

Fizzing and Foaming Experiment

Ingredients:

- 1 tablespoon of baking soda (sodium bicarbonate)
- 1 tablespoon of laundry detergent
- 3/4 cup of water
- 1/4 cup of vinegar
- several drops of food coloring
- a 12-ounce drinking glass
- a waterproof (plastic or metal) tray
- a teaspoon

Directions:

- Place the drinking glass on the tray.
- Add the baking soda and laundry detergent to the glass.
- Add the water and a few drops of food coloring.
- Gently stir the mixture to mix the contents of the glass.
- Quickly pour the vinegar into the glass.

What happened and why:

- In this experiment, the fizz is produced by a chemical reaction between baking soda and vinegar.
- Baking soda and vinegar react, and one of the products of the reaction is carbon dioxide gas.
- This gas forms bubbles that are surrounded by the liquid.
- The laundry detergent makes the bubbles last longer, and a foam is produced.
- The volume of the gas produced and trapped in the foam is much greater than the glass can hold, so some of it spills over the top of the glass.
- Baking soda is sodium bicarbonate.
- Vinegar contains acetic acid dissolved in water.
- Sodium bicarbonate reacts with most acids.
- The products of the reaction with vinegar are carbon dioxide gas, sodium acetate, and water.
- The reaction of sodium bicarbonate to form carbon dioxide gas is the basis of its use as a leavening agent in baking.
- Cakes are solid foams.
- The foam is produced when bubbles of carbon dioxide from the reaction of sodium bicarbonate are trapped in the batter.
- As the cake bakes, the batter dries, and the trapped bubbles of carbon dioxide form the holes in the cake.