Ferrites and its applications

Ferrites are compounds of iron oxides with oxides of other metal.

- A ferrite is a type of ceramic compound composed of iron(III) oxide (Fe_2O_3) combined chemically with one or more additional metallic elements.
- They are both electrically nonconductive and ferrimagnetic, meaning they can be magnetized or attracted to a magnet.
- Based on their magnetic coercivity and resistance to being demagnetized, ferrites are of two types; soft and hard ferrites
- Hard ferrites have high coercivity, hence they are difficult to demagnetize. They are used to make permanent magnets, for devices such as refrigerator magnets, loudspeakers and small electric motors.

Soft ferrites have low coercivity. They are used in the electronics industry to make ferrite cores for inductors and transformers, and in various microwave components.

- Ferrite compounds have extremely low cost, being made of iron oxide (i.e. rusted iron), and also have excellent corrosion resistance. • They are very stable and difficult to demagnetize, and can be made with both high and low coercive forces.
- It is used for high frequency applications.

Properties

- Hard
- Brittle
- Iron-containing
- Polycrystalline
- High electrical resistivity
- Low electrical losses
- Significant saturation magnetization
- Very good chemical stability
- Generally grey or black