

Custom-made SmCo Magnets

Material Information

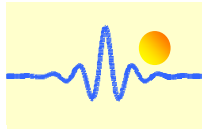
- An alloy composes of $\text{SmCo}_5/\text{Sm}_2\text{Co}_{17}$ produce by powder metallurgical method
- Extremely hard & brittle
- High demagnetization resistance
- Excellent anti-corrosion properties
- More expensive than NdFeB magnets because of limited raw material supply
- Outstanding thermal stability

Typical Physical Properties

Curie Temperature (°C)	700-800
Maximum Operating Temperature (°C)	350
Resistivity (μ ohm.cm)	50-90
Hardness (Hv)	450-600
Density (g/cm^3)	8.0-8.5
Relative Recoil Permeability (μ_{rec})	1.10
Saturation Field Strength, kOe (kA/m)	37.5 (3000)
Temperature Coefficient of Br (%/°C)	-0.05 ~ -0.03
Temperature Coefficient of iHc (%/°C)	-0.25 ~ -0.19

Magnetic Properties of SmCo Magnets (Samarium Cobalt)

Material	Material Grade	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 ³)	(BH)max (MGOe)
SmCo ₅	S16	790-840	7.9-8.4	612-660	7.7-8.3	1830	23	118-135	15-17
	S18	840-890	8.4-8.9	644-692	8.1-8.7	1830	23	135-151	17-19
	S20	890-930	8.9-9.3	684-732	8.6-9.2	1830	23	150-167	19-21
	S22	920-960	9.2-9.6	710-756	8.9-9.5	1830	23	167-183	21-23
	S24	960-1000	9.6-10.0	740-788	9.3-9.9	1830	23	183-199	23-25
Sm ₂ Co ₁₇	S220	930-970	9.3-9.7	676-740	8.5-9.3	1433	18	160-183	20-23
	S240	950-1020	9.5-10.2	692-764	8.7-9.6	1433	18	175-191	22-24
	S260	1020-1050	10.2-10.5	748-796	9.4-10.0	1433	18	191-207	24-26
	S280	1030-1080	10.3-10.8	756-812	9.5-10.2	1433	18	207-220	26-28
	S300	1080-1100	10.8-11.0	788-835	9.9-10.5	1433	18	220-240	28-30
	S320	1100-1130	11.0-11.3	812-860	10.2-10.8	1433	18	230-255	29-32



Dimension Range / Nominal Tolerance

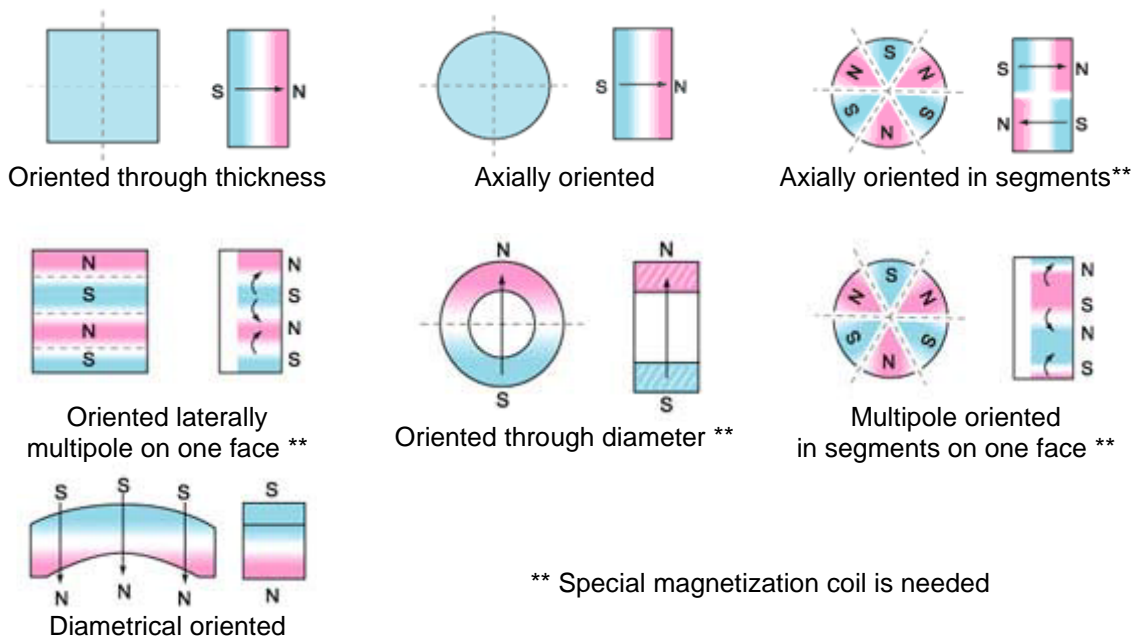
Block Magnet	Length (mm)	Width (mm)	Thickness (mm)
Maximum	100	80	50
Minimum	2.0	1.5	0.5
Tolerance	±0.1	±0.1	±0.1

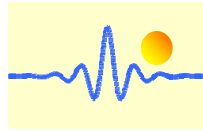
Disc Magnet	Diameter (mm)	Thickness (mm)
Maximum	100	50
Minimum	1.2	0.5
Tolerance	±0.1	±0.1

Ring Magnet	Outer Diameter (mm)	Inner Diameter (mm)	Thickness (mm)
Maximum	100	80	50
Minimum	2.6	1.8	0.5
Tolerance	±0.1	±0.1	±0.1

Segment & other irregular shapes can be manufactured according to customer's sample or technical specifications.

Magnetization Directions of SmCo Magnets





Definition of Part number

Part Number of Block Magnet

M	S	300	-	B	20	x	10	x	5
1)	2)	3)		4)	5)		6)		7)

- 1): magnet M
- 2): magnet material S: SmCo
- 3): material grade, see material grade of SmCo
- 4): magnet type B: block magnet
- 5): length in mm
- 6): width in mm
- 7): Thickness or height in mm, magnetization direction

The part number MS300-B20x10x5 is a SmCo block magnet with material grad S300, length of 20mm, width of 10mm, thickness of 5mm and magnetization direction in 5mm.

Part Number of Disc/Cylinder Magnet

M	S	300	-	D	10	x	6
1)	2)	3)		4)	5)		6)

- 1): magnet M
- 2): magnet material S: SmCo
- 3): material grade, see material grade of SmCo
- 4): magnet type D: disc magnet or C: cylinder magnet
- 5): Diameter in mm
- 6): Thickness or height in mm, magnetization direction

The part number MS300-D10x6 is for a SmCo disc magnet with material grad S300, diameter of 10mm, thickness of 5mm and magnetization direction in 6mm.

Part Number of Ring Magnet

M	S	320	-	R	15	x	8	x	4
1)	2)	3)		4)	5)		6)		7)

- 1): magnet M
- 2): magnet material S: SmCo
- 3): material grade, see material grade of SmCo
- 4): magnet type R: ring magnet
- 5): outer diameter in mm
- 6): inner diameter in mm
- 7): Thickness in mm, magnetization direction

The part number MS320-R15x8x4 is a SmCo ring magnet with material grad S320, outer diameter of 15mm, inner diameter of 8mm, thickness of 4mm and magnetization direction in 5mm.