

Introduction:

In this lab you will be performing a series of experiments and analyzing whether a physical or chemical change has occurred. All safety precautions must be followed at all times. Your grade will be based in part on the quality of the observations, so make sure that your observations are thorough.

Pre-Lab Questions:

1. What is the difference between a physical and chemical property?
2. What is the difference between a physical and chemical change?
3. Provide one example of a chemical change. Explain why this is a chemical change.
4. Provide one example of a physical change. Explain why this is a physical change.

Materials:

*Birthday candle	*3 test tubes	*1 test tube rack
*aluminum pan	*graduated cylinder (10mL)	*spatula
*stirring rod	*scissors	*AgNO <sub>3</sub> (Silver nitrate)
*6M HCl (acid)	*NaOH (sodium hydroxide)	*NaCl (sodium chloride)
*magnesium ribbon	*phenolphthalein	*Latex gloves
*matches		

Procedure:

Follow the procedure by number.

1. Break off a small amount of wax from the bottom of a birthday candle and heat it in a pan using a match. Record your observations.
2. Let the wax cool for 10 minutes. Record your observations.
3. Light the wick of the candle using a match. Secure the candle to the bottom of a pan by dripping wax onto the dish and then holding the base of the candle in the melted wax until the wax hardens. Allow the candle to burn until it goes out. Record your observations.
4. Tear a **small** (tiny) piece of paper into pieces and place the pieces in a pan. Record your observations.
5. Ignite the paper with the matches (insure all other flammable material is away from the burning paper). Allow paper to burn completely. Record your observations.
6. Measure 5 mL of water in a graduated cylinder. Pour the water into a test tube and add a small amount (about the size of the tip of the spatula) of sodium chloride. (NaCl) to the test tube. Stir the contents to mix. Record your observations.

7. While wearing a latex glove, add 10 drops of 0.1M Silver nitrate ( $\text{AgNO}_3$ ) to the sodium chloride-water mixture. Record your observations. (Place solution in designated waste container when finished. DO NOT DISCARD DOWN THE DRAIN!!!)
8. Obtain a small piece of magnesium ribbon and place it in a test tube. While wearing a latex glove, use a medicine dropper to add a few drops of the hydrochloric acid ( $\text{HCl}$ ) to the test tube containing the magnesium ribbon. Touch the outside of the test tube with your fingertip. Record your observations. (Place the solution in the designated water container when finished. DO NOT DISCARD DOWN THE DRAIN!!!)
9. Place 10-20 drops of sodium hydroxide in a test tube. Record your observations.
10. Add 1-2 drops of phenolphthalein, Record your observations.
11. Add 5-10 drops of 6M  $\text{HCl}$ , Record your observations.
12. Once you have made all of your observations:
  - Dispose of all solutions
  - Rinse out all test tubes and beakers
  - Clean up your area and put away your safety goggles and apron
  - Wash your hands
  - Put everything back on the cart (4<sup>th</sup> hour & 8<sup>th</sup> hour)

**POST-LAB QUESTIONS:**

1. Indicated whether the following changes are physical or chemical-
  - A. melting candle wax
  - B. burning candle wax
  - C. tearing paper
  - D. burning paper
  - E. dissolving  $\text{NaCl}$  (sodium chloride)
  - F. mixing  $\text{NaCl}$  and  $\text{AgNO}_3$
  - G. cutting magnesium ribbon
  - H. adding  $\text{HCl}$  to  $\text{Mg}$
2. Name two possible physical indications that a chemical change has occurred, using examples from this laboratory investigation.