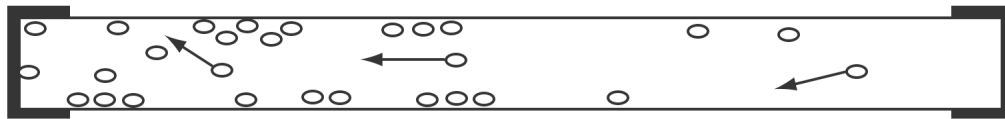


Educational Innovations^{INC}[®]

SS-7

Static Tube Kit



- Materials:
- 1 plastic tube with end caps and Styrofoam[®] pellets
 - 5 pieces of material
 - cotton - purple
 - rayon - red
 - nylon - white
 - silk - yellow
 - wool - brown tweed

Theory:

A. Objects become charged when rubbed against each other.

When two objects are rubbed together, negative electrons flow from one to the other. This results in one object becoming negatively charged and the other positively charged. The plastic tube, the Styrofoam[®] pellets, and some of the material in this kit are especially good at developing and holding a charge.

B. Unlike charges attract.

As you rub or shake the tube, you will see the Styrofoam[®] pellets quickly move. They always move toward an object with an opposite charge.



C. Like charges repel.

The Styrofoam[®] pellets always move away from an object with the same charge.



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Things to Try:

- A. Shake the tube. Rub your hand up and down the plastic tube. This develops charges on the plastic tube which attract or repel the charged Styrofoam® pellets.
- B. Rub different materials on the outside of the plastic tube. Some materials are better than others in developing a charge. Bring the charged tube close to the material that was rubbed. The material has an opposite charge from the rubbed tube, so it is attracted to it.

Rayon, the red cloth, is told as an “anti-static” material. In other words, it should be one of the least likely pieces of material to develop a charge. Does it seem to work this way?

- C. Remove the orange end caps and rub your hand up and down the tube. Notice that the orange end caps are not necessary to contain the pellets. Place the end caps on a flat surface so that they roll. Bring the charged tube close to the end caps.
- D. Shake out some of the pellets onto a flat surface. Rub the tube to develop a static charge and place it close to the pellets. Some of the pellets are attracted to the outside of the tube. Some of the pellets are attracted to the inside of the tube.
- E. Pick up a charged pellet and let go of it at the end of the tube. Watch how quickly it travels into the tube.
- F. Rub the outside of the tube when several pellets are clinging to the outside. Watch them travel through the air and land back on the tube.
- G. Borrow an electroscope from a physics teacher and determine the charge on the pellets and the outside of the tube.