Chemistry 0 Unit 3 Lesson 5 Homework
Assigned on 03/28/2021 Due date:04/10/2021

Experiment: What's the Difference between Baking Soda and Baking Powder?

In this assignment, you'll explore two common white powders – baking soda and baking powder, and compare them in a chemical reaction.

Question to investigate: What is the difference between baking soda and baking powder?

BACKGROUND INFORMATION:

Baking soda and baking powder are both used to make certain types of cakes and cookies. But are these white powders the same or different? One way to find out is to test them using a chemical reaction. You might know that vinegar added to baking soda causes a chemical reaction that makes bubbles form. The bubbles that form are a result of carbon dioxide gas that is produced by the chemical reaction between the molecules in the vinegar and the molecules in the baking soda. If baking soda and baking powder are the same, they should react the same way and produce the same amount of carbon dioxide gas when tested with vinegar. So to find out if baking soda and baking powder are the same or different, you could compare them by adding vinegar to both.

MATERIALS:

- Baking soda
- Baking powder
- Measuring cup
- Teaspoon
- Clear Cups
- Water
- Vinegar
- Stopwatch or timer

PROCEDURE:
You will test baking soda in each of the 2 liquids: water, and vinegar. Then you will test baking powder in each of the 2 liquids: water and vinegar.

Fill a clear cup with ¼ cup of water. Add 1 teaspoon baking soda and start the timer. Finish timing when all the little bubbles stop rising to the surface (which is the time until the reaction finished). Record your answer.

Repeat with remaining reactions: vinegar/baking soda, water/baking powder, and vinegar/baking powder.

RESULTS:

1. Please fill in the table below:

1 Teaspoon of	**¼ Cup of Liquid**	**Time until the reaction finished**	**Mark the reaction that has most bubbles**
Baking Soda	Water		
Baking Soda	Vinegar		
Baking Powder	Water		
Baking Powder	Vinegar		

2. Please paste your end result pictures of these four reactions (which show the bubbles in the cups) here [1]

[1] Continue on next page

DISCUSSIONS:

Please answer the following questions:

1. Based on this experiment, would you say that baking soda and baking powder are the same or different?

2. Please write down the ingredients from your baking soda and baking powder bottles below:
   BAKING SODA INGREDIENTS:
   BAKING POWDER INGREDIENTS:

3. We know that baking soda reacts with vinegar, but why does baking powder react with vinegar? Please choose from the following:
   A. Because baking powder does not contain baking soda
   B. Because baking powder contains baking soda
   C. Because baking powder contains corn starch

4. Why does baking soda produce more gas than baking powder, even though the same amount of the two powders is added to the same amount of vinegar? Please choose from the following:
   A. Because vinegar reacts with baking soda, and baking soda is 100% baking soda
   B. Because baking powder does not contain baking soda
   C. Because baking powder has more baking soda than pure baking soda

5. Which of the following reactions has produced more bubbles: baking soda with water or baking powder with water? Why so?

CONCLUSION:

Please explain how you can differentiate between baking soda and baking powder by performing these reactions.