

Baking Soda and Vinegar Experiment

Procedure

I. Discussion Topic: Everything is made up of matter.

- a. Matter is a physical substance which occupies space and has mass.
- b. Matter can go through changes. It can go through a physical change or a chemical change.
 - i. A physical change is when it changes in form but not what it is made of.
 - ii. A chemical change is when two or more substances (matter) are combined and they react with each other and they change into new substances.

II. Discussion Topic: There are evidences that are evident when substances go through a chemical change.

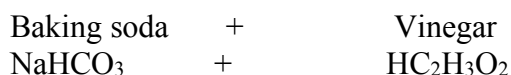
- a. A new solid is formed.
- b. A new liquid is formed
- c. Change of temperature (hot or cold)
- d. Light is given off
- e. An unexpected gas is given off
- f. An unexpected odor is given off
- g. An unexpected color change
- h. Combustion of material

III. Discussion Topic: Law of conservation: Matter is neither created nor destroyed. The matter only changes form.

- a. When substances are mixed, whether there is a physical change or a chemical change, the weight of the substances added together will always equal the final weight of the final substance(s).

IV. Display the chemical properties of baking soda and vinegar and show the chemical make up of the new products that were made.

- a. What we started out with was:



- b. When baking soda and vinegar are mixed together it changes into it became this:



- c. Notice:
 - i. All the elements that are in “a” are also in “b”—none were added and none were taken away.

- ii. The combination of elements in “a” have changed to different combinations of elements in “b”.
 - iii. The number of chemical elements on the left side of the equation equals the number of chemical elements on the right side, but they have changed form.
- d. It is a chemical change because:
- i. Three new substances are formed:
 - 1. salt-vinegar—a solid at the bottom of the flask
 - 2. water—the clear liquid
 - 3. carbon dioxide—the gas in the balloon
 - ii. Temperature change
 - 1. The bottom of the flask is cold
- e. Take the balloon off and let the carbon dioxide flow out of the balloon, reattach the balloon to flask and re-weigh. Show students that the gas has weight and even though it has changed forms of matter, it is a part of the chemical change and is part of the same mass.