

SCIENCE 9 LAB

PHYSICAL AND CHEMICAL CHANGES

INTRODUCTION: In this lab you will be studying the differences between physical and chemical changes in matter.

PROCEDURE 1:

1. Examine a few crystals of sodium chloride. List several of its physical properties below.
2. Place a small amount of sodium chloride into a _____ and grind it with the pestle. Examine the sodium chloride again.
3. Does the grinding change the chemical nature of the sodium chloride?
4. Is this a physical or a chemical change?
5. **SAVE THE SODIUM CHLORIDE FOR PROCEDURE 2.**

PROCEDURE 2:

1. Place the sodium chloride from Procedure 1 in about 30 ml of hot water. Use one of the small beakers and mix the sodium chloride and water with a stirring rod.
2. Describe what happens to the sodium chloride.
3. Place 5 dropperfuls of the mixture from step 1 into a small aluminum pan. Place the pan on the ring stand and heat it until all of the liquid is gone.
CAUTION: BE SURE TO WEAR SAFETY GOGGLES
4. What is in the pan when the liquid is gone?
5. Is this procedure a physical or a chemical change?

PROCEDURE 3:

1. You will need two pieces of copper metal. Examine a piece of copper metal. List some of its physical properties below.
2. Place one piece of copper into a test tube and add 4 ml of HCl solution. Allow the copper to stay in the acid for 4-5 minutes. **DO NOT HEAT!!!!** Describe what happens to the copper.
3. **PUT ON YOUR SAFETY GOGGLES** and hold the piece of copper with the tongs and heat it in the burner flame. **HEAT IT IN THE COOLER PART OF THE FLAME.** Heat it for a minute or so.
4. **CAREFULLY EXAMINE THE COPPER METAL. LIST SOME OF PHYSICAL PROPERTIES BELOW.**
5. Place the heated piece of copper into a new test tube and add 4 ml of HCl solution and allow it to stay in the acid for a few minutes. **Describe what happens below.**
6. In which parts of Procedure 3 do you think a chemical change took place?

PROCEDURE 4:

1. Place a small piece of ammonium carbonate on a piece of paper towel and bring it back to your lab station and examine it. List some of its physical properties below.
2. **PUT ON YOUR SAFETY GOGGLES** and place the ammonium carbonate into a **COMPLETELY DRY TEST TUBE.** Place the test tube into a holder and heat the test tube for **10 SECONDS.**
3. **VERY CAREFULLY SMELL THE END OF THE TEST TUBE.** Identify the odor if you can.

4. Describe what happens to the ammonium carbonate.
5. Did a chemical change take place?

PROCEDURE 5:

1. ~~Take a few strands of copper metal and twist them to make a wire.~~ The length of this wire should be a little longer than your test tube.
2. Add 3 ml of silver nitrate solution to a clean test tube.
3. What is the color of the copper and the silver nitrate solution ?
4. Place the copper wire into the liquid and check it every minute for about 5 minutes.
5. Record any changes in the copper and the silver nitrate solution.
6. Has a chemical change taken place?

PROCEDURE 6:

1. Get a small piece of magnesium metal and examine it. List some of its physical properties below.
2. **PUT ON YOUR SAFETY GOGGLES** place the piece of magnesium into a _____
3. Add 2 ml of hydrochloric acid (HCl) into the dish. Describe what happens.
4. Has a chemical change taken place?
5. Allow the liquid in the dish to sit undisturbed over night.
6. What is in the plastic dish after sitting over night? Make a sketch of the contents in the plastic dish and include this in the lab report.

PROCEDURE 7:

1. Put 1 ml of sodium sulfate solution into **test tube A** and 1 ml of barium chloride into **test tube B**. Examine the solutions and describe them below.
2. Pour the barium chloride solution into the test tube holding the sodium sulfate. **Record your observations.**
3. **Has a chemical change taken place?**

PROCEDURE 8:

1. Get a small amount of calcium metal. Examine it and list some of its physical properties below.
2. **PUT ON YOUR SAFETY GOGGLES** and place the calcium into a _____ which has some hot tap water in it. **Describe what happens.**
3. **Has a chemical change taken place?**

PROCEDURE 9:

1. Place _____ spoonful of copper chloride into 50 ml of distilled water. Stir the mixture until all of the copper chloride is dissolved.
2. Now add a small strip of aluminum foil to the copper chloride solution and wait for several minutes.. **Describe what happens to the aluminum foil.**
3. **Has a chemical change taken place?**

PROCEDURE 10:

1. Place a small piece of marshmallow into an aluminum pan.
2. Place the aluminum pan on the ring stand set up and heat the pan for several . Describe what happens to the marshmallow.
3. Has a chemical change taken place?

Procedure 11:

1. Take one of the bobby pins and straighten it out. While holding the metal with a pair of tongs, heat about half of it until it becomes red hot. Place the red hot piece of metal on your ring stand and let it cool to room temperature.
2. Take the other bobby pin and straighten it out. While holding the metal with a pair of tongs, heat about half of it until it becomes red hot. Immediately place the red hot metal into a beaker of cold tap water to cool off.
3. Once both pins have cooled, bend the heated part of each one and describe what happens.
4. Has a chemical or physical changed taken place ?

#	Substances used	Physical Properties observed	What we did to the substance(s)	results	type of change	evidence for this change

#	Substances used	Physical Properties observed	What we did to the substance(s)	results	type of change	evidence for this change

#	Substances used	Physical Properties observed	What we did to the substance(s)	results	type of change	evidence for this change