Effect of Electric Current

Heating Effect of Electric Current

- When electric current flows through a resistor, such as a heating coil of nichrome wire, it gets heated up.
- The generation (production) of heat in a resistor (or current) when electricity passes through it is called **heating effect of current**.

The heat produced in a resistor when current is passed through it depends on following factors.

- Current past through the register
- Time for which the current is passed
- Nature of the material

Magnetic Effect of Electric Current

A Danish scientist Hans Christian Oersted in 1819 discovered that when electric current is passed through any conductor a magnetic field is produced around it.

Electromagnet

- An electromagnet is formed due to the magnetic effect of electric current.
- When electric current flows through a wire wound around an iron bar, the bar behaves like a magnet. This magnet is called an electromagnet.
- Electromagnets are used in toys, iron industries, electric bells, cranes and Maglev trains, etc.

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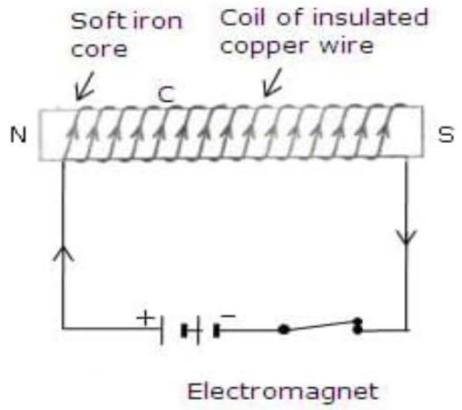
Construction of an Electromagnet

- To make an electromagnet, we take a rod NS of soft iron and wind a coil C of insulated copper wire around it. When the two ends of the copper coil are connected to a battery, an electromagnet is formed.
- An electromagnet is called a temporary magnet because it produces magnetic field so long as current flows in its coil.
- Core of an electromagnet should be of soft iron and not of steel because soft iron loses all its magnetism when current in the coil is switched off but steel does not lose its magnetism when the current is withdrawn.



Electromagnet

Strength of electromagnet depends on:

- The number of turns in the coil – Increasing the number of turns in the coil increases the strength of the electromagnet.
- The current flowing in the coil – Increasing the current flowing in the coil increases the strength of the electromagnet.
- The length of air gap between its poles: Reducing the length of air gap between the poles of electromagnet increases the strength of the electromagnet.

Effect of Electric Current

- Electromagnets are used in several electrical devices such as electric bell, electric motor, loudspeaker etc. They are also used by doctors to remove particles of iron or steel from a patient's eye and to remove pieces of iron from wounds.