

# Sintered SmCo Magnets' Specifications



**ADVANCED MAGNETS**

For Greener & Smarter Future

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**Table I Sintered SmCo Magnets' Grades and Their Magnetic Properties**

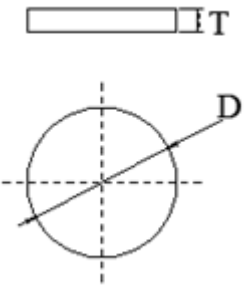
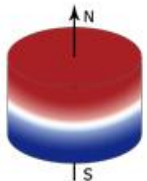

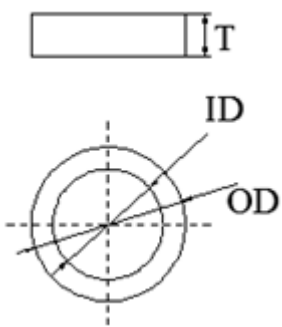
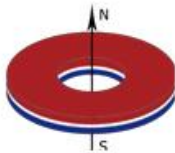
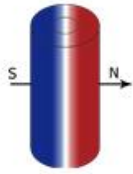
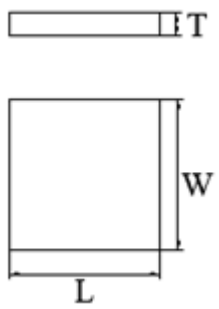
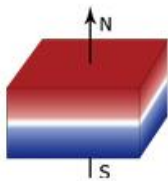
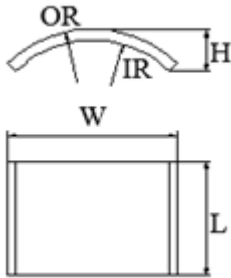
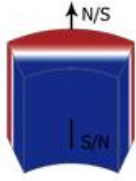
Grade	B <sub>r</sub>		H <sub>cb</sub>		H <sub>cj</sub>		(BH) <sub>max</sub>		T <sub>w</sub>
	kGs	T	kOe	kA/m	kOe	kA/m	MGOe	kJ/m <sup>3</sup>	°C
XGS32H	11.0-11.5	1.10-1.15	≥10.2	≥812	≥25	≥1990	30-32	239-255	≤350
XGS30H	10.7-11.2	1.07-1.12	≥9.9	≥788			28-30	223-239	
XGS28H	10.4-10.9	1.04-1.09	≥9.6	≥764			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	$kJ/m^3$	$^{\circ}C$
XGS24LT	9.7-10.2	0.97-1.02	$\geq 8.7$	$\geq 692$	$\geq 18$	$\geq 1433$	22-24	175-191	$\leq 300$
XGS22LT	9.3-9.8	0.93-0.98	$\geq 8.3$	$\geq 660$			20-22	159-175	
XGS20LT	9.0-9.5	0.90-0.95	$\geq 8.0$	$\geq 637$			18-20	143-159	
XGS18LT	8.5-9.0	0.85-0.90	$\geq 7.5$	$\geq 597$			16-18	127-143	
XGS16LT	8.0-8.5	0.80-0.85	$\geq 7.0$	$\geq 557$			14-16	111-127	
XGS14LT	7.5-8.0	0.75-0.80	$\geq 6.5$	$\geq 517$			12-14	95-111	
XG24H	9.7-10.2	0.97-1.02	$\geq 9.2$	$\geq 730$	$\geq 23$	$\geq 1830$	22-24	175-191	$\leq 250$
XG22H	9.3-9.8	0.93-0.98	$\geq 8.8$	$\geq 700$			20-22	159-175	
XG20H	9.0-9.5	0.90-0.95	$\geq 8.5$	$\geq 676$			18-20	143-159	
XG18H	8.5-9.0	0.85-0.90	$\geq 8.2$	$\geq 653$			16-18	127-143	
XG16H	8.0-8.5	0.80-0.85	$\geq 7.8$	$\geq 620$			14-16	111-127	
XG24	9.7-10.2	0.97-1.02	$\geq 9.2$	$\geq 730$	$\geq 15$	$\geq 1194$	22-24	175-191	$\leq 250$
XG22	9.3-9.8	0.93-0.98	$\geq 8.8$	$\geq 700$			20-22	159-175	
XG20	9.0-9.5	0.90-0.95	$\geq 8.5$	$\geq 676$			18-20	143-159	
XG18	8.5-9.0	0.85-0.90	$\geq 8.2$	$\geq 653$			16-18	127-143	
XG16	8.0-8.5	0.80-0.85	$\geq 7.8$	$\geq 620$			14-16	111-127	

Note:

- \* The data in the above table were samples' results tested at the temperature of 20  $^{\circ}C$ .
- \* The prefixes XGS and XG are for  $Sm_2Co_{17}$  and  $SmCo_5$  magnets, respectively.
- \* The typical temperature coefficients of  $B_r$  and  $H_{cj}$  are  $\alpha(B_r)$ : -0.03~-0.05 %/ $^{\circ}C$  and  $\beta(H_{cj})$ : -0.20~-0.30 %/ $^{\circ}C$ , respectively.
- \* The suffix LT means low/near-zero temperature coefficient of  $B_r$  ( $\alpha(B_r)$ : +0.01 ~ -0.03 %/ $^{\circ}C$ ).
- \* 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: 5-100 mm ID: 1-90 mm T: 1-60 mm
			Diametrically Magnetized	OD: 5-100 mm ID: 1-90 mm T: 1-60 mm
Block/ Rectangular			Thickness Magnetized	L: 1-160 mm W: 1-100 mm T: 1-100 mm
Arc/Segment			Diametrically Magnetized	OD-ID ≥ 1mm L: 1-120 mm W: 3-100 mm H: 1-60 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 ( $\rho$ )	$\text{g/cm}^3$	8.2-8.4
Curie Temperature ( $T_c$ )	$^{\circ}\text{C}$	700-850
Recoil Permeability ( $\mu_{\text{rec}}$ )	-	1.05-1.10
Vickers Hardness (HV)	MPa	400-600
Bending Strength ( $\sigma_{\text{bb}}$ )	MPa	150-180
Compressive Strength ( $\sigma_{\text{bc}}$ )	MPa	800-1000
Tensile Strength ( $\sigma_{\text{b}}$ )	MPa	35-40
Resistivity ( $\rho$ )	$\mu\Omega\cdot\text{m}$	0.5-0.9
Thermal Expansivity // Magnetization ( $\alpha_{\parallel}$ )	$10^{-6}/^{\circ}\text{C}$	5-9
Thermal Expansivity $\perp$ Magnetization ( $\alpha_{\perp}$ )	$10^{-6}/^{\circ}\text{C}$	10-13

Note:

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