

Heating Effect of Electric Current

Chapter 4: Electricity: Magnetic and Heating Effects · Topic 2

Key Concept

The amount of heat produced depends on the current strength, the resistance of the wire, and the time current flows — this relationship, discovered by James Prescott Joule, is used to calculate electrical heating precisely. This same heating effect is also the basis for electrical fuses — thin wires designed to melt and break the circuit if current becomes dangerously high, protecting appliances and preventing electrical fires.

Quick Revision Notes

- The heating effect occurs when current flows through a resistor, producing heat.
- Nichrome wire is commonly used in heating appliances due to its high resistance.
- Heat produced depends on current strength, resistance, and time (Joule's law).
- Fuses use the heating effect to melt and break a circuit if current is too high, preventing fires.

Practice Questions

- 1 Name two household appliances that use the heating effect of current.
- 2 Explain how a fuse protects an electrical circuit.
- 3 What factors affect the amount of heat produced by an electric current?