BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI– 110034

Class- 8 CHEMISTRY

Ch- CHEMICAL EFFECTS OF ELECTRIC CURRENT

Week :16th November to 20th November **No. of blocks- 1 or 2**

Guidelines

Dear Students,

- Refer to Science NCERT book before you begin to answer the questions.
- The assignment is to be done in the Chemistry notebook.
- Link for the chapter

https://ncert.nic.in/textbook/pdf/hesc114

Sub-Topic

I) Electric current in solids: Good conductor and poor conductor of electricity

II) Conduction of electric current in liquids

III) Tester to test the conduction of electricity using

(a) heating effect of electric current

(b) magnetic effect of electric current

Learning Outcomes

Each student will be able to

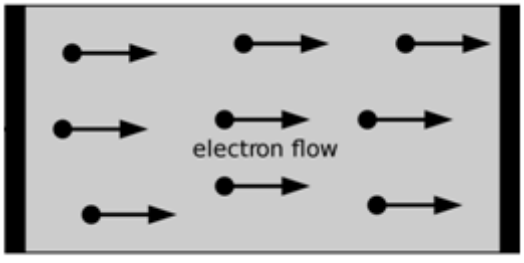
i) Understand the process of conduction of electric current in solids and liquids

ii) Test whether a given solid / liquid is a good or poor conductor of electricity.

Lesson Development

Electric Current:

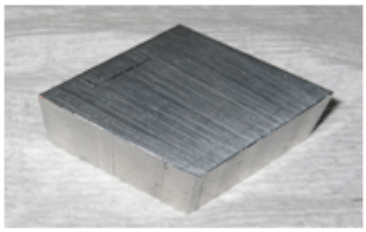
The flow of electrons in any material is termed as an electric current.



Flow of Electrons in the Matter

Good Conductors of Electricity:

The materials which allow the current to pass through them are known as good conductors. Examples are copper, aluminium, etc.



Good Conductors Metals

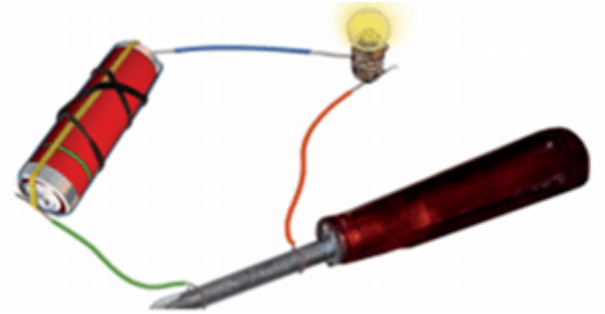
Poor Conductors of Electricity:

The materials which do not allow the current to pass through them, are known as poor conductors. They are also called as insulator. Examples are glass, plastic, etc.

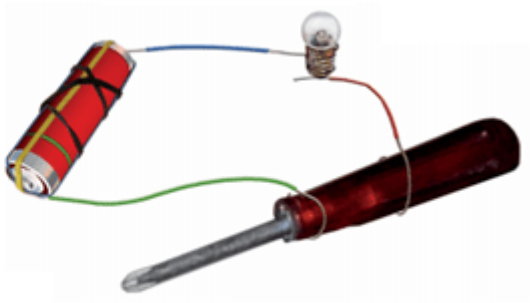
Poor Conductors

Tester:

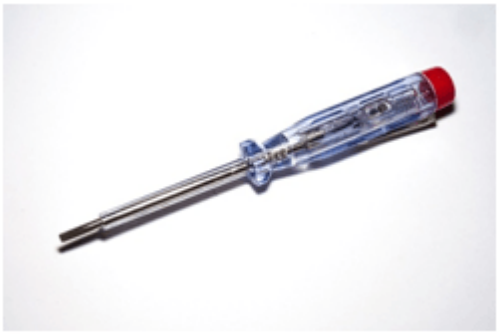
It is a device to test if a particular material allows electric current to pass through it or not.



Good conductor



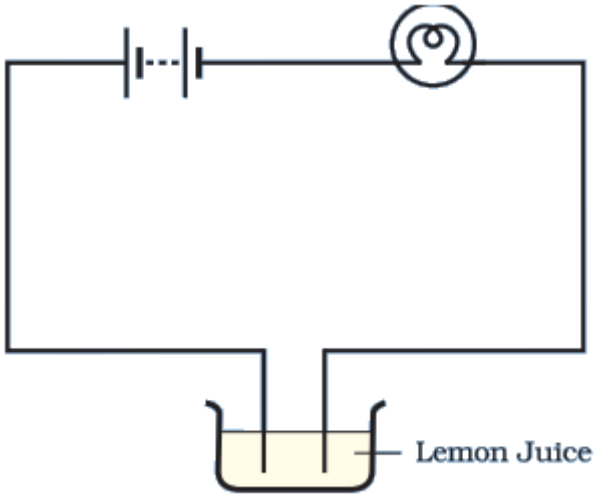
Poor Conductor



Tester

Conductivity in Liquids: Conduction of liquids depends on the ability of liquids to form ions. Some liquids such as oil or alcohol do not form ions and do not conduct electricity. Vinegar is mostly water with a small amount of acetic acid in it. The acetic acid separates into ions in water. So its solution conducts electricity.

(i) A tester can be used to check if a liquid is conducting or non-conducting.
(ii) To check if the liquid is conducting or not, connect the liquid between the two ends of tester by completing the connection of the circuit properly. If bulb in the tester glows, it means the liquid is conducting. But, if does not glow then it means liquid is non-conducting.



Testing conduction of electricity in liquid

(iii) Most liquids that conduct electricity are solutions of acids, bases and salts.

Heating effect of current:

The heating effect of current is responsible for the glowing of the bulb.

To test whether substance is conducting or not using heating effect:

When current passes through the bulb, the filament gets heated to a high temperature and as a result bulb starts glowing. But, if current is very small then the filament will not get heated to a high temperature and so will not glow.

Heating Effect of Electric Current for Glowing Bulb

LED (Light Emitting Diodes):

LED's can be used to detect weak currents, since; their filament does not require much temperature to glow.

They have two terminals called anode and cathode. The length of anode lead is slightly longer than the cathode lead and is always connected to the positive terminal of the battery. On the hand, cathode lead is shorter and is connected to the negative terminal of the battery.

LED

Magnetic effect of current:

The magnetic effect of current is responsible for the deflection in magnetic compass when current passes nearby it. It can detect weak currents.

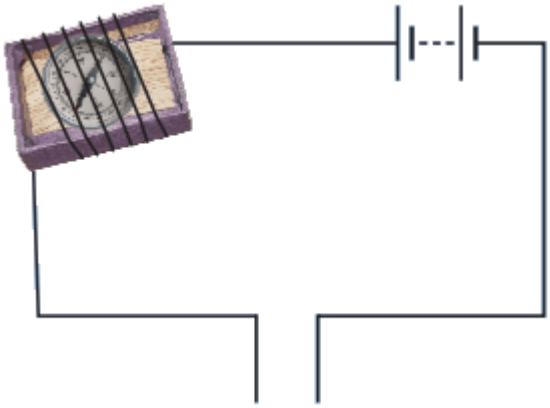
To test whether substance is conducting or not using magnetic effect:

For a closed circuit, when current passes nearby a magnetic needle and if the deflection is observed in the needle then it means the substance is conducting; otherwise it is non-conducting.

Magnetic Compass

Tester By using Magnetic Compass:

(i) Take the tray from inside a blank matchbox.
(ii) Wrap an electric wire a few times around the tray.
(iii) Insert a small compass needle inside it.
(iv) Now connect one free end of the wire to the terminal of a battery. Leave the other end free.
(v) Take another piece of wire and connect it to the other terminal of the battery



Tester by using the magnetic compass

Join the free ends of two wires momentarily. The compass needle should show deflection. Your tester with two free ends of the wire is ready.

Touch the both ends of tester to any substance to check whether the substance is conducting the electricity or not. If the deflection is observed in the needle then it means the substance is conducting; otherwise it is non-conducting.

Tap Water:

The water obtained from various sources like rivers, wells, taps, etc. is not in its purest form. It contains many impurities in it. These impurities include different salts too. As a result of these salts, the tap water becomes a good conductor of electricity.

Distilled Water:

It is the purest form of water and does not contain any kind of impurities in it. Hence, it is a poor conductor of electricity.

Distill Water

We can check the conductivity of tap water or distilled water via the magnetic tester.

ASSIGNMENT

1. What are insulators of electricity?
2. Name some substances other than water which conducts electricity?
3. Which effect of current causes the bulb to glow?
4. What is magnetic effect of electric current?
5 Define electric current.
6. Explain the mechanism of glowing bulb?
7. What do you mean by magnetic effect of electricity?
8. Prepare a tester to test conduction based on magnetic effect of the electricity.
9. Name some substances which make the liquids good conductor of electricity.
10. Give two examples of poor conductors of electricity.

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