

The Material With the Most Static Electricity

When you walk across a carpet and then touch a doorknob, you may feel a jolt caused by static electricity. Why does that happen? The soles of your shoes and the carpet are both insulators, so when they rub together, electrons are pulled from the carpet and deposited on your shoes. This experiment uses static electricity to lift small paper circles so that you can see just how strong of a static charge various materials can create.

Problem:

Which material produces the strongest static charge?

Materials:

- Hole puncher
- Construction paper
- Ruler
- Masking tape
- Balloon
- Several “rubbing materials” to test, such as a wool sock, a leather jacket, a paper plate, a cotton sock, a foam plate, a plank of wood, your own hair, a silk scarf, a piece of plastic wrap, or cotton batting.

Procedure:

1. Punch 100 dots from the construction paper.
2. Measure out a 6-inch square on a tabletop and mark its boundaries with masking tape.
3. Spread the dots evenly over the taped square.
4. Blow up one balloon.
5. For ten seconds, rub the balloon against a woolen sock.
6. Hold the balloon exactly one inch above the middle of the taped square. Leave it there until the dots stop jumping onto the bottom of the balloon.
7. Count the number of dots on the balloon, and record your data in a chart.
8. Place all of the dots back in the taped square.
9. Light the candle. Hold the balloon about a foot above the flame for several seconds, and wave the balloon back and forth. The ions released from the flame will negate any static charge left in the balloon. Blow out the candle.
10. Repeat Steps 3-9 four more times, and record your data.
11. Repeat Steps 3-9 with a new balloon, using other “rubbing materials.”
12. Analyze your data. Which rubbing material attracted the most dots to the balloon? That material created the most static electricity.



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