

Physical and Chemical Changes Lab

Directions/Purpose: At each station you will perform a basic experiment to identify whether a chemical or physical change has taken place. Fill in your information in the data table below. Some lab stations will take longer than others, if you finish before it is time to rotate please work on determining if a physical or chemical change happened at your station.

Station 1: Examine a wood splint and note its physical properties in the table below. Light the wood split using a match until it takes fire and allow it to burn itself out on the ceramic tile. Record your observations in the data table.

Station 2: Strike the match and light the candle. Observe what happens both before the candle was lit and after. Be sure to observe the wick and the wax.

Station 3: Place about an inch of water in a test tube. Using a test tube holder, heat the water in the test tube until it boils. Hold a dry test tube upside down in the escaping steam for a minute or two. Record your observations in the data table.

Station 4: Examine and note the properties of copper. Hold the copper strip with the crucible tongs and heat it in the Bunsen burner flame for several minutes. Examine and note its properties after heating. Record your observations in the data table.

Station 5: Put a pinch of sugar on a small piece of aluminum foil. Place the sugar/aluminum foil on the hot plate. Turn the hot plate on to a setting of no higher than 4 or 5. Heat the foil for several minutes. Note the properties of the sugar before and after heating. Record your observations in the data table.

Station 6: Observe some salt. Place a small amount of salt in a clean mortar and pestle and grind it into a powder. Use a spatula to place some salt in a test tube of water. Record your observations in the data table.

Station 7: Measure 5 mL of sodium hydroxide (NaOH) in the graduated cylinder. Add the 5 mL of sodium hydroxide to a test tube. Add 2 drops of copper (II) nitrate ($\text{Cu}(\text{NO}_3)_2$) solution to the NaOH in the test tube. Record your observations of before and after the addition in the data table. Place the waste from the test tube in the waste beaker.

Station 8: Take one small piece of magnesium ribbon. Place the magnesium ribbon onto a petri dish and add two drops of HCl. Observe what happens.

Station 9: Place a scoopful of baking soda in the petri dish. Add a small amount of vinegar to the baking soda. Make an observation before adding the vinegar and after adding the vinegar.

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Data Table:

Observations

Materials	Properties Before	Properties After	Chemical or Physical Change? Why?
Wood			
Candle			
Water			
Copper			
Sugar			
Salt			
$\text{Cu}(\text{NO}_3)_2$ and NaOH			
Mg and HCl			
Vinegar and Baking Soda			

Summary Questions:

1. Different kinds of matter are recognized by observing their _____.
2. Five characteristics or properties used to identify substances are _____, _____, _____, _____, and _____.
3. Two kinds of changes that matter may undergo are _____ and _____.
4. A change in which a substance loses the properties by which we identify it is called a _____ change.

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5. A change in which an element or compounds may change some of its physical properties but not its chemical properties is called a _____ change.

Conclusions:

1. A chemical change is one in which _____
2. Compounds are formed as the result of _____ changes.
3. A physical change is one in which _____
4. The formation of mixtures is a _____ change.

Related Questions:

1. Matter is defined as _____.
2. The three states or forms of matter are _____, _____, and _____
3. Mixing iron fillings and sulfur is a _____ change because _____
_____.
4. Heating a mixture of iron filings and sulfur produces a _____ change because _____
_____.

5. State whether the following are Physical (P) or chemical (C) changes:

- | | |
|-----------------------------------|----------------------------|
| a) Souring of milk _____ | g) Burning of coal _____ |
| b) Rusting of iron _____ | h) Pulverizing sugar _____ |
| c) Breaking glass _____ | i) Boiling water _____ |
| d) Tarnishing of silver _____ | j) Melting ice _____ |
| e) Dissolving salt in water _____ | k) Melting paraffin _____ |
| f) Magnetizing iron _____ | l) Decaying of food _____ |

6. Does the application of heat to a substance always produce a chemical change? _____
Give examples to support your answer _____

