

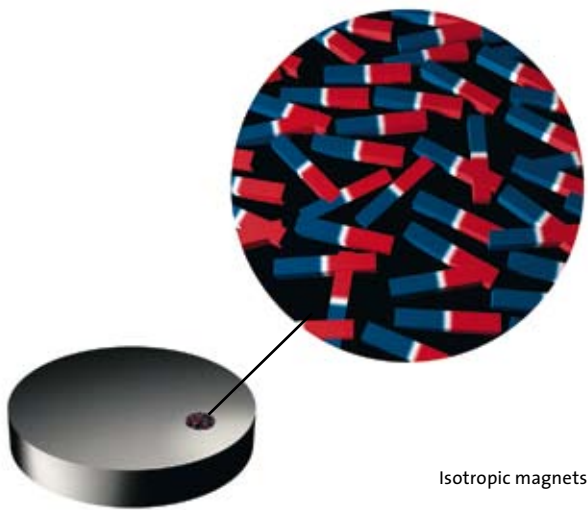
The preferred direction is the direction in which magnetic grains are oriented in a magnet. The requirements for this vary with the type of magnet.

Isotropic magnets

Isotropic magnets have no preferred direction. Since the orientation of their magnetic grains is statistically random, they can be magnetised in any direction. However, only those magnetic crystals are magnetised that are oriented in the direction of magnetisation.

The shape anisotropy possible for isotropic ferrites is remarkable. Depending on the powder properties and the moulding process, it can be up to 10%. The main reason for this is the hexagonal, laminar structure of the powder, which can orient itself in the compression direction upon axial pressing.

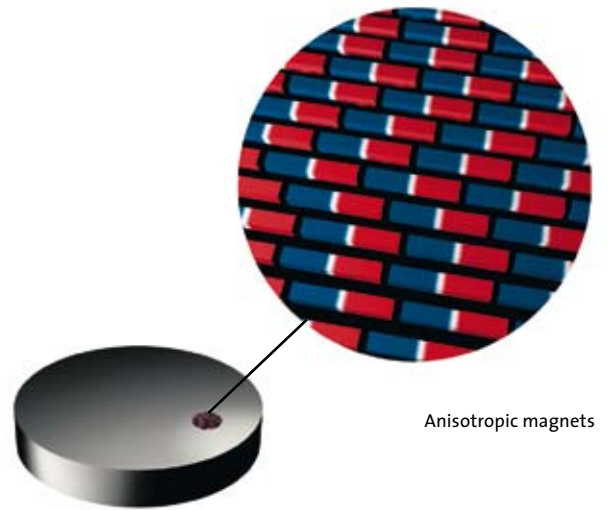
This can be compared to the difference between pairs of dice and a deck of playing cards. If we toss each "system" onto a table, the dice will be oriented stochastically, that is randomly, because of their shape. Quite a contrast to the playing cards; they fall in a distinct flat pattern, which will be further intensified if you apply pressure to them.



Anisotropic magnets

Anisotropic magnets are pressed or injection moulded in the presence of a magnetic field, and all grains are thereby rotated into the future direction of magnetisation. They have very good magnetic properties in their preferred direction, and attain nearly double the magnetic flux of isotropic magnets.

However, it is not possible to magnetise anisotropic magnets perpendicular to their preferred direction.



There are three main types of anisotropic magnets.

Magnets with axial preferred direction

Mainly, they are ring and disc magnets with axial preferred direction and rectangular magnets with preferred direction along their height.



Magnets with diametrical preferred direction

Magnets for special applications, such as motors or pumps, whose preferred direction is made perpendicular to the axis (diametrical).



Magnets with pole-oriented preferred direction

Plastic bonded magnets whose grains are oriented to be multipolar (pole-oriented) via a magnetic system in the injection mould.

