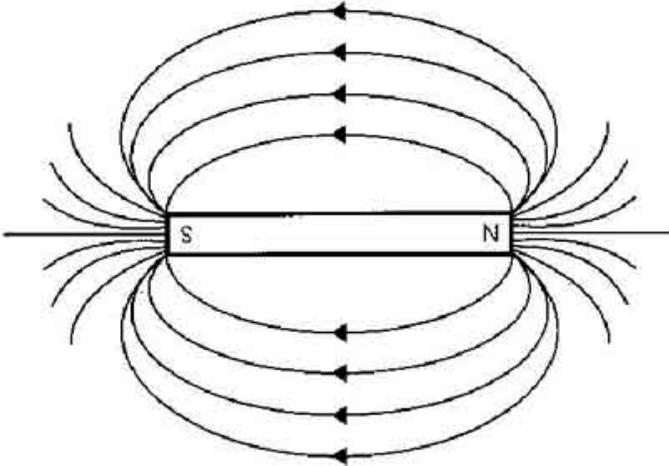




What is a magnetic field?

Typically, most people have been exposed to the phenomena created when you lay a bar magnet on a table, place a piece of glass over it and sprinkle iron filings on the glass. What turns up is a pattern of lines formed by the iron filings going from one end of the magnet to the other. Although a magnetic field isn't truly comprised of lines, the iron filings give a good visual representation of the bar magnet's magnetic field.

You may have also noticed that further away from the magnet there weren't as many lines and close to the magnet they were quite concentrated. This is a good demonstration of one of the best magnetic shielding methods available. Move the source of the magnetic field away from the item to be shielded or move the item away from the field. Even if it isn't practical to remove the item from the field any increased separation will lower the strength of the field to be shielded.



Looking again at the bar magnet, imagine placing an item (something you wish to shield) into the magnetic field (lines of iron filings). There will be a certain number of lines penetrating the item depending on where you placed it. Now if you were to leave the item at the same location but increased its size the number of lines penetrating the object also increases. What this means is that even if the strength of the magnetic field stays constant the amount (perhaps you can think of it as volume) of the field an item is exposed to will influence shield design.

A magnetic field cannot be seen, heard, or felt. All magnetic fields result from a source of magnetic flux, which might be the Earth, a motor, transformer or electric power line, or even a bar magnet. Usually magnetic fields are created electrically.

Electro magnetic shielding is necessary to isolate sensitive apparatus from these electro magnetic fields.

We can sense magnetic fields with measuring instruments, called Gaussmeters, or something simpler, like a compass (for DC fields) or a pickup coil (for AC fields). The first step to developing an effective magnetic shield is to measure the intensity of the field surrounding the area to be shielded.