

Physical and Chemical Changes in Matter

There are many ways in which matter can be described. One way is to describe the chemical and/or physical properties of the matter. Physical properties are characteristics of matter which are observable without a change in the matter. Examples of physical properties are: color, density, smell, hardness, melting point, boiling point, freezing point, and structure. An important fact to consider is that matter undergoing physical changes still remains the same matter, and the change is generally reversible. Chemical properties are observable when a change in the matter occurs. Examples of chemical properties are: burning, decomposition, combination with other substances, digestion, and reactivity. An important fact involving chemical changes is that the matter is changed, and a "new" substance is formed, which is frequently irreversible.

In this experiment, you will conduct several tests to determine if a physical or chemical change has occurred.

Materials:

0.10 M Silver Nitrate (AgNO_3)	Baking Soda (NaHCO_3)	2 – Test Tubes
Table Salt (NaCl) – Solid and Solution	Vinegar	Pipettes

Procedure:

Reaction 1 – Silver Nitrate and Table Salt Solution

- 1) Fill one test tube with approximately one inch of 0.10 M silver nitrate.
- 2) Fill the other test tube with approximately one inch of saturated table salt solution.
- 3) Record observations of each solution.
- 4) Pour the contents of one test tube into the other and record observations.
- 5) Empty the test tubes down the sink and rinse with a good amount of water.

Reaction 2 – Solid Table Salt and Water

- 1) Fill a test tube with approximately one inch of water.
- 2) Add a small amount of solid table salt to the other test tube.
- 3) Record observations of each substance.
- 4) Pour the water into the salt and swirl to mix. Record observations.
- 5) Empty the test tubes down the sink and rinse with a good amount of water.

Reaction 3 – Baking Soda and Vinegar

- 1) Fill a test tube with approximately one inch of vinegar.
- 2) Fill the other test tube with a small amount of solid baking soda.
- 3) Record observations of each substance.
- 4) Pour the vinegar into the baking soda. Record observations.
- 5) Empty the test tubes down the sink and rinse with a good amount of water.

Name: _____

Physical & Chemical Changes Lab

	Initial Observations	Reaction Observations	Final Observations	Physical or Chemical?
Reaction 1 – Silver Nitrate & Sodium Chloride				
Reaction 2 – Sodium Chloride & Water				
Reaction 3 – Baking Soda & Vinegar				

Questions:

- 1) What types of things were you looking for to determine if it was a physical change?
- 2) What types of things were you looking for to determine if it was a chemical change?
- 3) Which reactions were physical changes? What evidence was there to support your answer?
- 4) Which reactions were chemical changes? What evidence was there to support your answer?
- 5) How could you have easily separated the salt and water mixture without using a chemical change? What does this indicate about mixing salt and water?