

Hard ferrite (HF)

SrFe (Strontium ferrite).

Magnets made of hard ferrite (80% iron oxide) are made by sintering process.

Like all ceramic materials, these magnets are very hard and brittle and virtually non-machinable.

The magnetic adhesive force drops when the magnet is heated.

AlNiCo (AN)

Aluminium nickel cobalt.

Magnets made of AlNiCo (main constituents include aluminium, nickel, cobalt and iron) are made by sintering or casting process.

The material is very hard and tough, but can be redressed.

These magnets are used in applications in which the magnetic field is to remain as static and stable as possible; also under higher temperature fluctuations.

SmCo (SC)

Samarium cobalt.

Magnets made of SmCo (main constituents include samarium and cobalt) are made by sintering process.

The material is very hard and brittle and is virtually non-machinable.

The magnetic adhesive force drops when the magnet is heated.

NdFeB (ND)

Neodymium iron boron.

Magnets made of NdFeB (main constituents include neodymium, iron and boron) are made by sintering process.

The material is very hard and brittle and is virtually non-machinable.

This material delivers ultimate magnetic holding power.

The magnetic adhesive force drops when the magnet is heated.

Comparison of Magnet Materials:

Description	Hard ferrite (HF)	AlNiCo (AN)	SmCo (SC)	NdFeB (ND)
Pulling force	~ 390°F (200°C)	medium	strong	very strong
Max. working temperature*	~ 390°F (200°C)	~ 840 °F (450°C)	~ 390°F (200°C)	~ 175 °F (80°C)
Corrosion resistance	very good	very good	good	less good
Machineability	not possible	diamond cutting, grinding	not possible	not possible
Demagnetization capability	moderate by demagnetizing fields	easy by demagnetizing fields	very difficult only by large demagnetizing fields	difficult only by large demagnetizing fields
Price	very reasonable	high	very high	reasonable

*The maximum temperature used is only a guide value, because it also depends on the dimensions of the magnet.