

Honeycomb Candy (Sponge Candy)

Two Recipes

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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. Caution: Do not pour hot sugar mixtures down the drain, let them harden and dispose of them in the trash.

Clean utensils by soaking in hot soapy water.

All disposal must conform to local regulations.

Recipe 1: Honeycomb Candy using Butter

Ingredients

1 cup (200 g) granulated sugar

½ cup (1 stick or ¼ pound) (115 g) unsalted butter

½ cup (120 ml) light corn syrup (Note: If you want a darker colored honeycomb candy, substitute about 20 mL of dark corn syrup.)

¼ cup (60 mL) water

1/8 teaspoon salt (sea salt preferred) Note: Omit the salt if salted butter is used.

1 Tablespoon baking soda (sodium bicarbonate)

2 teaspoons pure vanilla extract

Butter or cooking spray to grease the baking pan

If a chocolate coating is desired:

12 oz (340 g) good-quality dark chocolate, chopped (chocolate chips can be used)

Equipment

8 x 8 inch baking pan

Heavy bottom saucepan, 1 ½ to 2 quart capacity

Wood spoon or heavy plastic candy making spoon

Instructions

Grease an 8 by 8-inch baking pan with butter. Set this aside. (Cooking spray can be used.)

Add the sugar, butter, corn syrup, water, and salt to a heavy-bottomed, 1 ½ to 2 quart (1 ½ to 2 L) saucepan.

Heat over medium high heat with occasional stirring using a wooden or heavy plastic candy making spoon, until the butter is melted and the sugar is dissolved.

Place a candy thermometer in the saucepan. Continue heating, without stirring, until the temperature reaches 285 to 300°F (150°C) this will take approximately 10 to 15 minutes. Note: The temperature will continue to rise after you remove the pot from the heat. (This is just below the hard crack stage.) The mixture should be amber colored.

Turn off the heat and use a wooden or plastic candy spoon to stir in the vanilla, then add the baking soda and stir. At this point the mixture will foam. (Don't stir too much because you want the bubbles in the candy.)

Pour the candy into the prepared baking pan and don't move the pan until the candy is fully set (at least 30 minutes, preferably 1 hour).

Once set, break or cut the candy (use a serrated knife) into 1 to 2-inch-sized pieces. (You can eat the smaller candy crumbs.)

Recipe 2: Honeycomb Candy without Butter

Ingredients

- 1 1/3 cup (266 g) granulated sugar
- 1/2 cup (120 mL) light corn syrup
- 6 tablespoons (90 mL) water
- 1/8 teaspoon cream of tartar
- 1 teaspoon (5 mL) vinegar (white or apple cider vinegar can be used)
- 1 1/2 teaspoon baking soda

Equipment

- 8 x 8 inch baking pan
- Heavy bottom saucepan, 1 1/2 to 2 quart capacity
- Wood spoon, heavy plastic candy making spoon or wire whisk.

Instructions

Grease an 8 by 8-inch baking pan with butter. Set this aside. (Cooking spray can be used.)

Add the sugar, corn syrup, water, cream of tartar, and vinegar to a heavy-bottomed, 1 1/2 to 2 quart (1 1/2 to 2 L) saucepan.

Heat over medium high heat with occasional stirring using a wooden or heavy plastic candy making spoon, until the sugar is dissolved.

Attach a candy thermometer to the side of the pan and heat over medium heat. There's no need to stir the pan once it begins to boil.

Heat the boiling sugar mixture to 300°F.

When the mixture comes to 300°F, quickly remove the pan from the heat, immediately add the baking soda and quickly whisk to combine. The mixture will become foamy and look pale. It will turn slightly golden as you whisk. (Don't whisk too much as it will remove the bubbles.)

Before the candy cools too much, quickly spread it into the prepared pan.

Candy will set within 30 minutes.

Crack or cut into pieces.

Optional: Chocolate Coated Honeycomb Candy

Melt the chocolate in a microwave or double boiler.

To coat the candy, dip pieces in the chocolate, and remove it with one or two forks to let the excess chocolate drip off.

Place the coated pieces on a wire rack or parchment paper lined baking sheet.

Let the chocolate set before serving or packaging the candy.

Explanation

Addition of the water allows the sugar to dissolve and the butter to melt without scorching. The water will evaporate during the heating process.

The sugar changes color due to the Malliard reaction (named after L. C. Malliard) in which amino acids react with reducing sugars producing the brown color and associated flavors to foods heated to a temperature between 284° to 329°F (140° to 165°C).

When the temperature reaches 285°F, the mixture, in procedure 1, will be light brown in color. As the temperature reaches 300°F, it becomes darker. Above 300°F, the final product will be dark brown and may exhibit a slightly “burned” taste. Addition of the vanilla extract will darken the color slightly. The mixture in procedure 2 stays relatively colorless up to 300°F. The mixture becomes opaque and an amber color develops, partially due to incorporated air, when stirring in the sodium bicarbonate.

The sodium bicarbonate (baking soda) produces bubbles of carbon dioxide causing the mixture to foam. After pouring it into the prepared baking pan, the mixture will continue to rise, followed by a slight deflation as some carbon dioxide escapes. It is important to let the mixture harden without being disturbed or it will further deflate as additional carbon dioxide escapes.

Note: Homemade honeycomb candy tends to have a thick outer “crust” or “skin”. This can be minimized by pouring the candy mixture into a smaller pan with higher sides than a typical 8 x 8 inch baking pan. After the candy has cooled, the outer crust can be cut off. See how commercial honeycomb candy is made at <https://www.youtube.com/watch?v=-6uynDLsaSk>