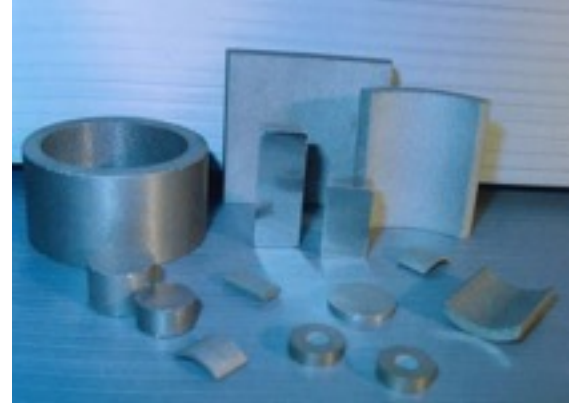


General Information

Well known as Rare Earth magnets, Samarium Cobalt (SmCo) is alloys of the Lanthanide group of elements, which is first kind of commercialized permanent magnet materials from early 1980's. SmCo magnets are available in a number of different grades that span a wide range of properties and application requirements.

SmCo magnets are brittle and machining operations should be performed prior to magnetization, using diamond tools. We are equipped to fabricate these materials to blueprint specifications.



SmCo magnets are anisotropic, and can only be magnetized in the orientation direction. In general, magnetizing fields of about 35 to 45 kOe are required to saturate SmCo materials.

Assemblies can be fabricated by adhering magnets with adhesives to suit a range of environments, by mechanically fastening magnets, or by a combination of these methods. Due to the relatively brittle nature of these magnet material press fits are not recommended. When multiple magnets are assembled in repelling positions, it is advisable to use mechanical fastening in addition to adhesives, since if adhesives were to give way, repelling magnets may dislodge and endanger personnel using them. Our design engineering team will be happy to assist you in designing both magnetic circuits and housings for your magnet assemblies.

SmCo is extremely brittle, and highly prone to chipping and cracking. Special machining techniques, involving diamond-grinding techniques, must be used to machine this material. We are fully equipped to machine these materials to your blueprint specifications. SmCo magnets require extremely high magnetizing fields and special consideration must be given to this when designing complex assemblies, if it is intended to magnetize after assembly. Consult us if you foresee any problems.

SmCo magnets can operate at temperatures up to 350 C, depending upon the grade and permeance coefficient. Sm₂Co₁₇ materials exhibit superior temperature characteristics as compared to the Sm₁Co₅ types.

Magnetic Property

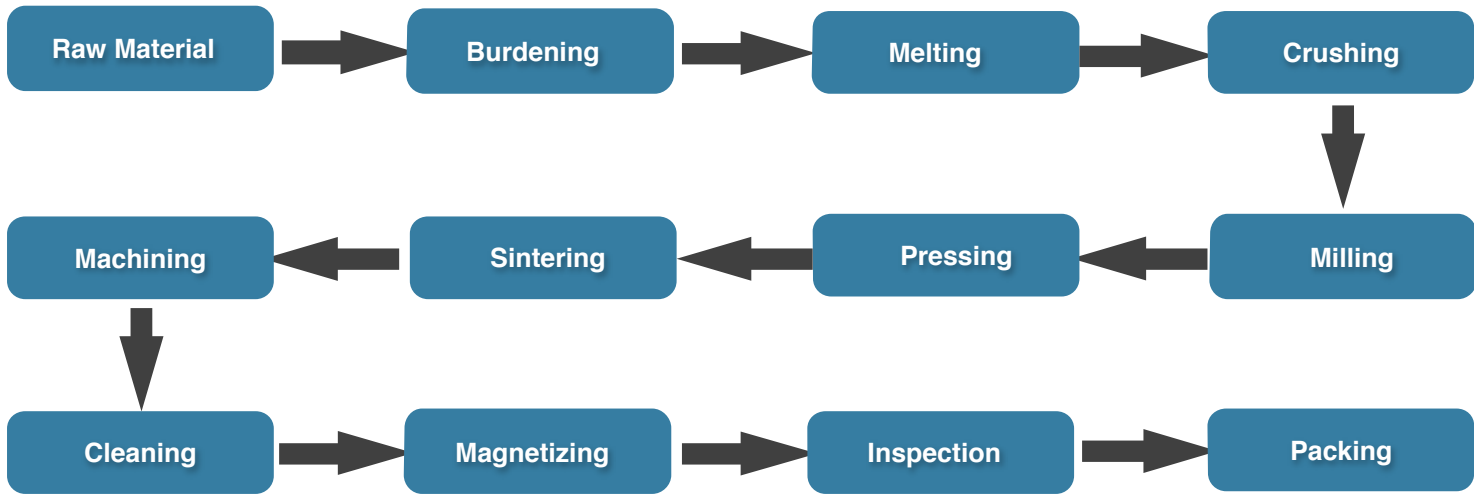
SC1:SmCo5 series, SC2: Sm2Co17 series

Material Grade	Residual Flux	Coercive Force	Intrinsic Coercive Force	Max. Energy Product	Max. Working Temperature
	Br (mT)	Hcb (kA/m)	Hcj (kA/m)	(BH)max (kJ/m ³)	(°C)
SC1-18	800~900	621~700	≥1990	127~159	250~280
SC1-20	880~940	676~732	≥1443	151~167	250~280
SC1-22	940~1000	700~748	≥1194	167~183	250~280
SC2-18T	850~950	636~716	≥1592	127~159	280~300
SC2-22T	940~1000	676~756	≥1592	159~191	280~300
SC2-22L	950~1020	477~557	≥493	159~191	280~300
SC2-22H	950~1020	557~716	≥636	159~191	280~300
SC2-26L	1020~1080	477~557	≥493	191~223	280~300
SC2-26H	1020~1060	557~716	≥636	199~215	280~300
SC2-26U	1020~1080	756~812	≥1990	199~223	280~300
SC2-28H	1060~1100	557~716	≥636	214~238	280~300
SC2-30L	1080~1150	477~557	≥493	223~254	280~300
SC2-30U	1080~1120	796~836	≥1990	223~247	280~300
SC2-32H	1110~1160	557~716	≥637	238~262	280~300

Physical Property

	Unit	SC1(SmCo5 series)	SC2(Sm2Co17 series)
Temp Coeff. of Br	/°C	-0.05%	-0.01~ -0.03%
Curie Temperature	°C	750~800	800~850
Desity	g/ cm ³	8.10~8.30	8.30~8.40
Thermal Expansion Coeff.	/°C	13x 10 ⁻⁶ / 6x 10 ⁻⁴	11x 10 ⁻⁶ / 8x 10 ⁻⁴
Vickers Hardness	Hv	450~500	500~600

Process Flow



Surface Coating

Coating	Ni	Ni-Cu-Ni
	Double layers	
Corrosion resistance	Excellent	Excellent