

Magnetism

Properties

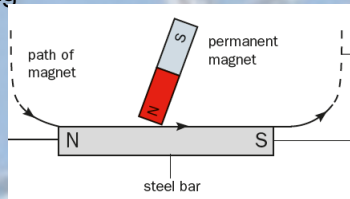
- Magnetic materials: Iron, Steel, Nickel, Cobalt
- Magnetic effect is strongest at the two poles – North and South
 - Like poles repel, unlike poles attract.
- Repulsion between 2 metals proves both are magnets.
- Attraction between 2 metals shows either or both are possibly magnets.

Magnetic Induction

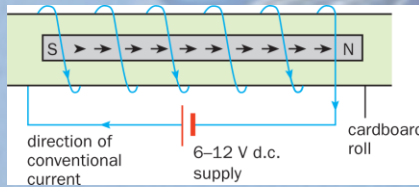
- Process by which a magnetic material becomes a magnet due to influence of another magnet.

Magnetization Methods (in general keep in north-south direction)

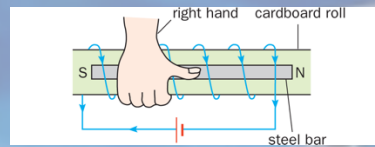
- Physical method
 - Stroking



- Electrical method
 - Use D.C. current supply to create a steady electromagnet.

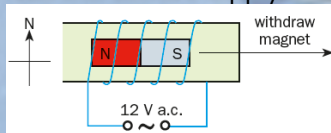


Right-hand Grip Rule



Demagnetization Methods (in general keep in east-west direction)

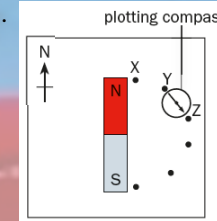
- Physical Methods
 - Heating: vibration of particles misalign the magnetic domains
 - Hitting/Hammering: impact misalign the magnetic domains
- Electrical Method
 - Use A.C. current supply to create a fluctuating electromagnet.



- Withdraw magnet in east-west direction.

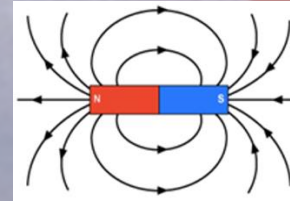
Magnetic Fields

- Region surrounding magnet in which a body of magnetic material experiences a magnetic force.
- Plotted using compass
- South in, North out (SINO)

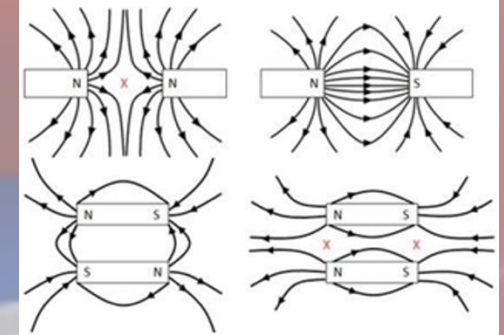


Magnetic Field Patterns

- Single bar magnetic field



- Magnetic fields between poles



Applications

- Magnetic shielding
- Magnetic keepers
- Magnetic material types:

Magnetic material	Soft	Hard
Properties	Easy to magnetise and demagnetise	Difficult to magnetise and demagnetise
Example(s)	Iron	Steel, alnico, neodymium
Used to make	Temporary magnets e.g. electromagnets	Permanent magnets e.g. magnetic door catch of a refrigerator