

Conductor and Insulator

Experiment 1: Construction of Conductivity Tester

Type 1

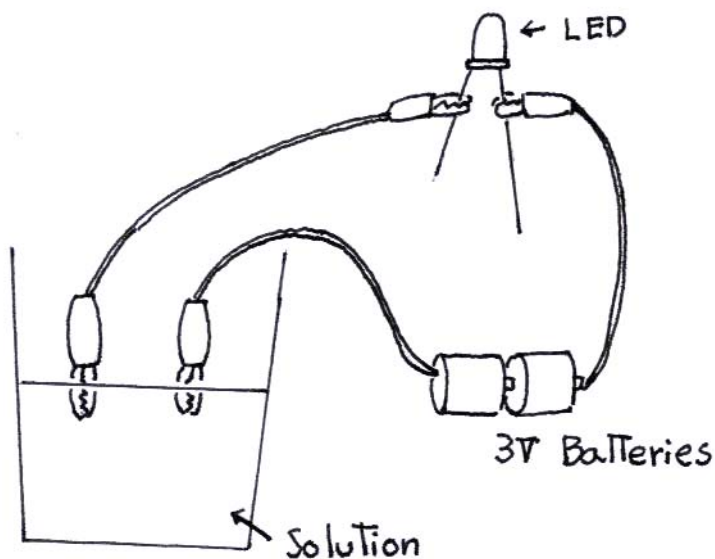
Materials:

Crocodile clips (4), LED, connecting wire, dry cells (1.5V: 2), plastic cup

Procedure:

Connect wires to batteries and a LED bulb as follows in the right fig.

Put the electrodes of the crocodile clips into the sample solution and record the observation to the table.



Type 2

Materials:

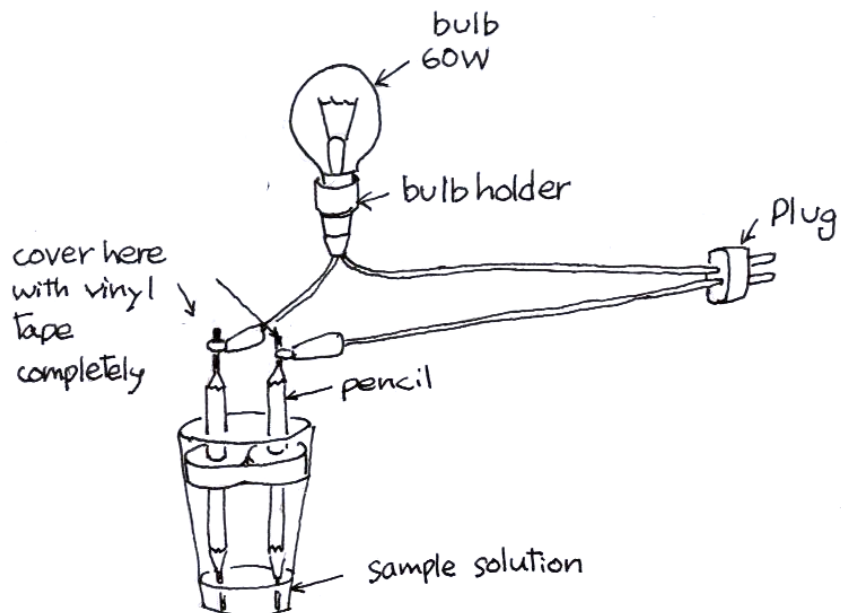
Pencils (2), connecting wire, PET bottle cap, a bulb of 60w, a plug, a bulb holder, crocodile mouth (2),

Procedure:

Sharpen the both ends of pencils and make electrodes.

Arrange the circuit as shown in the right fig.

Cover the conductive portion with vinyl tape completely.



Experiment 2

Materials: Conductivity tester, iron filings,

Procedure:

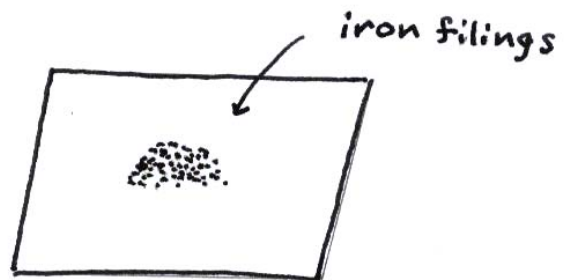
Take iron filings on a paper.
Put the electrodes of the tester into the iron filings.

Question:

Is the bulb lighted or not?

Prediction:

- (a) It is lighted.
- (b) It is not lighted.



Experiment 3

Materials: a glass or plastic cup, distilled water, iron filings.

Procedure:

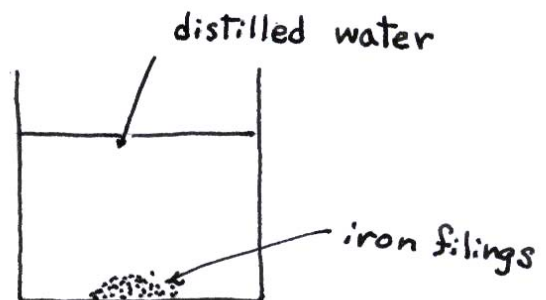
Take a glass and half fill it distilled water.
Put a spoon full of iron filings into it.
Put the electrodes of the tester into it.

Question:

Is the bulb lighted or not?

Prediction:

- (a) It is lighted.
- (b) It is not lighted.



Experiment 4

Materials: Salt, a conductivity tester.

Question:

Can a electric current pass through a crystal of salt?
Test it with your conductivity tester.

Prediction;

- (a) The bulb is lighted.
- (b) The bulb is not lighted.

Experiment 5

Materials: Salt, a glass, distilled water.

Question:

Can electric current pass through salt solution?
Test it with your conductivity tester.

Prediction:

- (a) The bulb is lighted.
- (b) The bulb is not lighted.

Experiment 6

Materials: Two glasses, salt, a conductivity tester.

Procedure:

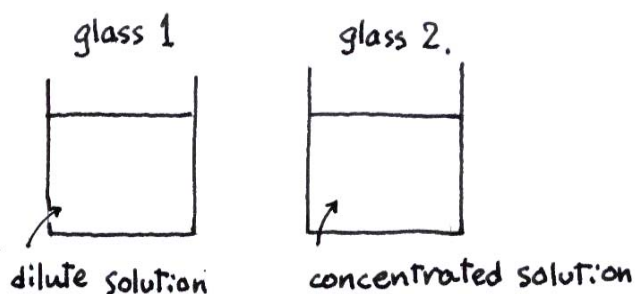
- Take two glasses.
- Put dilute solution of salt into one glass 1.
- Put concentrated solution into the other glass 2.
- Test the conductivity with your tester.
- Compare the brightness of the bulb.

Question:

Which glass is brighter?

Prediction:

- (a) Glass1 is brighter.
- (b) Glass2 is brighter.
- (c) The brightness is the same.



Experiment 7

Materials: Ethanol, a glass, conductivity tester.

Question:

Alcohol is a molecular compound. Can electric current pass through alcohol?
Take a glass of alcohol and test it with your conductivity tester.

Prediction:

- (a) The bulb is lighted.
- (b) The bulb is not lighted.

Experiment 8

Materials: Sugar, salt, two glasses, a spoon, conductivity tester

Procedure:

Put salted water into two glasses.
Put two spoons full of sugar into the glass A and nothing into the glass B.
Put the electrode of your conductivity tester into both glasses.
Compare the brightness of the bulb.

Question:

Which glass is brighter?

Prediction:

- (a) A is much darker.
- (b) B is much darker.
- (c) The brightness of A is the same as B.

