

Electricity and Circuits

Electricity has become an indispensable part of our life. It makes our task easier. The metro train runs with electricity which has made conveyance easier likewise many electronic appliances have made work simpler.

Electric Cell

An electric cell produces electricity from the chemicals stored inside it. It has two terminals namely the positive and the negative terminal. The metal cap is the positive terminal of the electric cell and the metal disc is the negative terminal. Electricity in the torch, wristwatches and alarm clocks is provided by the electric cell.

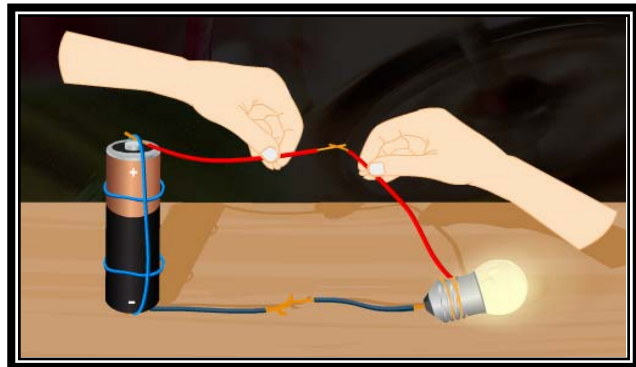


A Bulb connected to an Electric Cell

The bulb glows with the help of the electricity produced by the electric cell. The thin wire that gives off light is called the **filament** of the bulb.

Activity

Take four electric wires with differently coloured plastic coverings. Remove the plastic covering from the ends of each wire. This would expose the metal wires at the ends. Connect one wire to the positive terminal of the cell and the other to the negative terminal. Similarly connect the other two wires to the two terminals of the bulb. Now, connect the wires fixed to the bulb with those attached to the cell as shown in the figure. You will notice that bulb glows. If you connect both the wires of the bulb to the same terminal of the cell you will notice that bulb does not glow.

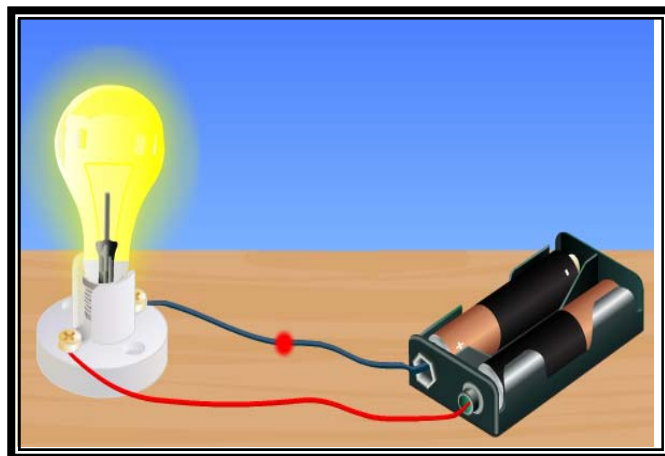


An Electric Circuit

Electric circuit is a path through which electric current flows. It consists of electric cell, electric device and wires.

How to make an Electric Circuit

Take a bulb and insert it into a bulb holder. Now take two cells and place them in a cell holder. Connect one terminal of the electric bulb to the positive terminal of the first cell and negative end of the second cell to the other terminal of the electric bulb with the help of wires. You observe that the bulb glows. This is due to the flow of current through the circuit.

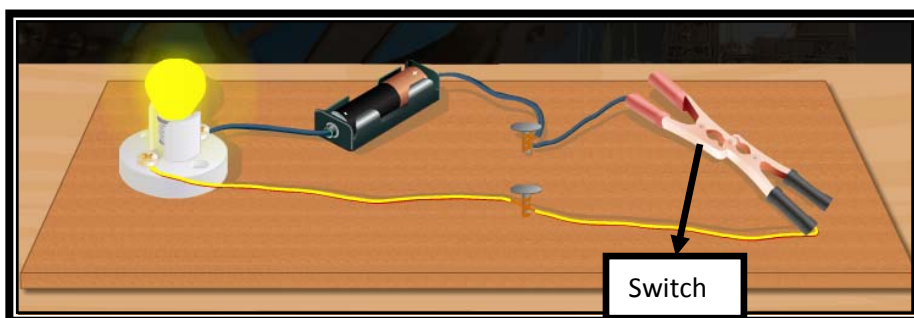


Electric switch

An electric switch is a simple device that either breaks the circuit or completes it.

Working of a electric switch

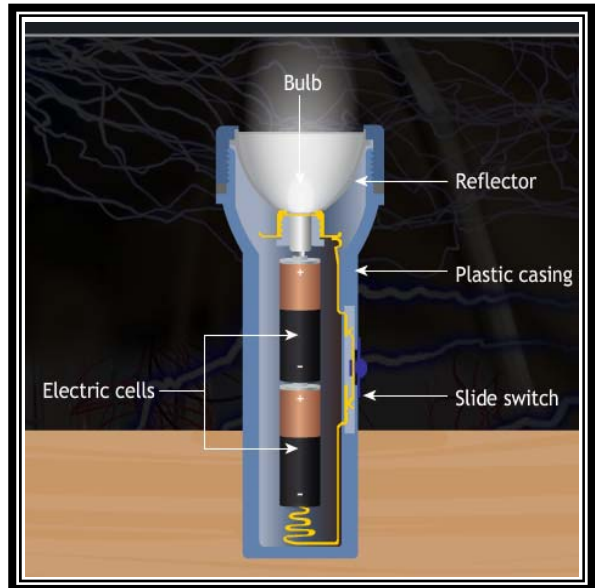
The materials require are a wooden board, two iron nails stuck to the board, bulb, bulb holder, a set a cells, wire and two metal clips. Connect one terminal of the electric bulb to the



positive terminal of the electric cell through wires. Now connect the other terminal of the second cell to the metallic clip such that it passes through the iron nail. Another wire is connected from the second clip to the other terminal of the bulb again passing through the nail. The bulb does not glow. This is because the circuit is not complete. Now connect both the clips and observe. The bulb glows because the current flows through the circuit. Here the metallic clip acts as a switch which regulates the flow of current. Such an arrangement is an example of an electric circuit.

Working of a Torch

A torch is an electric device that works with the help of electric cell which generates electricity for the bulb to glow. The bulb has an outer case of glass that is fixed on a metallic base. The metal parts of the torch must **conduct** electric current if the torch is to function. There are two electric cells ('batteries'), a switch and a lamp (the torch bulb). This is the lamp which is connected to the positive terminal of the cell while the spring of the torch is connected to the negative terminal of the second cell. The negative terminal of the first cell is connected to the positive terminal of the second cell. In the torch, closing the switch completes the circuit and allows current to flow and thus the bulb glows.



Electric Conductors and Insulators

Conductors are substances that allow electricity to pass through them. All metals are examples of conductors.

Substances which do not conduct electricity through them are called insulators like rubber, plastic and wood.