

1. Static Electricity
2. The Law of Electric Charge

Static Electricity

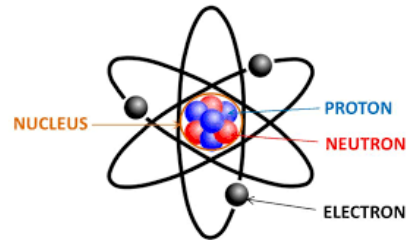
Review:

Electrons

- Carry a _____ charge
- Surround the nucleus on _____ and can be transferred from one atom to another

Protons

- Carry a _____ charge
- Located within the _____ and are held firmly in place



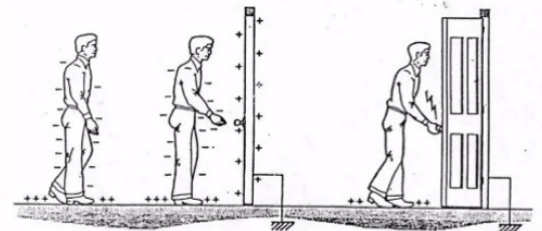
Static electricity is a result of the _____ between _____ and _____ charges within or on the surface of an object.

These charges can build up on the surface of an object until they find a way to be released or discharged.

A sudden flow of electrons from one charged object to another is called _____. This can result in a _____ or _____ (i.e., when you touch a metal doorknob after walking on a carpet in socks).

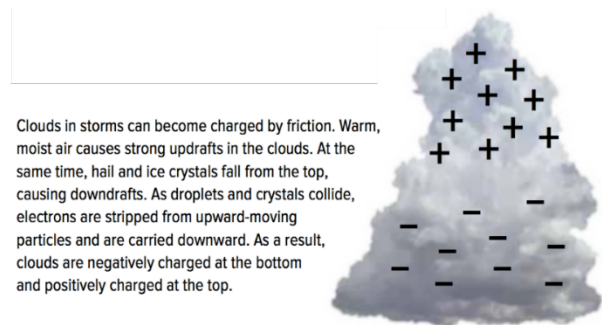
Frictional charging

Electrostatic discharge



It is possible to generate static electricity through _____. This will result in _____ being _____ from one material to another material.

- When electrons are rubbed off a material, it becomes positively charged
- The other material gains electrons and becomes negatively charged



Clouds in storms can become charged by friction. Warm, moist air causes strong updrafts in the clouds. At the same time, hail and ice crystals fall from the top, causing downdrafts. As droplets and crystals collide, electrons are stripped from upward-moving particles and are carried downward. As a result, clouds are negatively charged at the bottom and positively charged at the top.

Practice Questions

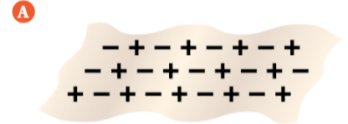
1. Explain the relationship among negative charges, positive charges, electrons, and protons.

2. What action causes electrons to be moved from one material to another?

Charged vs. Uncharged Materials

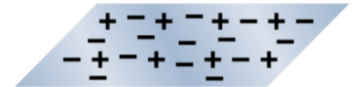
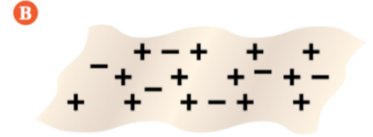
_____ materials:

- These materials have _____ numbers of _____ charged protons and _____ charged electrons
- This is described as being _____ (the positive and negative charges cancel each other out)



_____ materials:

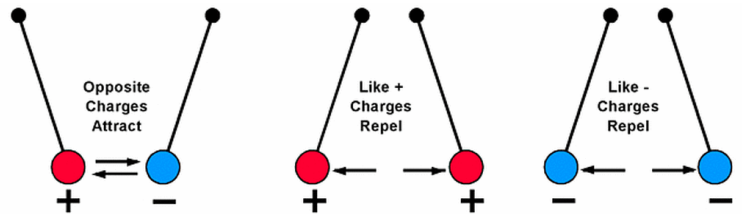
- Materials become charged due to _____
- The _____ will be rubbed _____ of one material and transferred to the other material. The _____ will _____.
- These two materials will be considered _____.
- Electrically charged materials will have an _____ number of positive and negative charges.



Law of Electric Charge

The Law of Electric Charge states that:

- _____ charges _____ each other
- _____ charges _____ each other
- _____ objects will also _____ _____ objects



Why does a charged balloon stick to a neutral wall?

- When a charged object (a balloon) is brought near a neutral object (the wall), the electrons in the neutral object do not come off as there is no friction being applied
- The negative charges in the wall are pushed away from the surface by the negative charges on the balloon (they want to repel each other)
- Positive charges in the wall (they cannot move) are attracted to the negative charges on the balloon
- This attraction is strong enough to hold the balloon to the wall

