General Information

Excellent temperature stability, high residual induction, and relatively high energies characterize Alnico materials, composed primarily of alloys of Aluminum, Nickel, and Cobalt. They are manufactured through either a casting or sintering process.

Cast magnets may be manufactured in complex shapes, such as horseshoes. Sintered Alnico offer slightly lower magnetic properties but better mechanical characteristics than cast Alnico. This material is used extensively in rotating machinery, meters, instruments, sensing devices, and holding applications…

Alnico is hard and brittle. Machining or drilling can not therefore be accomplished by ordinary methods. Holes are usually cored in at the foundry, and magnets are cast close to final size and then finish machined to closer tolerances.
Alnico has a low coercive force, and is easily demagnetized if not handled with care. For optimum performance of Alnico 5, the magnetic length should be approximately 5 times the pole diameter or equivalent diameter. For example, a 0.250" diameter magnet should be about 1.250" long. Because of its higher coercivity, Alnico 8 may be used in shorter lengths and in disc shapes.

The corrosion resistance of Alnico is considered excellent , and no surface treatments are required. However, Alnico magnets are easily plated for cosmetic reasons if required.

Alnico is hard and brittle, and prone to chipping and cracking. Special machining techniques must be used to machine this material. Holes must be made by EDM methods. We are fully equipped to machine these materials to your blueprint specifications.

Alnico magnets require magnetizing fields of about 3 kOe. Because of their relatively low coercive force, special care should be taken to assure that these magnets are not subjected to adverse repelling fields, since these could partially demagnetize the magnets. Magnetized magnets should be stored with keepers to reduce the possibility of partial demagnetization. If Alnico are partially demagnetized, they may be easily demagnetized.

Up to about 1,000 F, changes in magnetization are largely reversible and re-magnetizable, while changes above this are largely structural and not fully reversible or re-magnetizable. Approximately 90% of room temperature magnetization is retained at temperatures of up to 1,000 F.

Magnetic Property

Material Grade	Residual Magnetic Flux Density	Coercive Force	Max. Energy Product	Max. Working Temperature
	Br (mT)	Hcb (kA/m)	BH max(kJ/m3)	(°C)
LN10*	600	40	10	550
LNG12	700	44	12	550
LNG13	680	48	13	550
LNG16	800	48	16	550
LNG18	900	48	18	550
LNG37	1200	48	37	550
LNG40	1230	48	40	550
LNG44	1250	52	44	550
LNG48	1280	56	48	550
LNG52	1300	56	52	550
LNG56*	1300	58	56	550
LNG60*	1330	60	60	550
LNGT28	1000	56	28	550
LNGT30	1100	56	30	550
LNGT18	580	80	18	550
LNGT32	800	100	32	550
LNGT38	800	110	38	550
LNGT44	850	115	44	550
LNGT48	900	120	48	550
LNGT60	900	110	60	550
LNGT72	1050	112	72	550
LNGT80	1080	120	80	550
LNGT88	1100	115	88	550
LNGT96	1150	118	96	550
LNGT36J	700	140	36	550
LNGT48J	800	145	48	550
LNGT52J	850	140	52	550

Physical Property

Curie Temperature Tc	860	℃
Max Operating Temperature	525-550	℃
Specific Resistance	47-54	Ω-cm
Hardness	520-630	4X10-6/℃
Recoil Permeability	1.70-4.70	Gs/Oe
Tem. Coefficient	-0.025 ~ -0.020	%/℃
Tem. Coefficient of Inturensic Coerrice Induction	+0.01 ~ +0.03	%/℃

Process Flow