

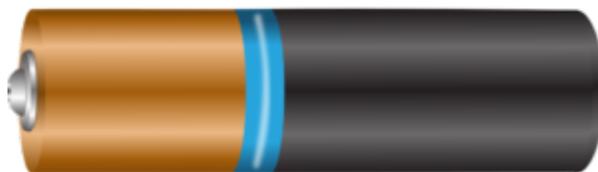
Electric Cell

Electricity is essential for day to day life. Have we ever thought of living without electricity? Do we have any alternative which can give us light without a supply of electricity? These are the questions which worked as a **catalyst** towards the invention of the electric cell which we can use to **generate electricity**.

This can function by receiving **electric** supply from a cell which is made of different chemicals and can store **electricity** for some period of **time**. Is this a constant source of electricity? Can we store this for better use? Let us study more.

Electric Cell

An electric cell is something that provides electricity to different devices that are not fed directly or easily by the supply of electricity. It has two terminals. One is the positive terminal and another one is the negative terminal.



Electric Bulb

A bulb has two terminals. The bulb has a spirally wound wire, filament, inside it. Two thick wires at the ends support this filament. An electric cell is connected to the terminals of the bulb. Hence, electricity from it passes through the bulb. The filament in the bulb glows and emits light. This is because the **circuit** is complete now.

Identification of Positive and Negative Terminals

- Just under the plus sign, an electric cell has a cap. This is the positive terminal. At the other end, just above the disc, there is a flat metallic disc with a minus sign which is known as the negative terminal.
- These positive and negative terminals of the cell are important because these can be used to connect it to various devices. There is a chemical inside the cell. It is a dark powdery stuff. To provide electricity to the device it is connected to this chemical that helps it.

- The strength of a **chemical** decreases, when a **cell** is connected to a device. Finally, the device connected to it stops functioning when the entire **energy** of the chemical is spent.

Question For You

Q. How is electric cell related to torch bulb?

Ans: An electric cell only provides electricity and that is the reason the bulb will glow. It provides electricity to so many devices, for example, alarm clocks, toys, pocket radios, emit light. Inside the torch, the bulb has a filament which is supported by two thick wires at its ends. When with the two terminals of the bulb, the +ve & -ve terminals are connected then electricity passes through the filament and it starts glowing.

Electric Circuits and Conductors and Insulators

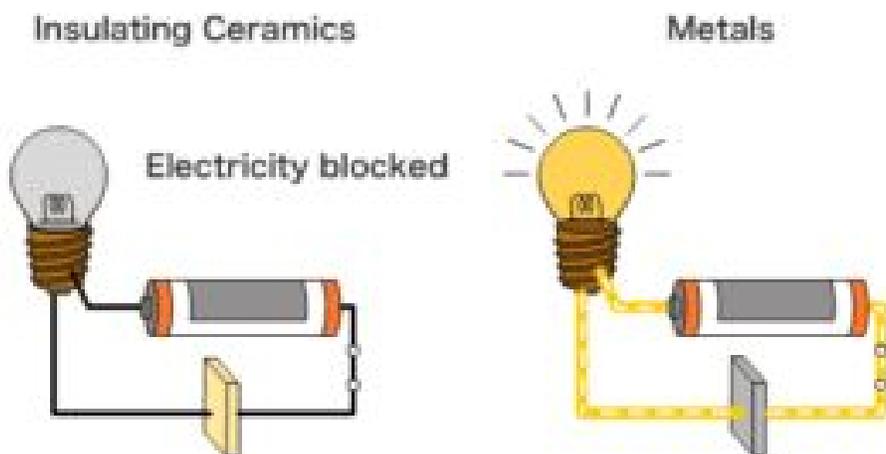
You find examples of physics almost everywhere around you. Have you ever got the electric shock when you touch a live wire? Why does that even happen? Why don't you get the same shock when you are

holding a plastic stick to touch the wire? The reason is simple and we will discuss it all in the following chapter. In this chapter, we will cover everything about a **conductor and insulators** so that you are in a better position to understand their phenomena.

What are Conductors?

Conductors are **substances** that allow **electricity** to pass through them freely. The reason behind this is that these substances contain many **atoms** that have loosely bound outermost **electrons** or valence electrons.

Metals are good conductors of **electricity**. Metals have a number of valence electrons or even a single **valence** electron which are loosely bound. In an **electric circuit**, these electrons can freely move around the circuit with a domino-like effect. Metals are found towards the right of the **periodic table**.



Can you name a [metal](#) which you are familiar with which is used in electrical wiring? [Copper](#) is the metal that is primarily used for electrical wiring because each copper atom has only one valence electron which can be easily freed. Thus, it can easily be harnessed in electricity as it is an excellent conductor.

Can you think of a few substances which are conductors of electricity? Nails, safety pins, [iron](#) rods, etc, are a few examples of conductors of electricity. The human body is also a conductor of electricity. Thus, we need to be extra cautious that we do not get an electric shock. We need to take due precautions when dealing with electricity. Now you realize what we said in the introduction paragraph. Don't you?

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- [Electric Cell](#)

What are Insulators?

Insulators are just the opposite of conductors. They are substances or materials that do not conduct electricity. Insulators inhibit the easy passage of electrons from atom to atom and thus do not allow electric current to pass through them.

The elements present in the left of the periodic table are non-metals and are mainly insulators. Substances which are largely made up of such elements are insulators. The insulating materials or elements have the valence electrons tightly bound. These electrons cannot be freed or loosened. They are poor conductors of electricity.

A few examples of insulators are erasers, paper, glass, and cotton. Insulating material made of glass or any other good insulator may be used in between electric wiring as a protective barrier and to prevent shock. What about dry air? Dry air is also a poor conductor of electricity. Rubber and glass are one of the strongest insulators.

Apart from conductors and insulators, there are also semiconductors like silicon and germanium. They occur in a zigzag pattern on the periodic table and are known as metalloids. They separate metals and non-metals in the periodic table.

Question For You

Q. Why is copper used in electrical wiring?

Ans: Copper is the metal that is primarily used for electrical wiring because each copper atom has only one valence electron which can be easily freed. Thus, it can easily be harnessed in electricity as it is an excellent conductor.

