

Samarium Cobalt (SmCo) permanent magnets are known for their high magnetic strength, exceptional temperature stability, and reliable performance. As a result, they rarely require a coating to combat corrosion and therefore are more suitable for certain applications than Neodymium.

Samarium cobalt magnets are often used when a wide range of operating temperatures is expected or if temperature effects must be mitigated, as when high accuracy or highly stable performance is desired. A potential challenge is their propensity to chip and crack, due to their brittle nature.

1:5 Alloy Material Characteristics

1:5 series SmCo provides an energy product between 16 and 22 MGOe and is made up of approximately 37% samarium and 63% cobalt. Considering an operating slope of one, a low coercivity grade 1:5 series may begin to experience permanent losses if heated above 482°F (250°C). High coercivity grade 1:5 SmCo can function at temperatures more than 752°F (400°C) with little to no irreversible loss. SmCo 1:5 magnets require lower field strengths than 2:17 materials to magnetize. In some instances, 1:5 material may be magnetized with multiple poles.

2:17 Alloy Material Characteristics

2:17 series SmCo provides an energy product between 24 and 32 MGOe and is composed of about 25% samarium, 5% copper, 18% iron and 2% hafnium or zirconium, with the remainder being cobalt. Considering an operating slope of one, a low coercivity grade 2:17 series SmCo may begin to experience permanent losses if heated above 482°F (250°C). High coercivity grade 2:17 SmCo can function at temperatures more than 932°F (500°C) with little to no irreversible loss. Specialized grades are available for even higher temperature requirements. SmCo 2:17 requires a higher magnetizing field when compared to SmCo 1:5. With the appropriate magnetizing fixture, multipole magnetization may be possible.

Applications

High-performance permanent magnet motors, medical instruments, magnetic couplings, magnetic bearings, gyroscopes, accelerometers, voice coil motors, particle accelerators, sputtering deposition, Halbach arrays, magnetic separation devices, speakers, microphones, undulators, wigglers, particle beam focusing devices, and many others.

Adams Magnetic Products is ISO 9001:2008 Certified and ITAR Registered



Discs

Diameter	Thickness	Grade	Item#
0.118	0.118	18	55B0009
0.187	0.060	18	55B0001
0.250	0.100	24	55B0018
0.250	0.250	26	55B0035
0.312	0.200	20	55B0038
0.375	0.200	20	55B0040
0.500	0.190	18	55B0019
0.625	0.180	18	55B0031
0.750	0.180	26	55B0025
1.500	0.500	26	55B0063



Rectangles

Thickness	Width	Length	Grade	Item#
0.188	1.000	1.500	26	50C0058
0.250	0.375	1.000	18	50C0016
0.500	1.000	2.000	26	50C0033

Notes: Dimensions are in inches. Direction of magnetization is through the thickness. Other sizes, shapes and magnetization types are available. Please call us if you don't find what you're looking for in this brief listing. 1-800-763-4795