MoLab Mondays!

Fizzy Ice Experiment

MoLab is excited to have the opportunity to stay in touch with our MoFamilies and continue to provide on-the-go, dynamic, hands-on, and inquiry-based science experiences through a mobile laboratory that promotes discovery. Our weekly activities will engage your little investigators with hands-on learning that proves anyone can think like a scientist.

For our second MoLab Mondays!, we are going to continue exploring chemistry and enjoy a fun experiment that will excite the senses. These materials are easy to round up in most households. Be sure to check out the extension activity at the end. This fun bonus experiment uses some of the same supplies and a couple extras from around the house.

Tools & Materials:

- crushed or cubed pieces of ice in a bowl (we use a pie pan)
- vinegar
- food coloring
- medicine dropper
- baking soda
- small bathroom cups

Making Your Ice Fizz

- Mix vinegar and food coloring in small bathroom cups to make colored vinegar. If you use an assorted pack of 4 colors (red, blue, green, and yellow), you will need 4 cups. Each cup will have one mixture of a color and vinegar. Fill the bathroom cups about half full of vinegar and use as much food coloring as you desire.
- Fill up your bowl or pie pan with crushed or cubed ice. For a fun effect, you could work them into mounds or piles of ice.
- Shake, or use a spoon, to sprinkle baking soda all over the ice piles.
- Use your medicine dropper to grab some colored vinegar and squeeze it onto your ice piles.
- Watch the reactions and chat with your kids about what they see! Pick a new color to drop and add that to the ice. Keep alternating colors and repeating. Add more baking soda to the ice and drop more vinegar onto the mounds and make even more observations.
- This activity gets quite addictive and just a little messy. We mix colors and experiment until all the ice melts. If you have time, you might want to try it again! It is amazing how fascinating ice can be once you add baking soda and vinegar.

Make Observations and Ask Your Student

1. What do you hear as you drop the vinegar onto the ice?
2. What do you see?
3. Why is the ice fizzing?
4. What is happening to the ice?
5. What new colors are being made?

What's Going On?

We explored chemistry last week and learned it is the branch of science that studies the properties of matter and how matter interacts. In our experiment today, a few things are happening. We know matter can be changed chemically and physically. When you melt an ice cube, it is a physical change. The bonds between the atoms remain intact. The fizzing reaction between the vinegar and baking soda is a chemical change. The bonds between atoms are broken and new ones are formed.

Is there evidence that a chemical reaction has taken place? Sure, the five different signs to look out for are an odor, a temperature change, a precipitate formation, a production of gas bubbles, or a color change. Our experiment produced gas bubbles of carbon dioxide.

Chemical reactions are cool and take place everywhere! Every time you eat, your body uses chemical reactions to break down your food into energy. Other examples you may be familiar with are metal rusting, wood burning, batteries producing electricity, and photosynthesis in plants.

This experiment also offers an opportunity to explore color combination. If your food coloring included the three primary colors of pigment (red, yellow, blue), you were able of make observations on how these classic colors combine to produce new colors. Red and blue make purple. Yellow and red make orange. Blue and yellow make green. There were probably lots of colorful physical changes taking place in your dish!

Dig a Little Deeper

The baking soda and vinegar reaction is an endothermic reaction. Baking soda reacts with the vinegar to produce carbon dioxide gas, sodium acetate, and water. It took energy to break the baking soda and vinegar apart and energy was released when the carbon dioxide, sodium acetate, and water were formed. Since more energy was needed to break the baking soda and vinegar apart, the temperature went down. The melting of ice is also an endothermic reaction.

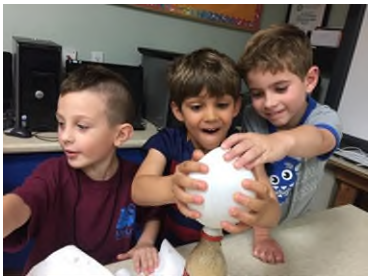
The experiment is also an acid and base reaction. The baking soda is a basic compound called sodium bicarbonate. Vinegar is an acidic combination of water and acetic acid. When vinegar and baking soda are mixed, a new chemical called carbonic acid is created. This carbonic acid immediately decomposes into carbon dioxide gas. When you mix the vinegar and baking soda, it's the carbon dioxide gas that makes the bubbles. This experiment is a good launching point to further investigate the Ph properties of substances for older students.

Extension Activity

Use your leftover baking soda and vinegar to create a trap for the carbon dioxide gas. Grab a balloon, an empty water bottle (or any bottle with the similar sized mouth), and a funnel. Use the funnel to pour vinegar into the water bottle. In a 16.9 ounce bottle, you will fill it about 2 inches. Dry the funnel and use it to load 2 tablespoons of baking soda into a balloon. Stretch and pull the lip of the balloon over the mouth of the water bottle. Slowly tip the balloon up and let the baking soda fall inside. Enjoy the reaction. Once it is over, you can remove the balloon and tie it off.

Experiment by repeating the activity and add more or less of the ingredients. What are the results?

Or, get creative and use your art skills to make a balloon friend!



Happy Experimenting from MoLab, Inc!