

Name: _____

Date: _____

Making Marshmallows

Introduction

Marshmallows are not that difficult to make and do not require any exotic ingredients. The sugar and corn syrup provide the sweetness, the gelatin keeps it 'goeey' and soft, and the mixing process adds air to the concoction, providing the fluffiness. You can also add food coloring and artificial flavoring to enhance the taste of the marshmallow, or pour it into molds to produce shapes similar to the chicks and bunnies we buy in spring!



Materials

confectioners' sugar for dusting
granulated sugar, 1/2 cup
kosher salt, pinch

light corn syrup, 1/3 cup
pure vanilla extract, 1 tsp.
unflavored gelatin, 1 package

Equipment – all equipment marked with a * must be for FOOD ONLY

beaker*, 400-mL
beaker tongs
bowl, glass
Bunsen burner
electric mixer
graduated cylinder*

iron rings, 2
ring stand
stirring rod*
thermometer*
wax paper
wire gauze

Safety Considerations

- Make sure that only "food-safe" equipment is used on the marshmallow mixture.
- Lab station surfaces can contain chemicals long after experiments have been completed. Do not touch the lab station with your hands; do not place any food-safe equipment directly on the lab station.
- The sugar and corn syrup mixture will get very HOT and can severely BURN you – be careful!
- Wash your hands thoroughly after completing this lab.

Procedure

1. Combine one package of gelatin and 40 mL of cold water in a glass bowl and allow it to sit while you mix the syrup. The gelatin must be soaked in cold water first in process called "blooming" so that it will dissolve in the hot sugar mixture.
2. Combine the sugar, corn syrup, salt, and ½ cup cold water in a 400-mL beaker and cook over a medium flame, stirring until the sugar dissolves.
3. Raise the flame to cook the syrup at high heat until it reaches 240°F (115.6°C) on the thermometer.
4. Using beaker tongs, CAREFULLY remove the beaker from the heat and immediately but slowly pour the sugar syrup into the gelatin mixture.
5. With the mixer on low speed, slowly pour the sugar syrup into the dissolved gelatin.
6. Put the mixer on high speed and whip until the mixture is very thick, or about 15 minutes.
7. While your partner is mixing, spray four small metal pans with non-stick spray. Be sure to write your names on the bottom of the pan with a permanent marker!

8. Add a small amount of a teaspoon of corn starch and a teaspoon of confectioners' sugar to each pan and spread evenly.
9. After 14 minutes of mixing, add the vanilla and mix thoroughly for another minute.
10. Pour an even amount of marshmallow mixture into each pan, smooth the top and dust with more confectioners' sugar.
11. Allow the marshmallow mixture to stand uncovered overnight until it dries out.
12. Turn the cooled marshmallows over onto wax paper and cut them into squares. Dust them with more confectioners' sugar and enjoy!

Clean-up

1. Clean the beaker, bowl and stirring rod thoroughly with soap and water using a FOOD-SAFE test tube brush, NOT from the lab drawer! You may need to use hot water to get out all the marshmallow goo.
2. Return all equipment to its proper location.
3. Wipe down your lab area and wash your hands before leaving the lab.

Questions

1. How do your marshmallows compare with store-bought marshmallows?

2. Why do you think gelatin is necessary to make marshmallows?

3. Why did we have to mix the marshmallow goo for 15 minutes before we could allow it to set?

4. A fun trick to try with marshmallows is to put them in the microwave and heat them so that they expand. Why does this happen?

5. List one way you could change this lab and describe how your results might be different.
