

LAB ACTIVITY: Physical and Chemical Properties

Name _____ Date _____ Per _____

Purpose:

- 1) To observe physical and chemical properties.
- 2) To decide if an observed change is physical or chemical.

Part 1: The Physical Properties of Matter – Examine each substance carefully. Do not touch the substance. Leave the substance in the container. Record examined observations of physical appearance.

Part 1 Data Table:

SUBSTANCE	FORMULA	PHYSICAL STATE	COLOR	ODOR (Yes or No)	ELEMENT OR COMPOUND
<i>Example:</i> CARBON	<i>C</i>	<i>Solid</i>	<i>Black</i>	<i>No</i>	<i>Element</i>
ALUMINUM					
SULFUR					
IRON					
ZINC					
COBALT NITRATE					
NICKLE SULFATE					
SODIUM BICARBONATE					
SILICON DIOXIDE					
SODIUM CHLORIDE					
AMMONIUM HYDROXIDE					
WATER					
VINEGAR					
OXYGEN					

Part 2: Complete the following 6 experiments (complete in any order).

- 1) Place 5 drops of AgNO_3 in a well; add 5 drops of K_2CrO_4 . Observe, record, and clean well.
- 2) Place 5 drops of NH_4OH in well, add 5 drops $\text{Co}(\text{NO}_3)_2$. Observe, record, and clean well.
- 3) Place 5 drops of NaHCO_3 in well; add 5 drops of vinegar. Observe, record, and clean well.
- 4) Light the birthday candle. Watch the candle burn ($\text{C}_{25}\text{H}_{52}$). Observe very closely what is happening. Burn the candle long enough for three drops to fall into the cold water. Blow out the candle. There are multiple changes and observations to record.
- 5) Obtain a small piece of magnesium (Mg) ribbon. Pinch with a pair of tongs and ignite with the Bunsen burner. When it ignites, drop into the evaporating dish. DO NOT LOOK DIRECTLY at the burning Mg. Observe, record, and clean dish.
- 6) Remove the lid of the acetone (CH_3COCH_3). Use the dropper to put a few drops on the Q-tip. Quickly put the lid back on, so it does not evaporate. Try to write your name on the table with the wet Q-tip. See how many letters you can write before they disappear.

Part 2 Data Table:

		Physical State (s, l, g, aq)	Color	Observations
Experiment 1	AgNO_3			
	K_2CrO_4			
Experiment 2	NH_4OH			
	$\text{Co}(\text{NO}_3)_2$			
Experiment 3	NaHCO_3			
	Vinegar			
Experiment 4	Light a Candle			
Experiment 5	Magnesium Ribbon			
Experiment 6	Acetone			

*****see attached page for post-lab / conclusion questions!***

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Conclusion Questions:

1) In your own words, differentiate between the following terms:

- Chemical Change and a Physical Change:

- Chemical Property and Physical Property:

2) For each of the experiments in Part 2, determine whether a physical or chemical change occurred.
Provide evidence to back up your claim.

	Physical or Chemical Change	Evidence
Experiment 1		
Experiment 2		
Experiment 3		
Experiment 4		
Experiment 5		
Experiment 6		

3) Which experiments were the easiest to determine whether or not they were chemical changes? Why were they easier?

**see questions on back.

4) Indicate whether the following are physical or chemical changes.

Process:	Chemical or physical change?
a) melting candle wax	
b) tearing Mg ribbon	
c) adding HCl to Mg	
d) tearing paper	
e) grinding CuSO_4	
f) burning paper	
g) heating CuSO_4	
h) dissolving NaCl	
i) mixing NaCl and sand	

5) Describe the difference between **elements**, **compounds**, and **mixtures**.

6) Can a compound be broken down to smaller components (i.e. elements or smaller compounds) by **physical** means? By **chemical** means?

7) Describe the difference between a **homogenous mixture** and a **heterogeneous mixture**. Give an example of each.

8) Discuss **why physical properties** are better to use to separate mixtures than chemical properties.