

# Conductor and Insulator

## Experiment 1: Construction of Conductivity Tester

### Type 1

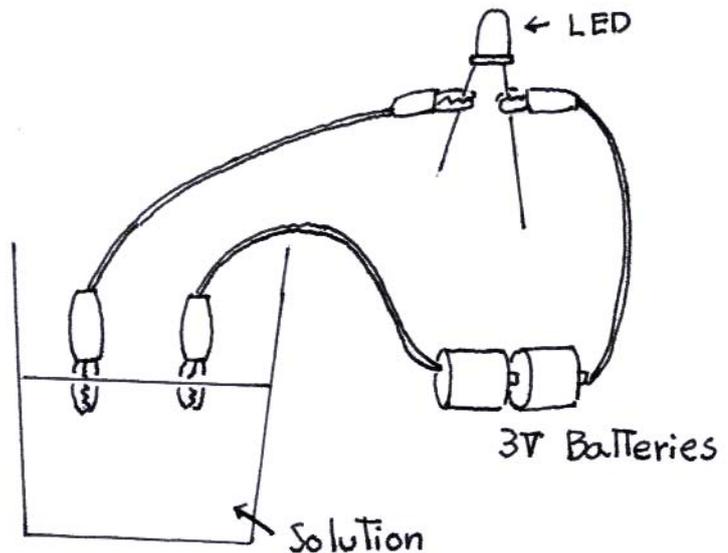
#### Materials:

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:

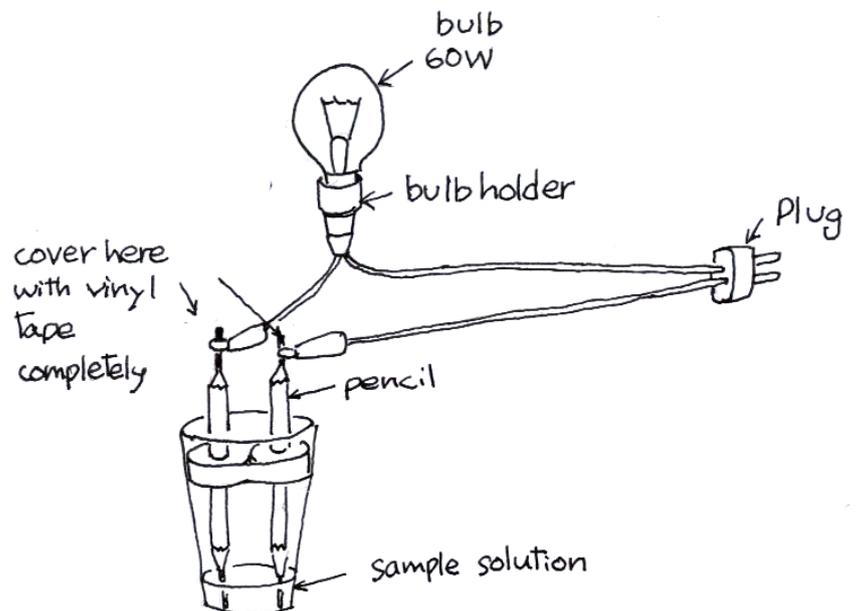
Pencils (2), connecting wire, PET bottle cap, a bulb of 60w, a plug, a bulb holder, crocodile mouth (2),

#### 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:

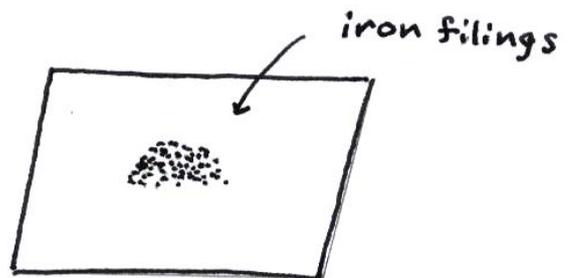
Take iron filings on a paper.  
Put the electrodes of the tester into the iron filings.

### 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:

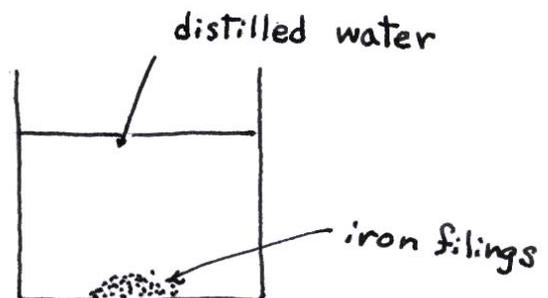
Take a glass and half fill it distilled water.  
Put a spoon full of iron filings into it.  
Put the electrodes of the tester into it.

### 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:

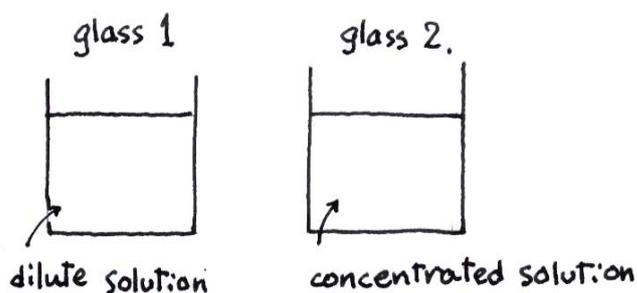
- Take two glasses.
- Put dilute solution of salt into one glass 1.
- Put concentrated solution into the other glass 2.
- Test the conductivity with your tester.
- Compare the brightness of the bulb.

### 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.

