Class 6 Physics Electricity and Circuits

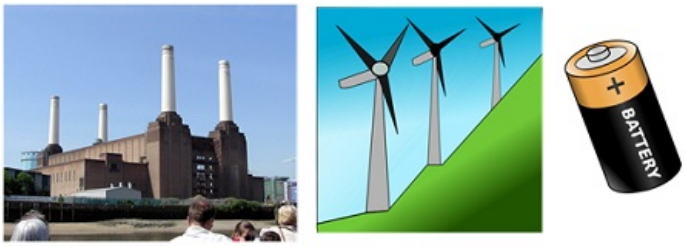
Electricity

Electricity is the flow of electric charge. It provides energy or power that is used to run electrical and electronic appliances.

- Electricity is used for running electrical appliances like fan, tube light, water pumps etc and electronic appliances like TV, Computer, washing machines, radio etc.

Electrical Appliances Electronic Appliances

- Electricity is generated through thermal power stations, windmills, batteries etc.



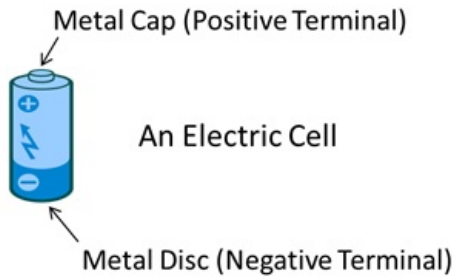
Sources of Electricity

Class 6 Physics Electricity and Circuits — Electric Cell

Electric Cell

An **electric cell** is a device which produces electricity capable to run smaller appliances like torch, clock, camera, radio etc.

- An electric cell has two **terminals** – **positive (+)** and **negative (-)**.
- Positive side of an electric cell has a metal cap. Negative side has a flat metal disc.
- Chemicals stored inside the cell produce electricity through internal reactions. Once, chemicals are used up, the cell loses its capability to produce electricity.

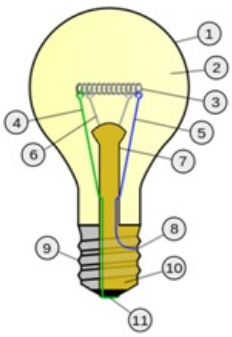


Class 6 Physics Electricity and Circuits — Electric Bulb

Electric Bulb

An **electric bulb** is a device which produces light when electricity is passed through its terminals.

- The bulb has two thick contact wires in the center with a thin wire attached between them. This thin wire is called **filament**.
- One of the thick wires is connected to the metal case at the base of the bulb and the other is connected to the metal tip at the center of the base. These two form the terminals.
- When electricity is passed through the terminals of the bulb, the filament gets heated up and produces light.
- A bulb is said to be fused if the filament gets broken. Fused bulb doesn't glow.
- The two terminals do not directly touch each other to avoid short circuit.



Electric Bulb

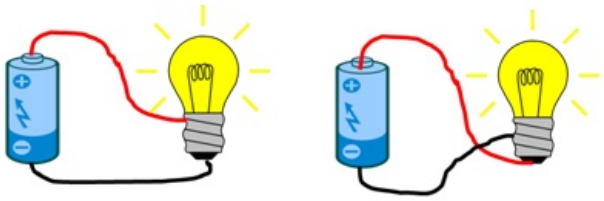
1. Outline of Glass bulb
2. Low pressure inert gas
3. Filament
4. Contact wire (goes out of stem)
5. Contact wire (goes into stem)
6. Support wires (one end embedded in stem; conduct no current)
7. Stem (glass mount)
8. Contact wire (goes out of stem)
9. Cap (sleeve)
10. Insulation
11. Electrical contact

Class 6 Physics Electricity and Circuits — Electric Bulb connected to Electric Cell

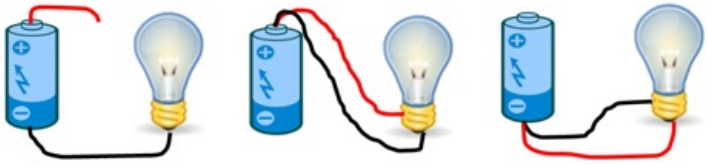
Electric Bulb connected to Electric Cell

An electric cellproduces electricity capable enough to make a bulb glow.

- To make a bulb glow using a cell, a wire needs to be connected from one terminal of the cell to one terminal of the bulb. Similarly, the other terminal of the cell must be connected to second terminal of the bulb.
- The bulb will not glow in case the above is not followed and the connections are not made properly.



Bulb glows when individual terminals of cell are connected to individual terminals of the bulb.

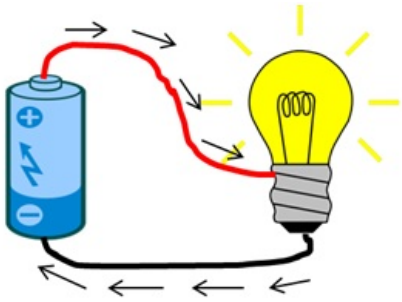


Bulb does not glow when either the complete connection is not there or one terminal of cell is connected to different terminals of the bulb.

Electric Circuit

An electric circuit is a complete path for electricity (current) to pass between two terminals of an electric cell.

- Bulb glows when current flows through its terminals.
- Conventionally, current flows from positive terminal to the negative terminal of the battery.
- A fused bulb (with broken filament) offers a broken path and hence the bulb doesn't glow.

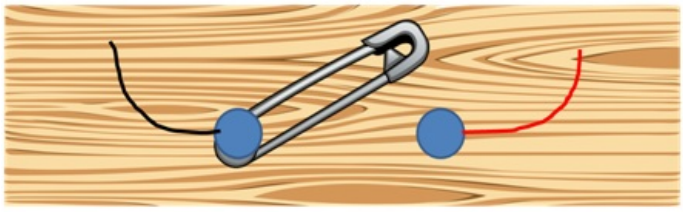


Direction of current flow

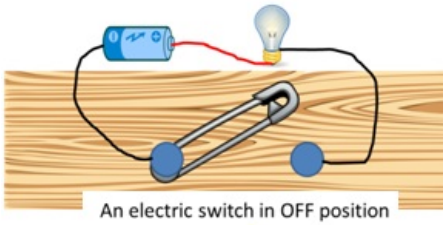
Electric Switch

Electric Switch is an electrical device which can make or break an electric circuit.

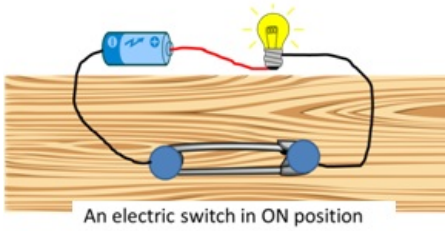
- A switch is said to be in **'ON' position** when it **makes or completes the circuit** and allows the current to pass through.
- Similarly, a switch is in **'OFF' position** when it **breaks the circuit** and does not allow the current to pass through.



A simple switch



An electric switch in OFF position



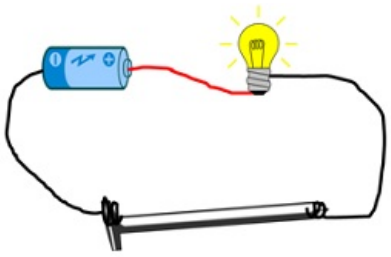
An electric switch in ON position

Class 6 Physics Electricity and Circuits — Conductors and Insulators

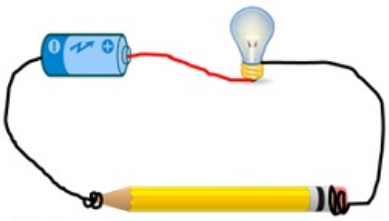
Conductors and Insulators

- Materials which allow electric current to pass through them are called conductors of electricity. Examples are iron nail, key, safety pin, water, human bodyetc.
- Materials which do not allow electric current to pass through them are called insulators of electricity. Examples are rubber, plastic, glass, air, clothetc.
- Conductors are mainly metallic while insulators are non-metallic.

- Electrical devices are made up of conductors. To avoid passing of the current to human body during their handling, these devices have a covering of insulators (like plastic, wood, aluminum) over them.



Iron nail acts as a conductor as it allows electricity to pass through



Wooden pencil acts as an insulator as it does not allow electricity to pass through