 207/199	S28H	1.04-1.09	10.4-10.9	≥749	≥9.4	≥1990	≥25	207-231	26-29	0.03	0.2	350
RE2Co17 207/159	S28	1.04-1.09	10.4-10.9	≥749	≥9.4	≥1592	≥20	207-231	26-29	0.03	0.2	350
RE2Co17 207/80	S28M	1.04-1.09	10.4-10.9	621-836	7.8-10.5	796-1273	10-16	207-231	26-29	0.03	0.2	250
RE2Co17 207/44	S28L	1.04-1.09	10.4-10.9	438-716	5.5-9	478-796	6-10	207-231	26-29	0.03	0.2	200
RE2Co17 222/199	S30H	1.08-1.11	10.8-11.1	≥773	≥9.7	≥1990	≥25	222-247	28-31	0.035	0.2	350
RE2Co17 222/159	S30	1.08-1.11	10.8-11.1	≥773	≥9.7	≥1592	≥20	222-247	28-31	0.035	0.2	350
RE2Co17 222/80	S30M	1.08-1.11	10.8-11.1	621-836	7.8-10.5	796-1273	10-16	222-247	28-31	0.035	0.2	250
RE2Co17 222/44	S30L	1.08-1.12	10.8-11.2	438-757	5.5-9.5	478-796	6-10	222-247	28-31	0.035	0.2	200
RE2Co17 239/199	S32H	1.12-1.15	11.2-11.5	≥812	≥10.2	≥1990	≥25	239-255	30-32	0.038	0.2	350
RE2Co17 239/159	S32	1.12-1.15	11.2-11.5	≥812	≥10.2	≥1592	≥20	239-255	30-32	0.038	0.2	350
RE2Co17 239/80	S32M	1.12-1.15	11.2-11.5	717-844	9.0-10.6	796-1273	10-16	239-255	30-32	0.038	0.2	250
RE2Co17 255/199	S34H	1.15-1.18	11.5-11.8	≥835	≥10.5	≥1990	≥25	255-270	32-34	0.04	0.25	300
RE2Co17 255/159	S34	1.15-1.18	11.5-11.8	≥835	≥10.5	≥1592	≥20	255-270	32-34	0.04	0.25	300

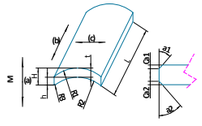
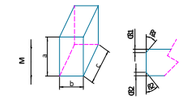
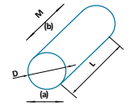
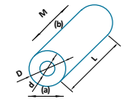
GB/T 17951-2022 Nomenclature	Grade	Br		Hcb		Hcj		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kA/m	kOe	kJ/m3	MGOe	α Br %/℃	β Hcj %/℃	℃
Magnetic Property parameters of Sintered Sm2Co17 High TW												
RE2Co17 151/199	HTS20H	0.87-0.93	8.7-9.3	≥853	≥8.2	≥1990	≥25	151-175	19-22	0.05	0.2	500
RE2Co17 159/199	HTS22H	0.91-0.98	9.1-9.8	≥893	≥8.7	≥1990	≥25	159-183	20-23	0.05	0.2	450
RE2Co17 175/199	HTS24H	0.96-1.03	9.6-10.3	≥924	≥9.1	≥1990	≥25	175-199	22-25	0.05	0.2	400
Magnetic Property parameters of Sintered Sm2Co17 Low Tc												
RE2Co17 103/159	LTS14	0.73-0.80	7.3-8.0	≥565	≥7.1	≥1592	≥20	103-127	13-16	0.005 (20℃ -100℃) 0.01 (20℃ -200℃)	0.3	-
RE2Co17 119/159	LTS16	0.79-0.86	7.9-8.6	≥613	≥7.7	≥1592	≥20	119-143	15-18	0.01 (20℃ -100℃) 0.015 (20℃ -200℃)	0.3	-
RE2Co17 135/159	LTS18	0.83-0.89	8.3-8.9	≥645	≥8.1	≥1592	≥20	135-159	17-20	0.015 (20℃ -100℃) 0.02 (20℃ -200℃)	0.3	-
RE2Co17 151/159	LTS20	0.87-0.93	8.7-9.3	≥653	≥8.2	≥1592	≥20	151-175	19-22	0.02 (20℃ -100℃) 0.025 (20℃ -200℃)	0.3	-
Magnetic Property parameters of Sintered Sm2Co17 Isotropic												
RE2Co17 16/159	QS4	0.30-0.50	3.0-5.0	≥2.2	≥0.27	≥1592	≥20	16-48	2-6	0.03	0.2	350
RE2Co17 32/159	QS6	0.50-0.70	5.0-7.0	≥3.6	≥0.45	≥1592	≥20	32-96	4-12	0.03	0.2	350
Magnetic Property parameters of Sintered SmCo5												
RECo5 111/159	PS14	0.71-0.83	7.1-8.3	≥541	≥6.8	≥1592	≥20	95-127	12-16	0.05	0.3	250
RECo5 119/159	PS16	0.79-0.86	7.9-8.6	≥605	≥7.6	≥1592	≥20	119-143	15-18	0.05	0.3	250
RECo5 119/199	PS16H	0.79-0.86	7.9-8.6	≥605	≥7.6	≥1990	≥25	119-143	15-18	0.05	0.3	250
RECo5 135/159	PS18	0.84-0.91	8.4-9.1	≥645	≥8.1	≥1592	≥20	135-159	17-20	0.05	0.3	250
RECo5 135/199	PS18H	0.84-0.91	8.4-9.1	≥645	≥8.1	≥1990	≥25	135-159	17-20	0.05	0.3	250
RECo5 151/159	PS20	0.87-0.93	8.7-9.3	≥653	≥8.2	≥1592	≥20	151-175	19-22	0.05	0.3	250
RECo5 151/199	PS20H	0.87-0.93	8.7-9.3	≥653	≥8.2	≥1990	≥25	151-175	19-22	0.05	0.3	250
RECo5 159/159	PS22	0.91-0.98	9.1-9.8	≥693	≥8.7	≥1592	≥20	159-183	20-23	0.05	0.3	250
RECo5 175/159	PS24	0.95-1.01	9.5-10.1	≥717	≥9.0	≥1592	≥20	175-199	22-25	0.05	0.3	250



When customers have special demand, HPMG can develop new material grades according to the needs

Profile of product dimension

Size range of different shapes: Block/Cylinder/Ring/Segment(unit:mm)

Type			Tolerances		Size	
(a)/(b)/(c) shows different magnetizing direction	Shape	Dimension	Generality	Special	Min [mm]	Max [mm]
	——ARC——	t	±0.05	±0.02	1.5	50-h
		H	±0.05	±0.02	1.5+h	50
		h	±0.15	±0.05	0	50-t
		L	±0.05	±0.03	0.5	100
		R1	±0.2	±0.03	2	∞
		R2	±0.2	±0.05	2	∞
		R3	±0.1	±0.05	0.1	according to customer requirement
		α 1, α 2	45±3° By Manual	45±3° By Manual	0.2	according to customer requirement
		C α 1, C α 2	±0.1	–	0.2	according to customer requirement
	——BLOCK——	a	±0.05	±0.02	0.5	50
		b	±0.05	±0.02	0.5	150
		c	±0.05	±0.02	0.5	150
		β 1, β 2	45±3° By Manual	45±3° By Manual	according to customer requirement	according to customer requirement
		C β 1, C β 2	±0.1	45±3° By Manual	0.2	according to customer requirement
	——CYLINDER——	D	±0.05 (a), (b)	±0.03 (a), (b)	2 (a), (b)	80 (a) 150(b)
		L	±0.05 (a), (b)	±0.02 (a), (b)	0.5 (a), (b)	150 (a) 50 (b)
	——RING——	D	±0.05 (a), (b)	±0.03 (a), (b)	5 (a), (b)	80 (a) 150 (b)
		d	±0.05 (a), (b)	±0.03 (a), (b)	1.5 (a), (b)	50(a) 130 (b)
		L	±0.05 (a), (b)	±0.02 (a), (b)	0.5 (a), (b)	100 (a) 80 (b)

Remark: Not all min./max. dimensions as well as tolerances are combinable in any way, so this document is just a rough design guideline, particular feasibility has to be agreed on case by case.

MATERIAL TYPE

Metallic Alloy

SURFACE PROTECTION

Not necessary

ORIENTATION & MAGNETIZATION

Axial / Diametral

TEMPERATURE BEHAVIOR

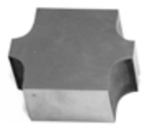
Br TEMPERATURE COEFFICIENT*	%/℃	~-0.02
HcJ TEMPERATURE COEFFICIENT*	%/℃	-0.03 ~-0.07

*The temperature coeffcients are nominal reference values only. They can vary for different temperatures and don't need to be linear.

**The maximum operating temperature is depending on the magnet shape, size and on the specific application.

PHYSICAL AND MECHANICAL TYPICAL PROPERTIES

CURIE TEMPERATURE	℃	750-850
RECOIL PERMEABILITY	μr	~2.0-7.5
SATURATION FIELD	kOe	>5.000
ELECTRICAL RESISTIVITY	Ωm	~0.45-0.55
COMPRESSIVE STRENGTH	N/mm^2	~700
DENSITY	g/cm^2	~7.3
FLEXURAL STRENGTH	N/mm^2	~55
TENSILE STRENGTH	N/mm^2	~45-60
VICKERS HARDNESS	HV	~300-400
YOUNG'S MODULUS	N/mm^2	~150
SPECIFIC HEAT	kcal/kg/℃	~0.12
THERMAL CONDUCTIVITY	kcal/m/hr/℃	~60
THERMAL EXPANSION COEFFICIENT	10-6/℃	~11-12



CAST AlNiCo (Isotropic)

MMPA	Grade	Br		Hcb		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kJ/m^3	MGOe	α Br %/℃	β Hcj %/℃	℃
ALNICO3	LN10	0.60	6.00	40.00	0.50	10.00	1.25	-0.02	-0.03~-0.07	550
	LNG10	0.60	6.00	44.00	0.55	10.00	1.25	-0.02	-0.03~-0.07	550
ALNICO2	LNG12	0.70	7.00	44.00	0.55	12.00	1.50	-0.02	-0.03~-0.07	550
	LNG13	0.68	6.80	48.00	0.60	13.00	1.63	-0.02	-0.03~-0.07	550
ALNICO8	LNGT18	0.58	5.80	80.00	1.00	18.00	2.25	-0.02	-0.03~-0.07	550

CAST AlNiCo (Anisotropic)

MMPA	Grade	Br		Hcb		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kJ/m^3	MGOe	α Br %/℃	β Hcj %/℃	℃
ALNICO4	LNG16	0.80	8.00	48.00	0.60	16.00	2.00	-0.02	-0.03~-0.07	550
	LNG18	0.90	9.00	48.00	0.60	18.00	2.25	-0.02	-0.03~-0.07	550
ALNICO5	LNG37	1.20	12.00	48.00	0.60	37.00	4.63	-0.02	-0.03~-0.07	550
	LNG40	1.23	12.30	48.00	0.60	40.00	5.00	-0.02	-0.03~-0.07	550
	LNG44	1.25	12.50	52.00	0.65	44.00	5.50	-0.02	-0.03~-0.07	550
ALNICO5DG	LNG48	1.28	12.80	56.00	0.70	48.00	6.00	-0.02	-0.03~-0.07	550
	LNG52	1.30	13.00	56.00	0.70	52.00	6.50	-0.02	-0.03~-0.07	550
ALNICO5-7	LNG56	1.30	13.00	58.00	0.72	56.00	7.00	-0.02	-0.03~-0.07	550
	LNG60	1.33	13.30	60.00	0.75	60.00	7.50	-0.02	-0.03~-0.07	550
ALNICO6	LNGT28	1.00	10.00	56.00	0.70	28.00	3.50	-0.02	-0.03~-0.07	550
	LNGT30	1.10	11.00	56.00	0.70	30.00	3.75	-0.02	-0.03~-0.07	550
ALNICO8	LNGT32	0.80	8.00	100.00	1.25	32.00	4.00	-0.02	-0.03~-0.07	550
	LNGT38	0.80	8.00	110.00	1.38	38.00	4.75	-0.02	-0.03~-0.07	550
	LNGT44	0.85	8.50	115.00	1.45	44.00	5.50	-0.02	-0.03~-0.07	550
ALNICO8HE	LNGT48	0.90	9.00	120.00	1.50	48.00	6.00	-0.02	-0.03~-0.07	550
ALNICO9	LNGT60	0.90	9.00	110.00	1.38	60.00	7.50	-0.02	-0.03~-0.07	550
	LNGT72	1.05	10.50	112.00	1.40	72.00	9.00	-0.02	-0.03~-0.07	550
	LNGT80	1.08	10.80	120.00	1.50	80.00	10.00	-0.02	-0.03~-0.07	550
ALNICO9	LNGT88	1.10	11.00	115.00	1.45	88.00	11.00	-0.02	-0.03~-0.07	550
	LNGT96	1.15	11.50	118.00	1.48	96.00	12.00	-0.02	-0.03~-0.07	550
ALNICO8HC	LNGT36J	0.70	7.00	140.00	1.75	36.00	4.50	-0.02	-0.03~-0.07	550
	LNGT48J	0.80	8.00	143.00	1.80	48.00	6.00	-0.02	-0.03~-0.07	550
	LNGT52J	0.85	8.50	140.00	1.75	52.00	6.50	-0.02	-0.03~-0.07	550

Sintered AlNiCo (Isotropic)

MMPA	Grade	Br		Hcb		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kJ/m^3	MGOe	α Br %/℃	β Hcj %/℃	℃
S.ALNICO3	FLN8	0.50	5.00	40.00	0.50	8.00	1.00	-0.02	-0.03~-0.07	550
S.ALNICO2	FLNG12	0.65	6.50	48.00	0.60	12.00	1.50	-0.02	-0.03~-0.07	550
S.ALNICO7	FLNGT18	0.60	6.00	90.00	1.13	18.00	2.20	-0.02	-0.03~-0.07	550

Sintered AlNiCo (Anisotropic)

MMPA	Grade	Br		Hcb		(BH)max		Temperature Coefficient		Tw
		T	kGs	kA/m	kOe	kJ/m^3	MGOe	α Br %/℃	β Hcj %/℃	℃
S.ALNICO5	FLNG34	1.18	11.80	48.00	0.60	34.00	4.25	-0.02	-0.03~-0.07	550
S.ALNICO6	FLNGT28	1.05	10.50	56.00	0.70	28.00	3.50	-0.02	-0.03~-0.07	550
S.ALNICO8	FLNGT38	0.80	8.00	120.00	1.50	38.00	4.75	-0.02	-0.03~-0.07	550
S.ALNICO8	FLNGT42	0.88	8.80	120.00	1.50	42.00	5.25	-0.02	-0.03~-0.07	550
S.ALNICO8HC	FLNGT33J	0.70	7.00	140.00	1.75	33.00	4.13	-0.02	-0.03~-0.07	550

Dimension tolerance (unit: mm)

Nominal value		Sintered magnets with Ti content ≤ 1%		Sintered magnets with Ti content >1%		Casting magnets
>	≤	Perpendicular to the pressing direction ±	Perpendicular to the pressing direction ±	Perpendicular to the pressing direction ±	Perpendicular to the pressing direction ±	Sand casting ±
-	4	0.15	0.20	0.20	0.25	0.40
4	6	0.20	0.25	0.25	0.30	0.40
6	8	0.20	0.25	0.25	0.30	0.40
8	10	0.20	0.30	0.30	0.35	0.45
10	13	0.25	0.30	0.30	0.35	0.50
13	16	0.25	0.35	0.35	0.45	0.50
16	20	0.30	0.35	0.40	0.45	0.55
20	25	0.30	0.40	0.45	0.55	0.60
25	30	0.35	0.40	0.50	0.60	0.65
30	35	0.40	0.50	0.55	0.70	0.70
35	40	0.45	0.55	0.65	0.75	0.75
40	45	0.50	0.60	0.70	0.80	0.80
45	50	0.50	0.65	0.75	0.90	0.80
50	55	0.55	0.70	0.80	1.00	1.00
55	60	0.60	0.80	0.90	1.10	1.00
60	70	-	-	-	-	1.00
70	80	-	-	-	-	1.00
80	90	-	-	-	-	1.10
90	100	-	-	-	-	1.20

Social Responsibility

Voluntary Blood Donation
Every year, we organize voluntary blood donation,which not only annotates our love to lives andresponsibility to society, but also fully demonstratethe sense of dedication and accountability of Hangzhou Permanent Magnet Group.

Governance

The work objectives of HPMG production management system : fully realize digitalization and informatization of production systems, including equipment, process, quality, and technology research & development management .
HPMG realizes the formal operation of the Warehouse Management System (WMS) system and collects comprehensive information and data of each production process. In 2024, a central integrated control system will be established to scientifically analyze the big data of the group's operation. By the end of 2024, the Manufacturing Execution System (MES) will be fully applied.

Environmental Responsibility

Greenhouse gas emission reduction solution
Save electricity and introduce energy-efficient motors
Build renewable energy such as photovoltaics in the factory area
Green electricity trading
incorporating energy management into daily management, forming an energy management system