

Sintered SmCo Magnets' Specifications



ADVANCED MAGNETS

For Greener & Smarter Future

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Table I Sintered SmCo Magnets' Grades and Their Magnetic Properties

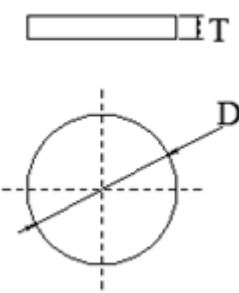
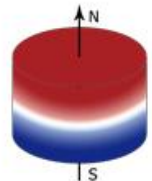
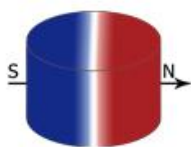
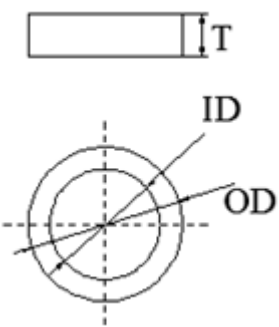
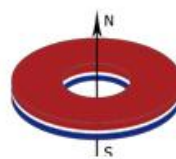
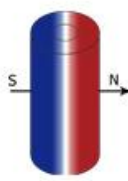
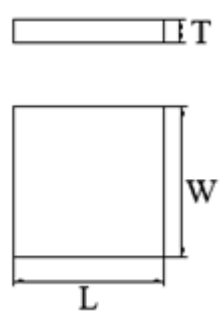
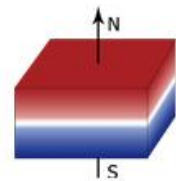
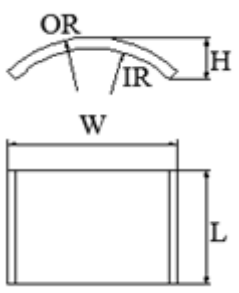
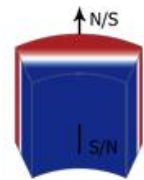
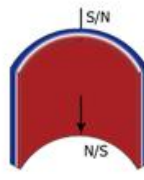
Grade	B_r		H_{cb}		H_{cj}		$(BH)_{max}$		T_w
	kGs	T	kOe	kA/m	kOe	kA/m	MGOe	kJ/m^3	$^{\circ}\text{C}$
XGS32H	11.0-11.5	1.10-1.15	≥ 10.2	≥ 812	≥ 25	≥ 1990	30-32	239-255	≤ 350
XGS30H	10.7-11.2	1.07-1.12	≥ 9.9	≥ 788			28-30	223-239	
XGS28H	10.4-10.9	1.04-1.09	≥ 9.6	≥ 764			26-28	207-223	
XGS26H	10.0-10.5	1.00-1.05	≥ 9.2	≥ 732			24-26	191-207	
XGS24H	9.7-10.2	0.97-1.02	≥ 8.9	≥ 708			22-24	175-191	
XGS22H	9.3-9.8	0.93-0.98	≥ 8.5	≥ 676			20-22	159-175	
XGS20H	9.0-9.5	0.90-0.95	≥ 8.2	≥ 653			18-20	143-159	
XGS32	11.0-11.5	1.10-1.15	≥ 10.0	≥ 796	≥ 18	≥ 1433	30-32	239-255	≤ 300
XGS30	10.7-11.2	1.07-1.12	≥ 9.7	≥ 772			28-30	223-239	
XGS28	10.4-10.9	1.04-1.09	≥ 9.4	≥ 748			26-28	207-223	
XGS26	10.0-10.5	1.00-1.05	≥ 9.0	≥ 716			24-26	191-207	
XGS24	9.7-10.2	0.97-1.02	≥ 8.7	≥ 692			22-24	175-191	
XGS22	9.3-9.8	0.93-0.98	≥ 8.3	≥ 660			20-22	159-175	
XGS20	9.0-9.5	0.90-0.95	≥ 8.0	≥ 637			18-20	143-159	
XGS32M	11.0-11.5	1.10-1.15	≥ 9.0	≥ 716	≥ 12	≥ 955	30-32	239-255	≤ 300
XGS30M	10.7-11.2	1.07-1.12	≥ 8.7	≥ 692			28-30	223-239	
XGS28M	10.4-10.9	1.04-1.09	≥ 8.5	≥ 676			26-28	207-223	
XGS26M	10.0-10.5	1.00-1.05	≥ 8.5	≥ 676			24-26	191-207	
XGS24M	9.7-10.2	0.97-1.02	≥ 8.5	≥ 676			22-24	175-191	
XGS22M	9.3-9.8	0.93-0.98	≥ 8.2	≥ 653			20-22	159-175	
XGS20M	9.0-9.5	0.90-0.95	≥ 8.0	≥ 637			18-20	143-159	
XGS32L	11.0-11.5	1.10-1.15	≥ 6.8	≥ 541	≥ 8	≥ 636	30-32	239-255	≤ 250
XGS30L	10.7-11.2	1.07-1.12	≥ 6.8	≥ 541			28-30	223-239	
XGS28L	10.4-10.9	1.04-1.09	≥ 6.6	≥ 525			26-28	207-223	
XGS26L	10.0-10.5	1.00-1.05	≥ 6.6	≥ 525			24-26	191-207	
XGS24L	9.7-10.2	0.97-1.02	≥ 6.5	≥ 517			22-24	175-191	
XGS22L	9.3-9.8	0.93-0.98	≥ 6.5	≥ 517			20-22	159-175	
XGS20L	9.0-9.5	0.90-0.95	≥ 6.5	≥ 517			18-20	143-159	

Grade	B_r		H_{cb}		H_{cj}		$(BH)_{max}$		T_w
	kGs	T	kOe	kA/m	kOe	kA/m	MGOe	kJ/m^3	$^{\circ}\text{C}$
XGS24LT	9.7-10.2	0.97-1.02	≥ 8.7	≥ 692	≥ 18	≥ 1433	22-24	175-191	≤ 300
XGS22LT	9.3-9.8	0.93-0.98	≥ 8.3	≥ 660			20-22	159-175	
XGS20LT	9.0-9.5	0.90-0.95	≥ 8.0	≥ 637			18-20	143-159	
XGS18LT	8.5-9.0	0.85-0.90	≥ 7.5	≥ 597			16-18	127-143	
XGS16LT	8.0-8.5	0.80-0.85	≥ 7.0	≥ 557			14-16	111-127	
XGS14LT	7.5-8.0	0.75-0.80	≥ 6.5	≥ 517			12-14	95-111	
XG24H	9.7-10.2	0.97-1.02	≥ 9.2	≥ 730	≥ 23	≥ 1830	22-24	175-191	≤ 250
XG22H	9.3-9.8	0.93-0.98	≥ 8.8	≥ 700			20-22	159-175	
XG20H	9.0-9.5	0.90-0.95	≥ 8.5	≥ 676			18-20	143-159	
XG18H	8.5-9.0	0.85-0.90	≥ 8.2	≥ 653			16-18	127-143	
XG16H	8.0-8.5	0.80-0.85	≥ 7.8	≥ 620			14-16	111-127	
XG24	9.7-10.2	0.97-1.02	≥ 9.2	≥ 730	≥ 15	≥ 1194	22-24	175-191	≤ 250
XG22	9.3-9.8	0.93-0.98	≥ 8.8	≥ 700			20-22	159-175	
XG20	9.0-9.5	0.90-0.95	≥ 8.5	≥ 676			18-20	143-159	
XG18	8.5-9.0	0.85-0.90	≥ 8.2	≥ 653			16-18	127-143	
XG16	8.0-8.5	0.80-0.85	≥ 7.8	≥ 620			14-16	111-127	

Note:

- * The data in the above table were samples' results tested at the temperature of 20 °C.
- * The prefixes XGS and XG are for $\text{Sm}_2\text{Co}_{17}$ and SmCo_5 magnets, respectively.
- * The typical temperature coefficients of B_r and H_{cj} are $\alpha(B_r)$: -0.03~-0.05 %/°C and $\beta(H_{cj})$: -0.20~-0.30 %/°C, respectively.
- * The suffix LT means low/near-zero temperature coefficient of B_r ($\alpha(B_r)$: +0.01 ~ -0.03 %/°C).
- * The above data are only for reference, magnets can be tailored according to customers' personalized requirements.

Table II Sintered SmCo Magnets' Shapes, Magnetization Direction and Size Range

Shape	Graphic Description	Magnetization Direction		Size Range
Disc/Cylinder			Axially Magnetized	D: 1-100 mm T: 0.5-100 mm
			Diametrically Magnetized	D: 1-100 mm T: 0.5-100 mm
Ring			Axially Magnetized	OD: 1.5-100 mm ID: 0.5-90 mm T: 0.5-60 mm
			Diametrically Magnetized	OD: 1.5-100 mm ID: 0.5-90 mm T: 0.5-60 mm
Block/ Rectangular			Thickness Magnetized	L: 1-160 mm W: 0.5-100 mm T: 0.5-100 mm
Arc/Segment			Diametrically Magnetized	OD-ID ≥ 1mm L: 1-120 mm W: 3-100 mm H: 1-60 mm
			Radially Magnetized	OD-ID ≥ 1mm L: 1-50 mm W: 3-30 mm H: 1-10 mm

Note:

* Other shapes of sintered SmCo magnets can also be tailored according to customers' specific requirements.

Table III Some Physical Properties of Sintered SmCo Magnets

Parameter	Unit	Value
Density (ρ)	g/cm^3	8.2-8.4
Curie Temperature (T_c)	$^{\circ}\text{C}$	700-850
Recoil Permeability (μ_{rec})	-	1.05-1.10
Vickers Hardness (HV)	MPa	400-600
Bending Strength (σ_{bb})	MPa	150-180
Compressive Strength (σ_{bc})	MPa	800-1000
Tensile Strength (σ_{b})	MPa	35-40
Resistivity (ρ)	$\mu\Omega\cdot\text{m}$	0.5-0.9
Thermal Expansivity // Magnetization ($\alpha_{//}$)	$10^{-6}/^{\circ}\text{C}$	5-9
Thermal Expansivity \perp Magnetization (α_{\perp})	$10^{-6}/^{\circ}\text{C}$	10-13

Note:

* The above data are only for reference, specific magnets maybe have different values.