

Physics Class Notes

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Heating effect of Electricity

Electric heating appliances are instruments that make use of the heating effect of electricity. Electrical energy is converted into heat energy in them

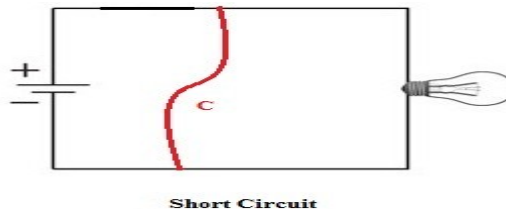
Important Part- Heating Coil



Heating coils are made of nichrome, an alloy of nickel, chromium and iron.

1. Why nichrome is used as a heating coil?
 - High resistivity
 - High Melting point
 - Ability to remain in red hot condition for a long time without getting oxidised
 - Sufficient ductility.

Short Circuit



Short circuit is the direct contact between positive and negative terminals of a battery or two wires from the mains without the presence of resistance in between them.

In the figure shown above 'c' indicates short circuit because positive and negative terminals of the battery are in direct contact.

Overloading

A circuit is said to be overloaded, when total power of all the appliances connected in the circuit is more than what the circuit can withstand.

Safety Fuse

Safety fuse is a device that works on the heating effect of electric current. **The important part of safety fuse is a fuse wire an alloy of tin and lead having low melting point.** It is connected in series to the circuit. When the current exceeds the permissible limit due to overloading or short-circuit, the heat generated in the fuse wire becomes excessive and hence it melts and breaks the circuit.

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Amperage

Amperage is the ratio of the power of the appliance to the working voltage.

$$\text{Amperage} = \text{Wattage} / \text{Voltage.}$$

Amperage increases with thickness of the wire.

- **When a fuse wire is included in a circuit, what are the precautions to be taken?**

Ans:

1. The ends of the fuse wire must be connected firmly at appropriate points.
2. The fuse wire should not project out of the carrier base.
3. Use fuse wire of proper amperage.

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