

Electrostatics and Electrophorus

Exploring with different materials to explain the difference between electrostatics and electrophorus?

Hand out packets – wool, balloons, Styrofoam pieces, tinsel, piece of plastic grocery bag

Explore with these materials create static electricity.

What do you think is happening to create static electricity?

Can you develop a model to explain your thinking?

Discuss ways to create static electricity using common materials.

Hand out PVC, Acrylic and plastic tubes

Continue to explore creating static charges. Changes or additions to your model can be made if necessary.

Provide other materials – string, Kleenex, tap, combs, grocery bags,

Materials:

Piece of wool	string
Balloons	small containers&lids
Plastic grocery bag	large nail
Small Styrofoam pieces	Kleenex cheap brand
Tinsel	straws
Foam boards/Styrofoam plates	comb
Aluminum pie plates	Al foil
PVC tubes and/or plastic tubes	empty soda can
Scotch tape	

List of activity titles:

Sticky Tape Electroscope

Tape Electroscope using straws

Remote control roller (soda can)

Flying tinsel

Flying hydra

Leyden Jar

Comb or Electroscope to determine + or – charges on an object.

+ means less electrons

- means more electrons

Comb and wool will always give up electrons and become +.

Electrostatic – the study of stationary electric charges or fields opposed to an electric current.

Electrophorus – a device for repeatedly generating static electricity by induction.

Resources:

<https://www.exploratorium.edu/snacks/remote-control-roller>

<https://www.exploratorium.edu/snacks/electroscope>

<https://www.exploratorium.edu/snacks/flying-tinsel>

The Physics Classroom is an excellent website for activities. Even though most is intended for High School, activities can easily be adapted for lower grade levels. Click or cut and paste to your browser any of the links below.

<http://www.physicsclassroom.com/NGSS-Corner/Activity-Descriptions/Sticky-Tape-Experiments>

<http://www.physicsclassroom.com/NGSS-Corner/Activity-Descriptions/Name-That-Charge-Description>

<http://www.physicsclassroom.com/class/estatics/Lesson-2/Charging-by-Induction>

Static Electricity

Name That Charge

- Disciplinary Core Idea: Types of Interactions (HS-PS2.B.3)
- Science and Engineering Practices: Developing and Using Models
- Cross-Cutting Concepts: Cause and Effect

Charge Interactions

- Disciplinary Core Idea: Types of Interactions (HS-PS2.B.3)
- Science and Engineering Practices: Developing and Using Models; Constructing Explanations and Designing Solutions; Engaging in Argument from Evidence; Obtaining, Evaluating and Communicating Information
- Cross-Cutting Concepts: Patterns; Cause and Effect

Sticky Tape Experiments

- Disciplinary Core Idea: Types of Interactions (HS-PS2.B.2)
- Science and Engineering Practices: Engaging in Argument from Evidence
- Cross-Cutting Concepts: Cause and Effect

Polarization

- Disciplinary Core Idea: Types of Interactions (HS-PS2.B.3)
- Science and Engineering Practices: Constructing Explanations and Designing Solutions; Developing and Using Models
- Cross-Cutting Concepts: Patterns; Cause and Effect; Structure and Function

Coulomb's Law

- Disciplinary Core Idea: Types of Interactions (HS-PS2.B.1)
- Science and Engineering Practices: Analyzing and Interpreting Data; Developing and Using Models; Engaging in Argument from Evidence
- Cross-Cutting Concepts: Patterns; Scale, Proportion, and Quantity

Electric Field Lines

- Disciplinary Core Idea: Types of Interactions (HS-PS2.B.2)
- Science and Engineering Practices: Developing and Using Models
- Cross-Cutting Concepts: Patterns

Kholt@ligo-la.caltech.edu

Kathy Holt

225-686-3193

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