

Chapter 32: Electrostatics**Static Electricity**

89 Static Cling

Purpose

To observe some of the effects of static electricity

Required Equipment/Supplies

electroscope
 hard rubber rod and fur *or* glass rod and silk
 plastic golf-club tube
 foam rubber
 plastic foam “peanuts” or packing material
 coin with insulated connected string
 empty soup or soda can, with insulated connecting string

Discussion

Have you ever been shocked after walking on a carpet and reaching for a doorknob? Have you ever found your sock hiding inside one of your shirts just after it came out of the clothes dryer? Have you ever seen a lightning bolt from closer range than you might like? All of these situations arise due to *static electricity*. After this activity, you should understand its behavior a bit better.

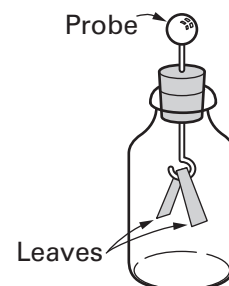
Procedure 

Step 1: Make sure the electroscope is discharged (neutral) by touching the probe with your finger. The leaves will drop down as far as possible.

CAUTION: *Do not open the electroscope in an effort to adjust the position of the leaves. NEVER touch the leaves.*

Step 2: Rub a hard rubber rod with fur, or a glass rod with silk. The rubber rod will become negatively charged, while the glass rod will become positively charged. Touch the probe of the electroscope with the charged rod.

1. What happens to the leaves of the electroscope?



2. What kind of charge is on the leaves?

Charge plastic tube.

Step 3: Discharge the electroscope by touching the probe with your finger. Charge a plastic tube by rubbing it with a piece of foam rubber. Observe what happens when you bring the charged tube close to (but not touching) the electroscope, and then move the tube away.

3. Record what happens.

Charge electroscope by induction.

Step 4: Devise a way to leave a charge on the electroscope, using the charged plastic tube but without touching the tube to the probe.

4. Record the method you used to charge the electroscope by induction.

Test charge on electroscope.

Step 5: Test whether the charge on the electroscope is positive or negative by bringing a charged glass or rubber rod close to (but not touching) the probe.

5. Is the charge on the electroscope positive or negative? Explain how you can tell.

Explore packing "peanuts."

Step 6: Charge the plastic tube. Now put some packing "peanuts" out on the table. Try to pick them up with the charged tube, or pour some over the charged tube. See how many different ways you can make the "peanuts" interact with the charged tube.

6. Describe and explain the behavior of the "peanuts."

Explore charge on tube.

Step 7: Charge the plastic tube by rubbing it with different materials. Each time, charge the electroscope by induction, as in Step 4, and test whether the charge on the electroscope is positive or negative.