

Edexcel Physics IGCSE

Chapter 2: Electricity Practical Notes



Investigate how Insulating Materials can be Charged by Friction (Physics only)

There are various methods of exploring this topic. These include, but are not limited to:

- The gold leaf electroscope
- Sticking a balloon to a wall
- Deflecting a stream of water

Gold Leaf Electroscope

Equipment

- Polythene and/ or perspex rod
- Cloth
- Gold leaf electroscope

Method

1. Before beginning the experiment, ensure the plate of the electroscope is uncharged (you can do this by touching it with your finger). The leaf should hang straight down next to the stem.
2. Charge up either a perspex or polythene rod by rubbing it with a cloth.
 - The polythene rod should become negatively charged as the cloth deposits electrons onto its surface.
 - The perspex rod should become positively charged as the cloth removes electrons from its surface.
3. Hold the rod near the plate of the electroscope and the leaf should be repelled from the stem, showing that the rod is charged.

The charge from the rod is transferred to the metal plate and travels down the stem and leaf of the electroscope. The stem and leaf therefore carry the same charge and repel each other.



Sticking a Balloon to a Wall

Equipment

- Inflated balloon
- Cloth
- Flat surface such as a wall

Method

1. Take the inflated balloon and hold it against the wall for a few seconds and then let go of it. If it is uncharged it should fall to the ground.
2. Using the same balloon, rub it vigorously with a cloth or against your hair
3. Once again hold it against the wall and release it. If it has been successfully charged, it will stick to the wall.
4. Electrons have rubbed on or off the balloon, giving it an overall charge. This overall charge repels the same charges on the wall but attracts the opposite charges. It is this attraction of opposite charges that causes the balloon to stick.

Deflecting a Stream of Water

Equipment:

- Polythene rod
- Water tap
- Cloth

Method:

1. Rub the polythene rod with the cloth so that it becomes charged.
2. Run the tap so that there is a strong stream of water and then hold the charged rod alongside the stream.
3. The water should deflect. This is because the charged molecules in water are attracted or repelled according to the charge of the rod.

