



SNS COLLEGE OF TECHNOLOGY



(An Autonomous Institution, Affiliated to Anna University)

Coimbatore – 641 035.

UNIT-IV

Aerated confectionery can be defined as an aerated gelled product containing a mixture of carbohydrates, mainly sugar and different types of glucose syrup, whipping and/or stabilizing agents, flavor and color.

The aeration technique enables a liquid to be transformed into a foam by incorporating a certain volume of air in the form of finely divided bubbles.

This technique causes:

- An increase in volume, together with a decrease in density
- A modification of the viscosity and fluidity of the aerated mass, leading to a better stability
- A modification of the texture and organoleptic characteristics of the finished products

Aeration of the product leads to:

- A shorter texture
- A modification in the mouthfeel
- A reduction of stickiness and cold flow
- A decrease in sweetness

Raw Materials

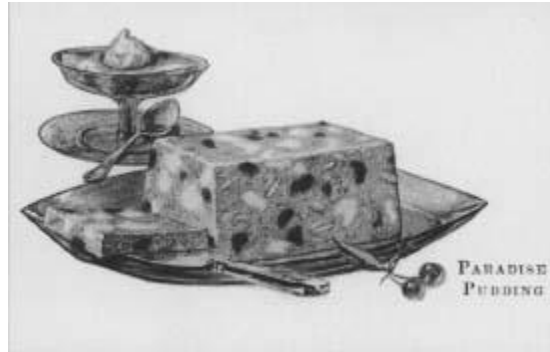
Marshmallows are made from only a few ingredients, which fall into two main categories: sweeteners and emulsifying agents. Sweeteners include corn syrup, sugar, and dextrose. Proportionally, there is more corn syrup than sugar because it increases solubility (the ability to dissolve) and retards crystallization. Corn starch, modified food starch, water, gum, gelatin, and/or whipped egg whites are used in various combinations. The resulting combination gives the marshmallows their texture. They act as emulsifying agents by maintaining fat distribution and providing the aeration that makes marshmallows puffy. Gum, obtained from plants, also can act as an emulsifier in marshmallows, but it is also important as a gelling agent.

Most marshmallows also contain natural and/or artificial flavoring. If they are colored marshmallows, the color usually comes from an artificial coloring.

The Manufacturing Process

Cooking

- 1 A solution is formed by dissolving sugar and corn syrup in water and boiling it. Egg whites and/or gelatin is mixed with the sugar solution. Then the ingredients are heated in a cook kettle to about 240°F (115°C). The resulting mixture is passed through a strainer to remove extraneous matter.
- 2 In the pump, the mixture is then beaten into a foam to two or three times its original volume. At this stage, flavoring can be added.



Paradise pudding from the recipe booklet "The Jell-O Girl Entertains," circa 1930. (From the collections of Henry Ford Museum & Greenfield Village.)

In the early twentieth century, marshmallows were considered a child's confection, dispensed as penny candy at general stores along with licorice whips and peppermint drops. But through a fortuitous connection with other popular foods and some clever marketing, marshmallows would soon become a staple ingredient at pot-luck dinners, family get-togethers, and even elegant parties.

A perusal through twentieth-century cookbooks and recipe booklets reveals that marshmallows usually served as an ingredient in cakes, candies, and desserts. They also became well-known as a topping for steaming cups of hot cocoa and as a roasted treat at cookouts and picnics. Increasingly, they served as a sweet addition to salads and side dishes, including their classic contribution to the Thanksgiving dinner table—atop a dish of baked sweet potatoes or yams.

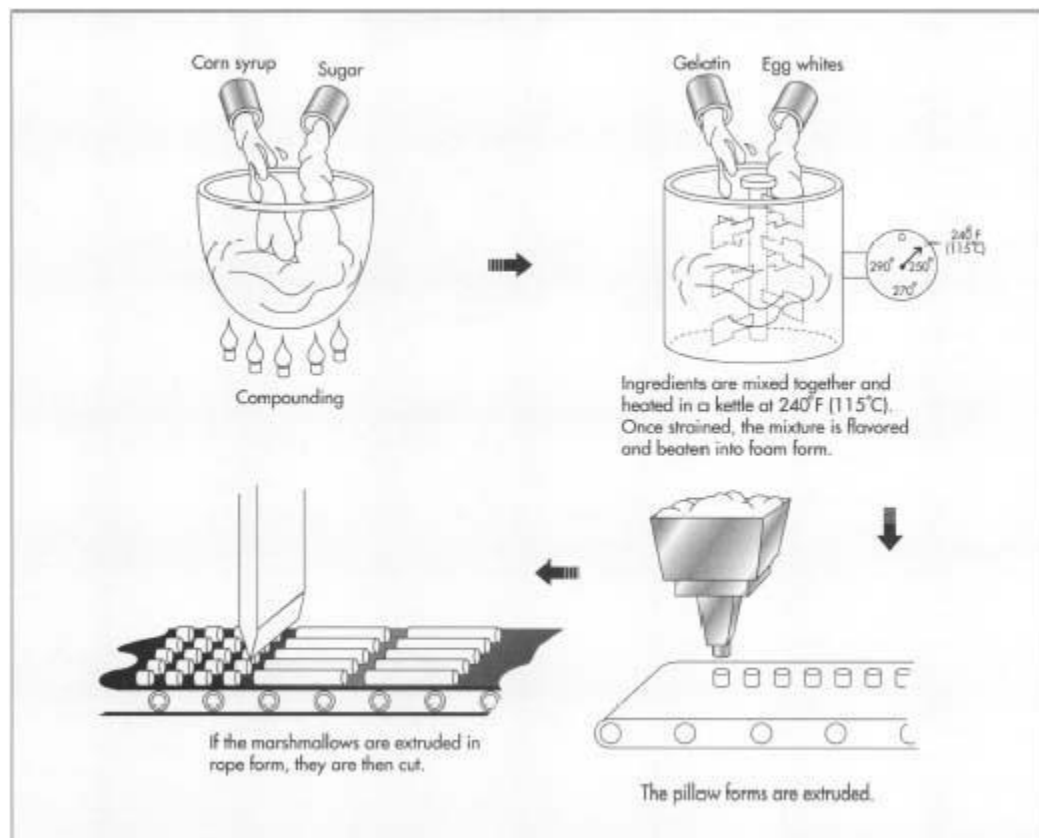
The 1935 recipe booklet, "Campfire Marshmallow Cookery," expanded upon the usual marshmallow classics with 50 "perfect" recipes. These ranged from everyday dishes like marshmallow ice box loaf and campfire rice pudding to special occasion desserts, including a selection of dainty marlows and mallobets (or ice creams and sherbets).

Perhaps the greatest distinction for marshmallows occurred as a result of their advantageous connection with gelatin salads and desserts, which rose in popularity during the 1920s and 1930s. Recipe booklets for Jell-O and Knox Gelatine from

that time include recipes that called for marshmallows on almost every page— recipes like banana fluff, lime mallow sponge, cocoa tutti frutti, and paradise pudding.

Forming

- 3 The heated mixture is transferred to a heat exchanger. Air is pumped into the mixture. The mixture cools in a tempering kettle, passes through another filter, and



continues on to the "hill." Marshmallows are extruded through a machine or deposited onto bands.

The extrusion process involves the foam being squeezed through a die to produce marshmallow's familiar pillow shape. Usually, they get a coating of corn starch to counter stickiness and help maintain their form after they have been extruded. Sometimes the pillows are formed into a rope of pillows. If so, they are cut and dried on a rubber conveyor belt.

Cooling

- 4 After the pillows are formed, they are sent through a cooling drum, where excess starch is removed. They also are cooled enough to be packaged.

Packaging

- 5 After the pillows have cooled, they are weighed and packaged. Before being put in cases, some manufacturers pass their product through a metal detector. The case is code dated and shipped to retail stores.