

Activity Sheet Answers

Chapter 6, Lesson 6

Using Chemical Change to Identify an Unknown

DEMONSTRATION



1. How do you know that these two similar-looking powders are actually different?

When the iodine solution was poured onto the white powders, one turned a very dark purple and the other didn't seem to change color. Since one powder caused a chemical reaction and the other did not with the same test liquid, the powders must be different.

2. Adding iodine solution to one powder caused a physical change, while adding the iodine solution to the other powder caused a chemical change. Which powder probably reacted chemically with the iodine solution? How do you know?

The mixture of the iodine with the powder that caused no color change was the physical change because the powder just got wet or dissolved a bit. The mixture of the iodine with the powder that caused the color change was the chemical change because the change in color indicates that a new substance was formed.

3. What is the identity of the unknown? Which observations led you to your conclusion?

The unknown is baking powder.

The baking powder and the unknown were the only powders to bubble when water was added. Also, the results of the testing with all the other test liquids on the baking powder matched with the set of results for the unknown.

EXPLAIN IT WITH ATOMS & MOLECULES

4. On the molecular level, why did the different substances react in a characteristic way with the test solutions?

Each substance is made from different atoms bonded together in different ways. Each one will react differently with the molecules in the test liquids.

TAKE IT FURTHER

5. Which two powders react to produce carbon dioxide gas when water is added to baking powder?

The two powders in baking powder that react to produce carbon dioxide gas are cream of tartar and baking soda.

DEMONSTRATION

6. Based on your observations, and what you know about vinegar and cream of tartar, why do you think the baking soda and cream of tartar reaction is similar to the baking soda and vinegar reaction?

In the demonstration, the vinegar and the cream of tartar both turned the indicator from green to pink. This means that vinegar and cream of tartar are both acids. Since the vinegar reacts with baking soda, maybe the cream of tartar, which is also an acid, will react with baking soda in a similar way.