

Mystery Powders: Physical & Chemical Properties

Objective:

Students will complete various tests of white powders to develop an understanding of physical and chemical properties. Once students observe the reactions of those powders, they will be given a Mystery Powder. Based on the observations of the reactions of the mystery powder, students should be able to identify the mystery powder.

Materials:

- 4 Medicine cups
- 2 Clothes pins
- Piece of aluminum foil
- Vinegar (at lab station)
- Iodine (at lab station)

Procedures:

Obtain a medicine cup with 1 Tablespoon of a Powder. Complete the following tests for that Powder. Record all observations in the Data Table.

1. **Description of Powder:** Describe the powder using your senses (color, texture, shape, smell, etc.) of your powder. PLEASE DO NOT TASTE ANY CHEMICALS IN A SCIENCE LAB!!!
2. **Reaction to Water:** Put 1 teaspoon of your powder in a medicine cup. Mix 1 teaspoon of water into the powder in the medicine cup. Stir.
3. **Reaction to Heat:** Make a small "cup" out of aluminum foil for your powder. Place 1 teaspoon of the powder in the foil "cup." Spread the powder out thin. Turn the hot plate on to about 6-7. Heat on hot plate for 1-2 minutes. If the substance starts to smoke, remove from hot plate. WARNING!!! Foil will be HOT. Use a clothes pin to remove the hot foil cup from the hot plate.
4. **Reaction to Iodine:** Place 1 teaspoon of your powder in a medicine cup. Add 3 drops of iodine to the powder in the medicine cup.
5. **Reaction to Vinegar:** Place 1 teaspoon of your powder in a medicine cup. Add 3 drops of vinegar to the powder in the medicine cup.

****Repeat procedures for ALL white powders and record observations in the Data Table****

Wash and dry all cups and return to front (teacher) table.

Data Table

Powder	Description of powder	Reaction to Water	Reaction to Heat	Reaction to Iodine	Reaction to Vinegar
Baby Powder					
Baking Powder					
Baking Soda					
Corn Starch					
Plaster of Paris					
Salt					
Sugar					
Mystery Powder					

I think the mystery powder is _____ because _____

_____.

1. Which two powders are most alike?
2. How could you tell if the chemical reacted to water? Give an example.
3. How could you tell if the chemical reacted to iodine? Give an example.
4. How could you tell if the chemical reacted to vinegar? Give an example.
5. How could you tell if the chemical reacted when you added heat? Give an example.