

# MAGNETIC MATERIALS

## Magnetic properties of magnets

Various types of magnetic materials are available. Many kinds including anisotropic ferrites, rare earth magnets, rubber magnet sheets, colored magnet sheets, etc. are available in various sizes.

※Main characteristics are shown in the following tables for comparison.

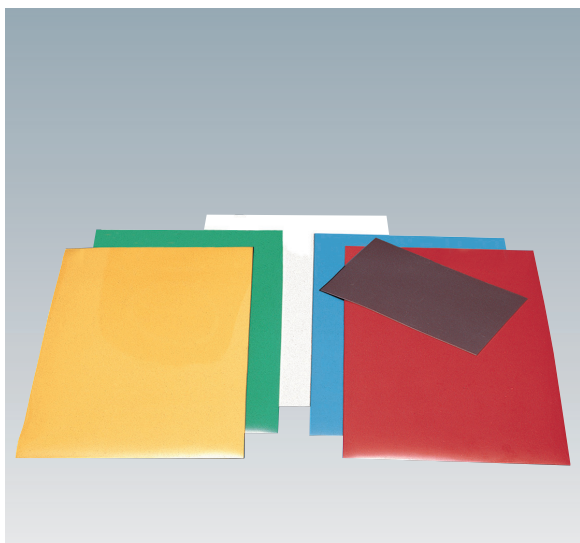
Kinds of Permanent Magnet	Residual Magnetic Flux Density (Br)	Holding Power (BHC)
	T (G)	kA/m (Oe)
Anisotropic ferrite	0.36-0.42 (3600-4200)	239-271 (3000-3400)
Rare earth magnet samarium-cobalt	0.98-1.06 (9800-10600)	477-637 (6000-8000)
Rare earth magnet neodymium	1.0-1.33 (10000-13300)	836-995 (10500-12500)
Alnico magnet	1.28-1.35 (12800-13500)	52-58 (650-726)

## Rubber magnet sheet

Kinds of Permanent Magnet	Residual Magnetic Flux Density (Br)	Holding Power (BHC)
	T (G)	kA/m (Oe)
Anisotropic	0.22-0.23 (2250-2350)	159-174 (2000-2180)
Isotropic	0.14-0.15 (1400-1550)	100-111 (1250-1400)

## No.1 RUBBER MAGNET SHEET

●Flexible rubber magnet sheets having excellent magnetic properties.

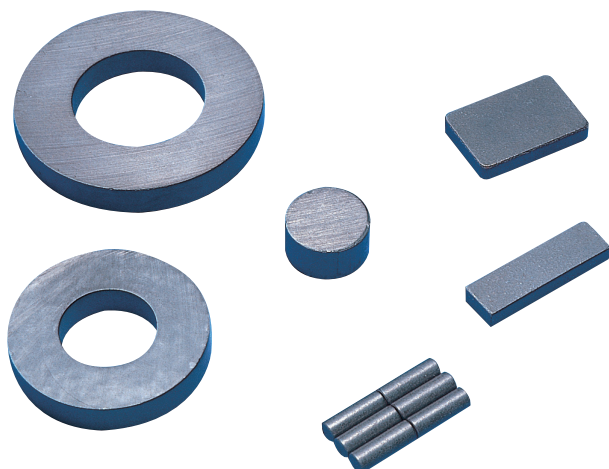


[mm (in.)]				[mm (in.)]			
Type	Thickness	Width	Length	Type	Thickness	Width	Length
Plain				Plain			
Anisotropic	① 0.8 (0.031)	100 (3.93)	1000 (39.4)	Isotropic	② 0.8 (0.031)	1000 (39.4)	1000 (39.4)
	① 1.0 (0.039)	100 (3.93)	1000 (39.4)		② 1.0 (0.039)	1000 (39.4)	1000 (39.4)
	① 1.0 (0.039)	200 (7.87)	1000 (39.4)		③ 2.0 (0.078)	10 (0.39)	1000 (39.4)
	① 1.2 (0.047)	200 (7.87)	1000 (39.4)		③ 3.0 (0.118)	15 (0.59)	1000 (39.4)
	① 1.5 (0.059)	200 (7.87)	1000 (39.4)		③ 4.0 (0.157)	8 (0.31)	1000 (39.4)
	① 1.6 (0.063)	100 (3.93)	1000 (39.4)		③ 5.0 (0.197)	15 (0.59)	1000 (39.4)
	① 2.0 (0.078)	100 (3.93)	1000 (39.4)	Colored sheets (white, red, yellow, green, blue)			
	① 2.0 (0.078)	200 (7.87)	1000 (39.4)	Isotropic	② 0.8 (0.031)	300 (11.8)	400S (15.7)
	① 3.0 (0.118)	100 (3.93)	1000 (39.4)	Colored sheets (white, red, yellow, green, blue, orange)			
	① 3.0 (0.118)	200 (7.87)	1000 (39.4)	Isotropic	② 0.8 (0.031)	100 (3.93)	300S (11.8)
① 2.5 (0.098)	200 (7.87)	1000 (39.4)	② 0.8 (0.031)		200 (7.87)	300S (11.8)	
① 3.5 (0.137)	200 (7.87)	1000 (39.4)	② 0.8 (0.031)		300 (11.8)	300S (11.8)	
① 4.0 (0.157)	200 (7.87)	1000 (39.4)	② 0.8 (0.031)		1000 (39.4)	1000S (39.4)	
① 3.0 (0.118)	20 (0.78)	1000 (39.4)	Colored sheets (white only)				
④ 5.0 (0.197)	61 (2.40)	950 (37.4)	Isotropic	② 0.8 (0.031)	100 (3.93)	300D (11.8)	
④ 10.0 (0.393)	30 (1.18)	1000 (39.4)		② 0.8 (0.031)	200 (7.87)	300D (11.8)	
				② 0.8 (0.031)	1000 (39.4)	1000D (39.4)	

- ※①: Anisotropic one face multi poles (a lot of N · S on one face only by anisotropic)
- ※②: Isotropic one face multi poles (a lot of N · S on one face only by isotropic)
- ※③: Isotropic one face 2 poles (N · S on one face only by isotropic)
- ※④: Anisotropic magnetized on both faces (magnetized in the direction of thickness by anisotropic)
- ※"S" refers to non-lustrous sheets and "D" refers to lustrous sheets.
- ※Colored sheets have been cut to specific sizes.
- ※For sheets longer than 1000 mm, a fee for cutting is required additionally.

## No.2 FERRITE MAGNET (ROUND/RECTANGULAR)

●Ferrite magnets having significantly higher magnetic properties than isotropic magnets. In addition to dry types, a wet anisotropic magnet having a particularly high magnetic flux density is available (made to order).

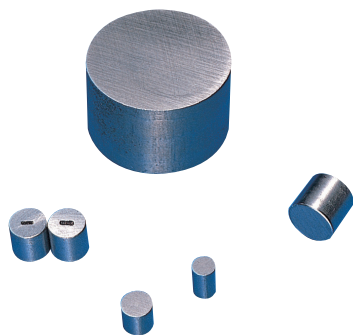


### Anisotropic

[mm (in.)]					
Shape	Diameter	Thickness	Shape	Size	Thickness
Round (incl. ring)	φ 15 (0.59)	4.0 (0.15)	Rectangular	20 (0.78) × 15 (0.59)	4.0 (0.15)
	φ 20 (0.78)	4.0 (0.15)		20 (0.78) × 15 (0.59)	7.0 (0.27)
	φ 27 (1.06) × φ 17 (0.66)	3.0 (0.11)		40 (1.57) × 25 (0.98)	10.0 (0.39)
	φ 30 (1.18)	5.0 (0.19)		40 (1.57) × 10 (0.39)	7.0 (0.27)
	φ 30 (1.18)	8.0 (0.31)		40 (1.57) × 40 (1.57)	10.0 (0.39)
	φ 100 (3.93) × φ 60 (2.36)	15.0 (0.59)		100 (3.93) × 100 (3.93)	10.0 (0.39)

※ Even if a magnet of a size listed above is to be ordered, a certain quantity of such magnets may in some cases need to be ordered at a time.

### No.3 ALNICO MAGNET (ROUND)



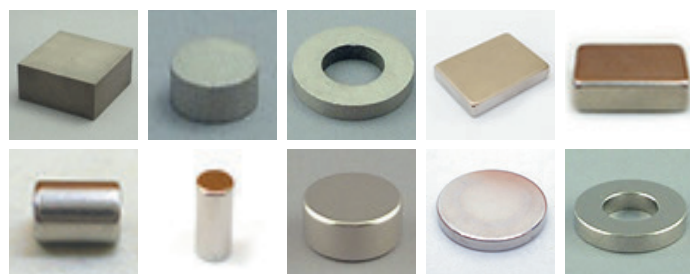
● Cast magnets consisting mainly of iron, aluminum, nickel and cobalt (Fe, Al, Ni, Co). These magnets feature a larger residual magnetic flux density and magnetic stability against changes in temperature.

[mm (in)]

Size (Diameter × Length)					
φ 3(0.11) × 8(0.31)	φ 3(0.11) × 9(0.35)	φ 3(0.11) × 12(0.47)	φ 3(0.11) × 20(0.78)	φ 3(0.11) × 22(0.86)	
φ 4(0.15) × 10(0.39)					
φ 5(0.19) × 8(0.31)	φ 5(0.19) × 10(0.39)	φ 5(0.19) × 15(0.59)	φ 5(0.19) × 20(0.78)	φ 5(0.19) × 25(0.98)	φ 5(0.19) × 60(2.36)
φ 6(0.23) × 8(0.31)	φ 6(0.23) × 12(0.47)	φ 6(0.23) × 15(0.59)	φ 6(0.23) × 20(0.78)	φ 6(0.23) × 25(0.98)	φ 6(0.23) × 60(2.36)
φ 8(0.31) × 10(0.39)	φ 8(0.31) × 16(0.62)	φ 8(0.31) × 50(1.96)			
φ 10(0.39) × 10(0.39)	φ 10(0.39) × 15(0.59)	φ 10(0.39) × 30(1.18)	φ 10(0.39) × 50(1.96)	φ 10(0.39) × 100(3.93)	φ 10(0.39) × 140(5.51)
φ 13(0.51) × 10(0.39)	φ 13(0.51) × 12(0.47)	φ 13(0.51) × 15(0.59)			
φ 14(0.55) × 10(0.39)					
φ 15(0.59) × 70(2.75)					
φ 20(0.78) × 15(0.59)					
φ 25(0.98) × 15(0.59)    φ 25(0.98) × 20(0.78)					

※ For sizes not listed above, please contact us.

### No.4 RARE EARTH MAGNET (RECTANGULAR/ROUND)



- Very small yet strong magnetic force.
- The samarium-cobalt type having high thermal stability and corrosion resistance and the neodymium type having the highest magnetic force and strong mechanical strength and less susceptible to cracking are available.

Other sizes (not listed in the table) are also available. Please contact us.

#### Rectangular

[mm (in)]

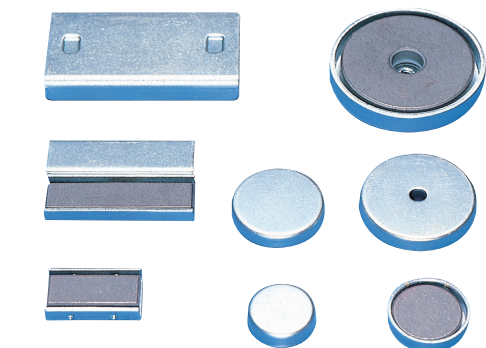
Samarium-Cobalt		Neodymium			
Size	Thickness	Size	Thickness	Size	Thickness
45(1.77) × 25(0.98)	10(0.39)	12(0.47) × 7(0.27)	4(0.15)	20(0.78) × 15(0.59)	5(0.19)
		20(0.78) × 12(0.47)	5(0.19)	30(1.18) × 30(1.18)	10(0.39)

#### Round

[mm (in)]

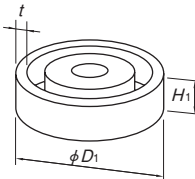
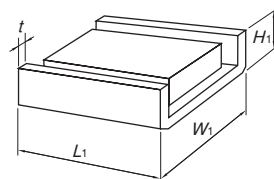
Samarium-Cobalt			Neodymium			
Size (Diameter × Length)			Size (Diameter × Length)			
φ 2(0.07) × 2(0.07)	φ 2.5(0.09) × 3(0.11)		φ 2(0.07) × 2(0.07)	φ 2(0.07) × 3(0.11)		
φ 3(0.11) × 1.5(0.05)	φ 3(0.11) × 2(0.07)	φ 3(0.11) × 3(0.11)	φ 3(0.11) × 2(0.07)	φ 3(0.11) × 3(0.11)	φ 3(0.11) × 10(0.39)	
φ 4(0.15) × 2(0.07)	φ 4(0.15) × 3(0.11)	φ 4(0.15) × 4(0.15)	φ 4(0.15) × 2(0.07)			
φ 5(0.19) × 3(0.11)	φ 5(0.19) × 5(0.19)		φ 5(0.19) × 3(0.11)		φ 5(0.19) × 5(0.19)	
φ 6(0.23) × 2(0.07)	φ 6(0.23) × 3(0.11)	φ 6(0.23) × 4(0.15)	φ 6(0.23) × 2(0.07)	φ 6(0.23) × 3(0.11)	φ 6(0.23) × 5(0.19)	
φ 7(0.27) × 3(0.11)						
φ 8(0.31) × 3(0.11)	φ 8(0.31) × 4(0.15)	φ 8(0.31) × 3(0.11)		φ 8(0.31) × 4(0.15)	φ 8(0.31) × 5(0.19)	φ 8(0.31) × 8(0.31)
φ 10(0.39) × 3(0.11)	φ 10(0.39) × 5(0.19)	φ 10(0.39) × 10(0.39)	φ 10(0.39) × 3(0.11)	φ 10(0.39) × 5(0.19)	φ 10(0.39) × 10(0.39)	
φ 12(0.47) × 5(0.19)			φ 14(0.55) × 10(0.39)			
φ 15(0.59) × 5(0.19)			φ 15(0.59) × 5(0.19)			
φ 20(0.78) × 5(0.19)			φ 20(0.78) × 5(0.19)			
			φ 22(0.86) × 10(0.39)			

### No.5 SIMPLE MAGNETIC HOLDER



Rectangular

Round



Simple holders consisting of an isotropic ferrite permanent magnet covered by an iron yoke. Dimensionally, the finishing accuracy is not good and these holders are not recommended for incorporation in jigs/fixtures. When these holders are used for the purpose of holding only by themselves, such purpose can be achieved at low cost.

#### Round

[mm (in)]

Model	Yoke Dimensions			Magnet Size	Magnet Type	Mass	Remarks
	D <sub>r</sub>	H <sub>r</sub>	t				
KM-FC2	φ 18(0.70)	5(0.19)	0.8(0.03)	φ 15(0.59) × 4(0.15)	Isotropic	12.5g/0.027lb	
KM-FC4	φ 24(0.94)		0.55(0.02)			φ 20(0.78) × 4(0.15)	23.8g/0.052lb
KM-FC5	φ 31.6(1.24)	4.7(0.18)	0.8(0.03)	φ 28(1.10) × φ 5.5(0.21) × 3.5(0.13)		38.2g/0.084lb	φ 4.3 hole provided
KM-FC6	φ 36(1.41)	7(0.27)	1.6(0.06)	φ 30(1.18) × 5(0.19)		97.5g/0.214lb	
KM-FC7	φ 44(1.73)	8(0.31)				φ 38(1.49) × φ 9(0.35) × 5.7(0.22)	122.5g/0.270lb

#### Rectangular

[mm (in)]

Model	Yoke Dimensions				Magnet Size	Magnet Type	Mass	Remarks
	L <sub>1</sub>	W <sub>1</sub>	H <sub>1</sub>	t				
KM-FK3	20(0.78)	34(1.33)	7(0.27)	1.6(0.06)	20(0.78) × 30(1.18) × 5(0.19)	Isotropic	51.4g/0.113lb	
KM-FK5	55(2.16)	30(1.18)	8(0.31)	1.5(0.05)			49(1.92) × 24(0.94) × 6(0.23)	140g/0.308lb

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