Pop Rocks (Fizzy Candy)

Materials Needed

2 cups granulated sugar
½ cup corn syrup (light Karo syrup or similar)
1 to 2 Tablespoons water (use just enough to wet the sugar)
1 Tablespoon baking soda (sodium bicarbonate)
¼ cup citric acid (available at natural food stores) with an additional teaspoon of citric acid at the end of the process
¼ to 1/2 teaspoon flavoring extract (Use candy flavoring, if available. Note: Candy flavoring is more concentrated than flavoring extracts purchased in a supermarket – use ¼ teaspoon.)
3 or 4 drops food color (more may be required) Use food coloring gel, if available (Purchased at candy making or cake making shops)
Confectioner's sugar
stirrer: wood spoon, high temperature spatula, or high temperature plastic candy spoon
saucepan: 2 ½ to 3 quart (Note: This larger saucepan is needed as the mixture foams during the heating process. This will contain the mixture from overflowing the pot.)
12 x 18 inch baking sheet with sides (or similar)
Candy thermometer
Gallon size plastic freezer bag
pot holders or hot mitt

Safety

Safety glasses or goggles must be worn in the laboratory at all times.

This experiment is best performed at home or in a home economics laboratory. If this experiment is performed in a chemistry laboratory, all work surfaces must be cleaned and free from laboratory chemicals. After cleaning work surfaces, it is advised to cover all work areas with aluminum foil or a food-grade paper covering.

All glassware and apparatus must be clean and free from laboratory chemicals. Use only special glassware and equipment, stored away from all sources of laboratory chemical contamination, and reserved only for food experiments is recommended.

There are no safety hazards associated with the materials used in this experiment.

The materials prepared in this experiment will be hot. Wear a hot mitt or use pot holders when handling hot pots or any of the mixtures prepared.

Disposal

Generally, all waste materials in this experiment can be disposed in the trash or poured down the drain with running water. All disposal must conform to local regulations.

Procedure

Prepare the 12 x 18 baking sheet by sprinkling some confectioner's sugar in it to coat the surface. Place this aside.

Measure the sugar, corn syrup, and water into the saucepan. Stir to form a smooth paste.

Heat over medium heat until the mixture starts to boil. Insert the candy thermometer and continue heating, with stirring, until the mixture reaches 300°F (150°C). This will take a little while as the water will boil off during the heating process.

While the sugar mixture is heating, measure the baking soda and the citric acid into separate bowls.

Remove the pot from the heat. Slowly, with stirring, add the baking soda to the sugar mixture, followed by the citric acid, the flavoring extract, and the food color. CAUTION: The mixture will foam.

Pour the hot mixture onto the prepared baking sheet. Try to spread it out without overflowing the sides.

Allow the mixture to cool for about 30 minutes to 1 hour.

Once the mixture is cool, break it into pieces and place it into a gallon size zip lock bag. Use a rolling pin, meat mallet, or a pot to break the candy into small pieces. (Not a powder.)

Store your pop rocks in small zip lock bags.

Explanation

Pop Rocks is a hard candy made from sugar, lactose (milk sugar) corn syrup and flavoring. The ingredients are heated together and boiled in a pressure cooker, then agitated and mixed with carbon dioxide gas at about 600 PSI. The mixture is then rapidly cooled to 25°C resulting in the carbon dioxide gas forming tiny, 600 PSI bubbles in the candy. When the pressure is released, the candy shatters into the form as it is packaged, but the pieces

still contain trapped bubbles of carbon dioxide. These bubbles can be observed with a magnifying lens or dissection microscope. The tiny air pockets of carbonation (CO_2) are released when melted in your mouth and has a mild "crackling" sensation and "popping" noise. The original flavors were Orange, Cherry and Grape.

This recipe uses sodium bicarbonate and citric acid to produce the carbon dioxide fizz. It is not as fizzy as pop rocks.

References

Heath, Wilfrid Paul, Process of Manufacturing Candy, U.S. Patent 1,384,319, July 12, 1921.

Greenwood, George W., assignor to Stephen F. Whitman & Son, Inc., Process for Manufacturing Puffed Candy, U.S. Patent 1,855,670, April 26, 1932.

Bowman, Jacob Warren, assignor to Gum Incorporated, Method and Apparatus for Making Candy and the Like, U.S. Patent 2,197,919, April 23, 1940.

Kremzner, Leon, and William A. Mitchell, assignors to General Foods Corporation, Gasified Confection and Method of Making the Same, U.S. Patent 3,012,893, December 12, 1961.