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Samarium-Rare earth magnet sintered

Sintered Samarium Cobalt rare-earth (SmCo) magnets are manufactured by using powder metallurgy techniques, which include stringent process controls and complicated heat treatment, cycles. The composition of this Sintered SmCo magnets alloy is approximately 35% Samarium, 60% cobalt with the balance being Fe & Cu. By varying the percentages of this composition and changing the sintering & heat treatment cycles the two grades 1:5 & 2:17 are produced. The difference between them is in energy product, temperature coefficient and magnetisation force required to saturate. The 2:17 Sintered SmCo magnets (most popular) offers a better performance & lower temperature coefficient, however it is slightly more expensive and requires very high fields to magnetise it.



Features of Sintered SmCo magnet:

An alloy compose of SmCo5/Sm2Co17; Limited raw material supply result high in cost; High resistance to demagnetization; Suitable in a temperature of over 100 °C to 350°C or hostile environments; Various shapes and dimensions can be met; low temperature coefficient; High performance and Extremely brittle; Outstanding thermal stability; Excellent resistance to corrosion and oxidation, no coating is needed for surface protecting.

Applications of Sintered SmCo magnet:

Sintered SmCo magnet is suitable for machines with high magnetic requirements Good for strict working environment requirement. robotics, machine tools to relays sensors , UHV magnetrons, motors , watch , transducers , instruments , positional detector ,generators ,radar and etc. Electronic magnetron, Magnetic Transmission , Magnetic Treatment , Magnistor , Etc.

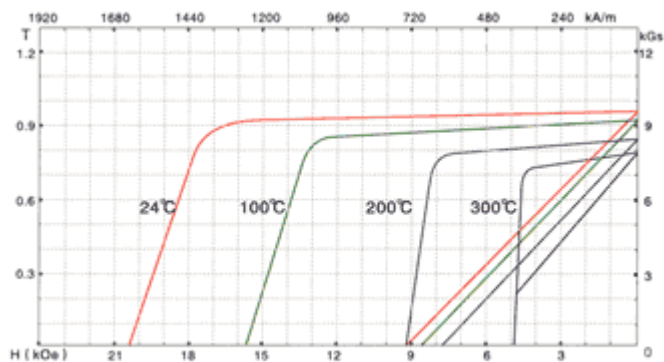
Grade	Residual	Fulx Br	Coercive Force Hcb	Intrinsic Coercive force Hcj	Max. Energy	Product (BH) max
	mT	kGs	kA/m	koe	kJ/m ³	MGoe

SMCO5	SmCo5-YX16	750~880	7.5~8.8	597±40	7.5±0.5	≥1591	≥20.0	127±16	16±2
	SmCo-YX16A	750~880	7.5~8.8	597±40	7.5±0.5	≥1989	≥25.0	127±16	16±2
	SmCo-YX16B	750~880	7.5~8.8	597±40	7.5±0.5	≥2386	≥30.0	127±16	16±2
	SmCo-YX18A	800~930	8.0~9.3	637±40	8.0±0.5	≥1591	≥20.0	143±16	18±2
	SmCo-YX18T	800~930	8.0~9.3	637±40	8.0±0.5	≥1591	≥20.0	143±16	18±2
	SmCo-YX18B	800~930	8.0~9.3	637±40	8.0±0.5	≥1989	≥25.0	143±16	18±2
SMCO 2:17	SmCo-YX20	900~950	9.0~9.5	≥670	8.5~9.2	≥1591	≥20.0	159±16	20±2
	SmCo-YX20A	900~980	9.0~9.8	637±40	8.0±0.5	≥1989	≥25.0	159±16	20±2
	SmCo-YX22	900~1030	9.0~10.3	653±40	8.2±0.5	≥1432	≥18.0	175±16	22±2
	SmCo-YX22A	900~1030	9.0~10.3	653±40	8.2±0.5	≥1989	≥25.0	175±16	22±2
	SmCo-YX24	950~1080	9.5~10.8	676±40	8.2±0.5	≥1432	≥18.0	191±16	24±2
	SmCo-YX24A	1000~1100	10.0~11.0	676±40	8.2±0.5	≥1989	≥25.0	191±16	24±2
	SmCo-YX26	1000~1130	10.0~11.3	357~516	4.5~6.5	413~556	5.0~7.0	207±16	26±2
	SmCo-YX26A	1000~1130	10.0~11.3	716±40	9.0±0.5	≥796	≥10.0	207±16	26±2
	SmCo-YX26B	1000~1130	10.0~11.3	716±40	9.0±0.5	≥1194	≥15.0	207±16	26±2
	SmCo-YX26C	1000~1130	10.0~11.3	716±40	9.0±0.5	≥1591	≥20.0	207±16	26±2
	SmCo-YX26D	1000~1080	10.0~10.8	≥732	9.0~10.5	≥2300	≥30.0	207±16	26±2
	SmCo-YX28	1060~1180	10.6~11.8	357~516	4.5~6.5	413~556	5.0~7.0	223±16	28±2
	SmCo-YX28A	1060~1180	10.6~11.8	763±40	9.6±0.5	≥796	≥10.0	223±16	28±2
	SmCo-YX28B	1050~1150	10.5~11.5	≥750	9.4~9.8	≥960	≥12.0	223±16	28±2
	SmCo-YX28C	1060~1180	10.6~11.8	763±40	9.6±0.5	≥1194	≥15.0	223±16	28±2
	SmCo-YX30	1100~1200	11.0~12.0	438~597	5.5~6.5	454~597	5.7~7.5	238±16	30±2
	SmCo-YX30A	1100~1200	11.0~12.0	≥560	7.0~8.5	≥716	≥12.0	238±16	30±2
SmCo-YX30B	1100~1200	10.8~11.2	796-859	10.0-10.8	≥1990	≥25.0	223-247	28.0-31.0	
SmCo-YX32	≤1120	≤11.2	≤557	≥7.0	≥637	≥8.0	≥239	≥30.0	

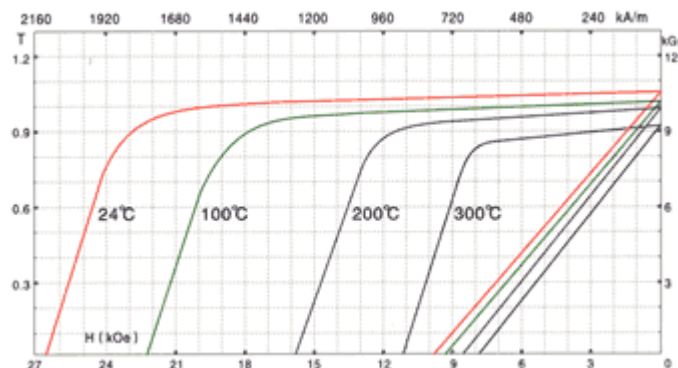
Characteristics & application of SmCo permanent magnet

Curie Temp.	T _c	°C	800-850	Coeff. of thermal expansion	C//	1/°C	~8×10 ⁻⁵
Density	D	g/cm ³	8.3~8.5		C⊥	1/°C	~11×10 ⁻⁵
Recoil Permeability	μ _{rec}		1.00~1.05;	Rigidity strength		N/m ²	~1.5×10 ⁸
Max. Working Temp.	T _{max}	°C	350	Compress strength		N/m ²	~8×10 ⁸
Electrical Resistivity		Ω.Cm	8.6×10 ⁵	Tensile strength		N/m ²	~3.5×10 ⁷
Vickers Hardness	Hv		500~600	Young's Modulus		N/m ²	~1.2×10 ¹¹
Thermal Conduct rate		W/mK	~12	Magnetization field H _a		kA/m	≥1600

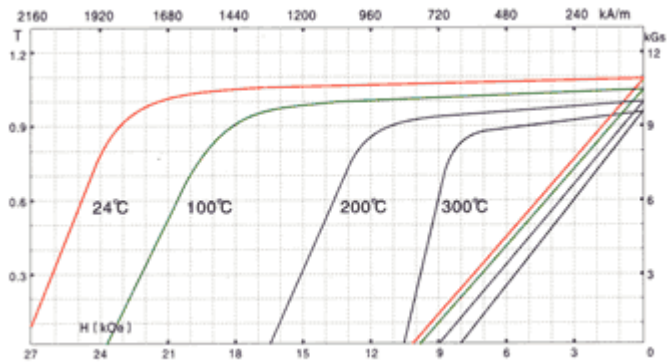
Typical Demagnetization Curves of SmCo Magnets



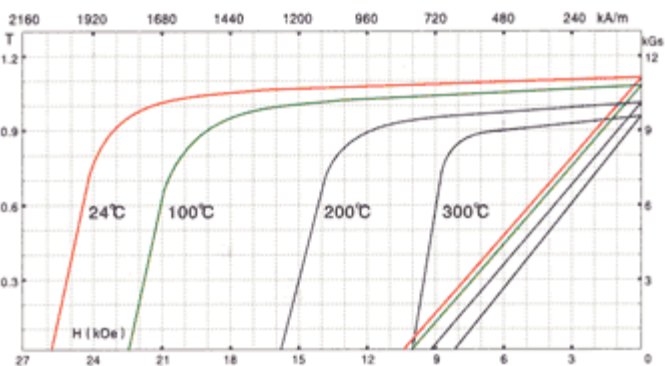
SmCo5 Demagnetization Curve YX 18A



Sm2Co17 Demagnetization Curve YX 26A



Sm2Co17 Demagnetization Curve YX 28A



Sm2Co17 Demagnetization Curve YX 30A