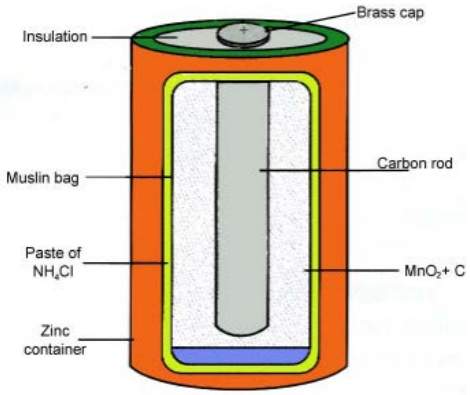
Electricity Circuits & Its component

Electric cell

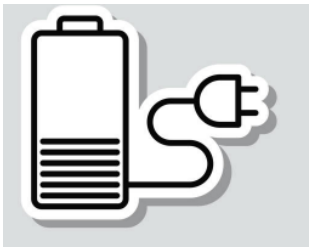
What is an Electric cell?

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



An electric cell

An electric cell has two terminals - positive (+) and negative (-).



Battery

An electric cell produces electricity from the chemicals stored inside it.

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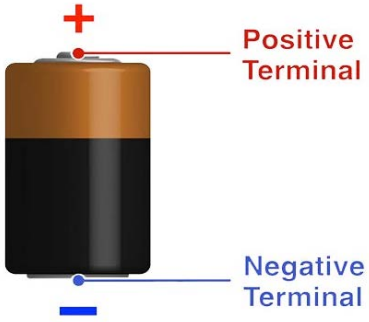
Features of an Electric Cell

- It is a small cylindrical structure which helps in operating the devices.
- A small metal cap is placed on one side and a metal disc is present on the other side.
- All cells have two terminals: Positive and Negative.
- The metal cap and metal disc are positive (+) and negative (-) terminals of the electric cell respectively.
- Chemical energy is converted into electrical energy inside a cell. When the chemicals are exhausted, the cell stops working.

We use electric cells to supply the energy needed for electrons to move around an electric circuit. A battery is a group of two or more electric cells that are connected. The electric cell system works to generate electricity.



Power station

Electricity that we use at homes, in our factories, is supplied from a power station.

A bulb connected to an electric cell.

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☞ Electric current

Moving charge is called electric current. The rate of flow of charge is the amount of current,

So, I = Q / t = ne / t

Where Q = ne, Here, n = number of electrons, e=charge of electrons = 1.6×10-19c

1C = Charge of 6.25×10^{18} electrons.

☞ Unit of Electric Current

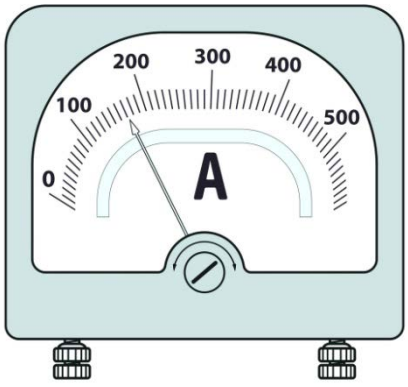
The S.I. unit of current is Ampere.

Smallest currents are measured in milliamperes (mA) and microampere (μA)

1mA = 10 - 3A
1mu × A = 10 - 6A

☞ Instrument to Measure Current

An ammeter is an instrument used for Measuring Electrical Current



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☞ It must be connected in series in the circuit. Positive side of ammeter must be connected nearest of the positive terminal of the battery (electric cell), and vice versa.

Example 1: How many electrons constitute the current of one micro ampere?

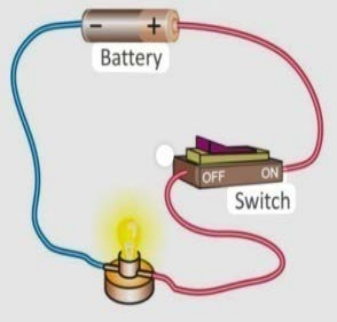
Solution: Given: Current, 1 = 1μA = 10 - 6 A

We know, Q = ne

Where n is the number of electrons and e is the charge on 1 electron and e = 1.6 × 10 - 19 C

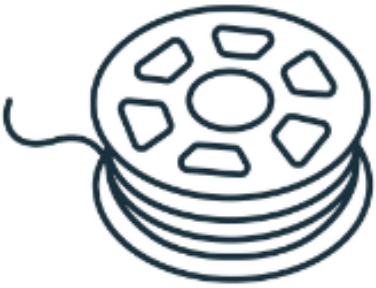
$n = (10^{-6})/(1.6 \times 10^{-19}) = 6.25 \times 10^{12} \times e$

A Bulb connected to an electric cell.



☞ Filament

In an electric bulb, there is a thin tiny wire inside the glass cover. This is called a filament.



☞ Terminal

All types of electric cells have two terminals -a positive terminal, a negative terminal.

Electricity Circuits & Its component

Wire

An electric wire is a conducting path in an electric circuit, through which current flows.
It is usually made out of a metal that is a good conductor of electricity.

Electric Bulb and its Working

- It consists of a thin wire that glows due to the passage of current. This is known as the filament.
- An electric circuit provides a closed path for the current to flow. The terminals of the bulb are connected by wires to the electric cell.
- Sometimes the bulb does not glow as the filament gets fused (breaks) due to overheating.
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