

MYSTERY POWDER

(adapted from the ACS Kids & Chemistry)

OBJECTIVES

1. To make careful observations of the different chemical reactions
2. To identify an unknown sample.

INTRODUCTION

Identifying unknowns is a basic function of chemistry. This qualitative analysis is based on simple chemical reactions of solid compounds with test reagents. A test reagent is a chemical that causes a specific reaction to occur. The resulting reaction may produce a gas, a precipitate, or a color change. For example, sodium iodide is a test reagent for identifying the presence of lead in solution. If a small volume of sodium iodide is added to a solution that is suspected to contain lead ions, the formation of a yellow precipitate (insoluble compound) of lead iodide indicates the presence of lead ions in solution. In the absence of lead ions in solution, a precipitate will not form, or if one does, it will not be the color unique to lead iodide.



In this experiment, you will perform simple chemical reactions and record all observations in the chart. You will also make careful observations and logical interpretation of the results obtained with an unknown powder and identify the nature of the powder.

PROCEDURE

Solid white powders: Baking soda, Sugar, Flour, Cream of tartar, and Chalk.

Test reagents: Vinegar, Iodine solution, Water, and Radish (or an indicator)

Using a reaction cell plate or an index card, place a small amount of the solid powder into a reaction well, then add a few drops of the test reagents to each of the 5 powders. Be sure to record all observations in the result chart. Note that “ More is better” is definitely not the case here. Only a small amount of the substance is required to make observations in this case.

Each student will then be given a “mystery” powder. Test the mystery powder with the test reagents. Record observations of the mystery powder and compare with the results of the chart.

Evaluate your results and identify the mystery powder.

**MYSTERY POWDER
LABORATORY REPORT**

NAME: _____
DATE: _____

RESULTS

CHART

	Vinegar	Iodine	Water	Radish (or Indicator)
Baking Soda				
Sugar				
Flour				
Cream of tartar				
Chalk				

Observations and Identification of the Mystery Powder

	Vinegar	Iodine	Water	Radish (or Indicator)
Mystery powder				