

Sintex® Permanent Magnets

At Sintex we supply sintered and polymer-bonded permanent magnets

We manufacture polymer-bonded neodymium magnets (NdFeB). Other permanent magnets, such as sintered neodymium (NdFeB), sintered ferrites (SrFe) and sintered samarium cobalt magnets (SmCo) are sourced from third parties. All solutions are naturally based on customer drawings/sketches.



The magnets are used for production of Sintex' magnetic systems and for direct resale to customers. In case of resale, we assure the quality and the magnetic properties of the magnets, whilst also taking responsibility for auditing and handling logistics. We have many years of experience and can thus offer everything from simple retaining magnets to technically complex magnets – with or without surface treatment.

We also have the option of encapsulating your magnet in stainless steel, so that exposure to chemicals, water or gasses is an option. This innovative and highly corrosion resistant magnet type is unique in the production and is therefore a Sintex patented solution.

Magnet types

- Polymer-bonded neodymium magnets (NdFeB)
- Encapsulated neodymium magnets (IP NdFeB)
- Sintered neodymium magnets (NdFeB)
- Sintered samarium cobalt magnets (SmCo)
- Sintered ferrite magnets (SrFe)

Polymer-bonded neodymium magnets

Polymer-bonded neodymium magnets are manufactured of magnetic powder mixed with epoxy, compacted in a matrix and then heat treated.

The polymer-bonded NdFeB magnets are magnetised after hardening. The magnetic material is isotropic, which means it can be magnetised arbitrarily with the number of poles and in the various directions required for the application concerned.

Advantages are:

- Pressed in one single process
- High mechanical strength
- Increased density
- 4-6 times stronger than traditional magnets
- Greater power at reduced volume
- Increased efficiency
- Long service life
- High operating temperature

Encapsulated neodymium magnets

The integrated magnet type developed by Sintex is innovative, because magnet powder is pressed into the encapsulation. Unique for this processing method is that no epoxy is necessary for binding the powder or the complete magnet to a shaft, there is no need for costly heat treatment and the manual assembly process is avoided. Magnetisation of the IP magnets is the last step

The advantages for the IP NdFeB integrated magnet are:

- Encapsulation and magnet pressed together
- High magnetic strength
- 20% higher efficiency at same volume
- Smaller design volume at same efficiency
- Eco friendly - no epoxy and less assembly
- Long service life

Sintered magnets

The sintered magnets are primarily sourced from Asia. Powder, consisting of metal and rare earths, is compressed in special tools and subsequently sintered at high temperature. The magnets are often mechanically finished to obtain the required geometry.

The sintered magnets can be anisotropic or isotropic. Anisotropic magnets have a preferred direction of magnetisation obtained during the manufacturing process, whereby a high magnetic strength can be achieved. Isotropic magnets can be magnetised in an arbitrary direction - although the magnetic strength will be compromised.

Rethinking Components of Tomorrow

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Properties of the various magnets and comparison hereof

| Type | Polymer-bonded NdFeB | Sintered NdFeB | Sintered SmCo | Sintered SrFe | IP NdFeB |
|-----------------------------------|----------------------|----------------|---------------|---------------|-----------|
| Withstand high temperature | Less good | Good | Very good | Very good | Very good |
| Withstand low temperature | Very good | Very good | Very good | Less good | Very good |
| Magnetic strength | Good | Very good | Very good | Less good | Very good |
| Arbitrary magnetisation direction | Very good | Less good | Less good | Good | Very good |
| Corrosion | Good | Less good | Very good | Very good | Very good |
| Price | Good | Good | Less good | Very good | Good |

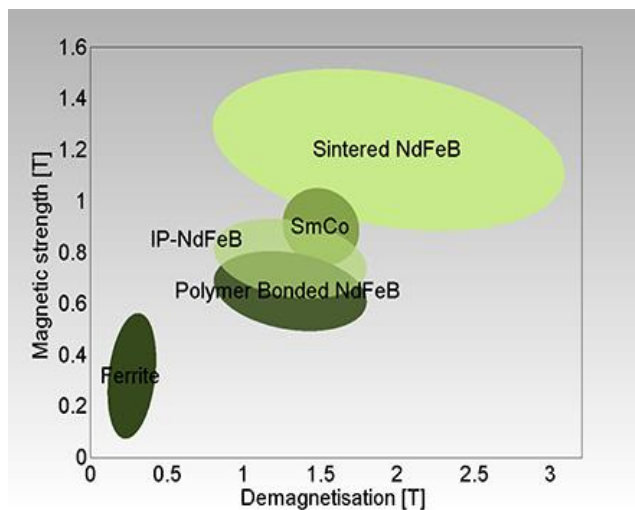
 = Very good

 = Good

 = Less good

Magnet overview

The magnetic strength and resistance to demagnetisation of the various types of magnets are illustrated in the figure below.



Surface treatment

For special applications, e.g. in the event of direct contact with water, it may be necessary to apply a surface treatment to certain types of magnets. We provide different options for surface treatment such as nickel, zinc and epoxy, or alternatively complete enclosure in stainless steel.

Specification of magnets

Magnets are characterised by a number of properties, the most important when specifying a magnet are:

- Magnetic properties such as remanence B_r , coercivity H_{cb} , intrinsic coercivity H_{ci} and, if applicable, max energy product (BH) Max.
- Dimensions and tolerances
- Retaining power, if applicable
- Minimum and maximum operating / working temperatures
- Area of application - e.g. aquatic environment
- Requirements concerning surface coating
- Iron or other magnetic materials or fields nearby

More information

Characteristic of all Sintex® magnets is that they are based on many years of know-how and development in the field. Regardless of whether the magnets are to be used in technically complex systems or as simply holding magnets, we have the experience to provide advice about design, dimensioning and further processing or machining.

For further information, please refer to the technical datasheets for each type of magnet concerned, see more info on our magnetic systems or contact our specialists.

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