

A FORMULARY OF CANDY PRODUCTS

2nd Edition

By

Norman Harris

*Formerly U.S. Army Natick
Research, Development &
Engineering Center*

Dr. Silvio Crespo

*Vice President—Technical
Emeritus, Wilbur Chocolate Co.*

Dr. Martin S. Peterson

*(Deceased)
Editorial Consultant*

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PREFACE

The creative role of transforming a candy into a delicacy sought by the most discriminating consumer is up to the most competent technologist. This means developing the right combination of fresh ingredients, processing them with extra care, and making sure that the product is properly protected thereafter until consumption. Most candy contains sugar in an aqueous supersaturated state. This gives a sweet taste; and its texture can vary from very soft to hard, crispy, chewy, and grainy, depending on the ingredient and processing factors. Candy ranks as the most calorie-dense food. It can be stored without refrigeration, but must be packaged for sanitary and preservation reasons.

In the Sixties, candy was stocked in shelters in 5-gallon hermetically sealed cans for emergency situations by Civil Defense; and is currently used as a dessert item for operational rations by the Armed Forces worldwide.

The mention of one brand of ingredient in a formula contained in this book should not be construed to mean that one of similar quality is not equivalent or superior in function. Moreover, the user of these ingredients is responsible for checking for any patent infringement, should the latter exist.

Formulas for confections shown here contain the basic ingredients needed to produce each product. Most candies described here *do not* use food additives other than the main constituents needed for preservation. For prolonged shelf life, especially those candies containing high fat, and nutmeats, the product could benefit by using natural or synthetic antioxidants; or more solid fats with a higher A.O.M. To maintain a creamy or fresh texture, or prevent bloom, emulsifiers may be added. The use of milk substitutes such as whey, with artificial milk flavors, can reduce cost.

In the second edition the authors have added chapters on Hazard Analysis Critical Control Point (HACCP), U.S. Labeling Laws, Storage, Color Addition, and Therapeutic Formula. Both the glossary and low-calorie candy for-

mulas have been expanded. In addition some new formulas have been added, *e.g.*, licorice, and jelly beans. We added Chocolate Tips, Microwave Tempering, and an abstract on a chocolate that resists melting yet does not have a “waxy” texture; used by the U.S. Armed Forces in Operation Desert Shield/Desert Storm.

We hope you find this new edition helpful, and we welcome any comments or criticism.

Norman E. Harris
Silvio Crespo

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Norman E. Harris

ABBREVIATIONS

Bé	Baumé
c	cup
cc	cubic centimeters
D.E	dextrose equivalent
°F	. . . . .	°Fahrenheit
g	. . . . .	grams
gal	. . . . .	gallon
h	. . . . .	hour
in	. . . . .	inch
lb	. . . . .	pound
meq	. . . . .	milliequivalents
m.p.	. . . . .	melting point
min	. . . . .	minutes
oz	. . . . .	ounce
pbw	. . . . .	parts by weight
pt	. . . . .	pint
qt	. . . . .	quart
rpm	. . . . .	revolutions per minute
Tbl	. . . . .	tablespoonful
tsp	. . . . .	teaspoonful
wt.	. . . . .	weight

Chapter I

AERATED CANDIES

Aeration is employed in candy production to bring about desirable changes in texture and consistency. Aeration produces effects that cannot be duplicated by other means. Aerated candies are more creamy, more fragile, less chewy, and less likely to cling to the teeth than other types of candy.

FONDANTS USED IN MAKING AERATED CANDIES

Fondant

No. 1

(Basic Fondant)

		% Weight
Granulated sugar	80 lb	73.0
Corn syrup (43 D.E.)	20 lb	18.0
Invert sugar	10 lb	9.0
		Total 100.0

Procedure

Boil ingredients to 242°F (sea level), then cool and cream into fondant.

Source: Crompton & Knowles

No. 2

(For Cream Wafers and Cream Dipped Bonbons)

		%
		Weight
Refined cane sugar	50 lb	77.89
Water	12 lb	18.69
Nulomoline (invert sugar)	2 lb	3.12
Gelatin (dissolved in hot water)	1 oz	0.09
Water (hot)	2 oz	0.21
		Total 100.00

Procedure

Place the sugar, water, and **Nulomoline** into a clean kettle. Turn on heat and stir batch occasionally until it reaches boiling point. Carefully wash down all grains of sugar that adhere to sides of kettle, and boil the batch as rapidly as possible to 244–246°F. Turn off heat and immediately add the dissolved gelatin. Stir the batch gently to mix gelatin, then promptly pour the batch onto a cold marble or metal slab which has been lightly dampened with water. Now take 2 oz of cold water and sprinkle the surface of batch using a brush for this purpose.

Allow the batch to remain undisturbed until it has cooled to approximately 90°F, then work into fondant. Allow the fondant to set about ½ h, then take a portion of the fondant, place it into a double boiler and stir continuously until it has melted and registers a temperature of 130–135°F, then use for bonbon work.

For cream wafers, it is suggested that the fondant be heated to approximately 145°F and then colored and flavored and cast on waxed paper or rubber mats.

When the wafers are cold, turn them upside down to thoroughly dry the bottom of the wafer, then place them on trays or pack. (For each 550 ft above sea level, reduce boiling temperature by 1°F).

Source: Crompton & Knowles

No. 3

(For Dipping Purposes)

		%
		Weight
Granulated sugar	85 lb	66.79
Corn syrup	15 lb	11.79
Nulomoline (invert sugar)	7 lb	5.50
Water	20 lb	15.72
Hard coconut butter (80–90°F m.p.)	2 lb	0.10
Medium grade gelatin (soaked in 5 oz cold water)	2 oz	0.10
		Total 100.00

Procedure

Place the water, sugar, **Nulomoline**, and corn syrup into a kettle and bring the batch to the boiling point. Stir occasionally so as to be certain that the sugar is dissolved when the batch begins to boil. Wash down the sides of the kettle to remove all grains of sugar. Place a thermometer into the batch and cook to 244–248°F.

Turn off the heat, add the gelatin solution and mix the batch gently until the gelatin is dissolved. Cool the batch to approximately 105°F, add the coconut butter which should be melted, then beat into fondant. It is advisable to use the fondant the same day on which it is made.

If this fondant is to be used in a coating machine, it is suggested that it be boiled to 238°F, then cooled to 100°F and beaten in the usual manner.

When preparing the fondant for machine work, it is suggested that an additional 5 lb of **Nulomoline** be added to 100 lb of fondant which should be heated to 105–110°F.

Source: Crompton & Knowles

AERATED CANDIES

Almond Crystallized Creams

		%
		Weight
Casting fondant	140 lb	47.62
Granulated sugar	100 lb	34.01
Corn syrup	10 lb	3.40
Water	3 gal	8.50
Nonpareil Supreme almonds (18/20 or 20/22 count)	15 lb	5.10
Frappé whip (pink color, raspberry flavor)	4 lb	1.37
		Total 100.00

Procedure

Place casting fondant into cream melting kettle, heat to 115–120°F. Meanwhile heat sugar, corn syrup, and water to boiling. Cook to 242–244°F, then add to the fondant, mixing thoroughly. Add the color, flavor, and frappé. Cast into starch impressions or rubber molds containing whole almonds. When creams have set, remove from starch. Prepare crystallizing syrup as follows: Cook 300 lb granulated sugar and 15 gal water. Boil and stir until batch registers 33.5 Bé at boiling point. If a Baumé gauge is not available, boil to 221°F at sea level. Cool to 80–90°F, then ladle syrup over creams in crystallizing pans or immerse wire baskets containing creams in cool syrup. Permit creams to remain in syrup 7–10 h, drain and turn creams onto waxed paper.

Source: California Almond Growers Exchange

Almond Paste Centers

(Coat with Chocolate or Crystallize)

		%
		Weight
Almond paste	10 lb	30.27
Short bonbon fondant	10 lb	30.27
Nulomoline (invert sugar)	1 lb	3.04
Fine powdered sugar	12 lb	36.33
Sucrovert (liquid invertase)	0.5 oz	0.09
Vanilla, rum, or pistachio flavor		to suit
Color		to suit
		Total 100.00

Procedure

Place all of the above ingredients into an upright mixer or knead by hand to form a firm paste or dough. Increase or decrease the percentage of powdered sugar to obtain a paste sufficiently firm to roll by hand into pieces of the desired size and shape.

The almond paste centers may be roughly formed into pieces of the desired size, then placed into rubber molds. The formed centers are then removed from the molds and allowed to dry on the surface and are later crystallized or coated with chocolate.

The almond paste center mass may be formed into a sheet of varied colored layers, then cut into squares, oblongs, and triangles, then later crystallized or coated.

The almond paste center mass may also be rolled into a sheet and cut into various shapes using a standard hand lozenger cutter, and the centers may then be coated with fondant bonbon coating.

Source: Crompton & Knowles

Almond Whip Bar

		%
		Weight
Milk chocolate coating	10 lb	36.95
Hard coconut butter	5 lb	18.48
Frappé	7 lb	25.86
Buttered, diced roasted almonds*	5 lb	18.48
Salt	1 oz	0.23
Rum flavor		to suit
		Total 100.00

Procedure

Mix melted coconut butter and melted chocolate together. Allow to cool to approximately 82°F. Pour in small kettle cake mixer. Whip, adding frappé. Beat or whip at second speed until fluffy. Add salt and flavor and 5 lb almonds. Pour on waxed paper and spread approximately ½ in. thick. When batch has set and cooled, remove the waxed paper and cut to desired bar size. Dip in milk or dark chocolate coating. May be topped with bits of blanched almonds if desired.

Source: California Almond Growers Exchange

* If you prefer, use select sheller run. Roast or chop or crush to suit.

Assorted Cream Squares

		%
		Weight
Granulated sugar	20 lb	47.62
Corn syrup	10 lb	23.81
Frappé No. 1 (q.v.)	4 lb	9.52
Powdered or macaroon coconut	2 lb	4.76
Basic Fondant (q.v.)	6 lb	14.29
Salt, flavor, color		to suit
		Total 100.00

Procedure

Boil the sugar and corn syrup with sufficient water to 242°F (sea level). Set the batch off the fire, add the Frappé, coconut, and basic fondant, and mix well, then add salt, flavor, color, etc. and mix thoroughly. Divide the batch into two or more sections:

Section No. 1: White color, vanilla flavor; coarse cut citron mixed together.

Section No. 2: Yellow color, **Nulco MeloBan** (powdered ripe banana) flavor, plus sliced Brazils.

Section No. 3: Pink color, Roman punch flavor, plus glazed cherries cut in half.

The fruit and nuts are to be worked into the surface of the batch only. Spread about $\frac{3}{8}$ in. thick.

FRAPPÉ NO. 1:

Corn syrup	50 lb
Invert sugar	50 lb
Albumen	1 lb
Water	2 lb

Procedure

Cook 50 lb of corn syrup to 245°F (sea level), shut off the heat and add 50 lb of invert sugar and stir until it is melted. Place the batch into a marmalade beater, start the beater, then gradually add 1 lb of albumen which has been previously dissolved in 2 lb of water and beat the batch until light.

BASIC FONDANT:

Granulated sugar	80 lb
Corn syrup	20 lb
Invert sugar	10 lb
Water	

Procedure

Boil 80 lb of granulated sugar, 20 lb of corn syrup, 10 lb of invert sugar, plus sufficient water to dissolve the sugar, to 242°F (sea level), then cool and cream into fondant.

Source: Crompton & Knowles

Ban-O-Bar

		%
		Weight
Granulated sugar	85 lb	70.21
Nulomoline (invert sugar)	15 lb	12.39
Water (to dissolve the sugar)		
Sucrovert (invertase)	1 oz	0.05
Special Frappé (q.v.)	10 lb	8.26
Cut or shredded orange peel (preserved)	6 lb	4.96
Nulco MeloBan (mixed with 1½ lb water)	3.5 lb	4.13
Yellow color		to suit
Citric acid		to suit
		Total 100.00

Procedure

Boil sugar, **Nulomoline**, and water to 250°F. Then cool batch to approximately 125°F and beat into fondant.

While beating, add the **Sucrovert**, **Nulco MeloBan** (powdered ripe bananas) which has been mixed with water, and the color; and when the batch grains, add the Special Frappé and citric acid. When this is well mixed, work in the orange peel.

Permit the batch to cool to room temperature, then form into bars of the desired shape and coat with milk chocolate.

SPECIAL FRAPPÉ:

Sugar	15 lb
Corn syrup	15 lb
Nulomoline	20 lb
Albumen	2 lb
Water	4 lb

Procedure

Boil 15 lb of sugar, 15 lb of corn syrup with sufficient water to dissolve the sugar to 250°F. Turn off the heat, add at once 20 lb of **Nulomoline** and stir until melted. Place the batch into a marshmallow beater, start the beater, then gradually add 2 lb of albumen which has been properly dissolved in 4 lb of water; beat the batch until quite light.

Source: Crompton & Knowles

Cast Cream Centers for Bars, Easter Eggs, etc.

		% Weight
Fondant (q.v.)	100 lb	60.23
BOB:		
Sugar	25 lb	15.06
Corn syrup	15 lb	9.03
Nulomoline (invert sugar)	10 lb	6.02
Water	6 lb	3.61
Standard Frappé (q.v.)	10 lb	6.03
Convertit (invertase)	0.5 oz	0.02
		Total 100.00

Procedure

Place 100 lb of the fondant into a cream melting kettle and heat to approximately 120°F. Meanwhile prepare the bob.

Boil all together to 240°F. Pour this bob into the melted fondant mixing continuously, then add standard frappé. Mix well. Then add **Convertit**. Mix thoroughly, then add color and flavor. Test the batch so as to be certain it will register 150–155°F.

FONDANT:

Sugar	75 lb
Corn syrup	25 lb

Procedure

Cook to 245°F.

STANDARD FRAPPÉ:

Nulomoline (invert sugar)	50 lb
Corn syrup	50 lb
Albumen (dissolved in water)	1 lb
Water	2 lb

Procedure

First cook 50 lb of corn syrup to a temperature of 245°F. Shut off the steam and add 50 lb of cold **Nulomoline** and stir until the latter is melted. Place the batch into a marshmallow beater, start the machine, then add the albumen solution. Beat until light and use as needed.

More or less frappé may be used according to the weight of cream center desired. (For each 550 ft above sea level, reduce the boiling temperature by 1°F.)

Source: Crompton & Knowles

Cast Cream Cordial Cherries

		% Weight
Basic Fondant (q.v.)	100 lb	51.73
BOB:		
Sugar	70 lb	36.21
Nulomoline (invert sugar)	5 lb	2.59
Water	18 lb	9.31
Sucrovert (invertase)	5 oz	0.16
		Total 100.00

Procedure

Prepare basic fondant.

Boil bob altogether to 230°F.

The bob, when mixed with the fondant, registers a temperature of 165°F and is cooled to 160°F before adding **Sucrovert**.

Casting temperature 160°F.

(No frappé used in this formula.)

BASIC FONDANT:

Corn Syrup	80 lb
Nulomoline (invert sugar)	10 lb
Water (to dissolve the sugar)	

Procedure

Cook altogether to 242°F.

CHERRY SPECIFICATIONS:

Count 900/1000 per U.S. gal. The syrup in which the cherries are packed contains 40.5% solids. The ratio of syrup to cherries is approximately 4 lb/1 gal. The density of the syrup in which the cherries are received is 40.5.

One ounce of tartaric acid is mixed with 1 gal of the cherries in syrup and allowed to set overnight.

One pound of cream center batch is used to cover 40 cherries by making two castings. Forty cherries when drained weigh approximately 6 oz. Part of the batch is colored orange and flavored with orange oil and cast into starch impressions and later used as yolks for eggs.

Source: Crompton & Knowles

Cast Whipped Cream for Easter Eggs and Bars

		%
		Weight
Basic fondant (q.v.)	100 lb	44.05
BOB:		
Sugar	50 lb	22.03
Corn syrup	25 lb	11.01
Water	12 lb	5.29
Frappé No. 3 (q.v.)	40 lb	17.62
		Total 100.00

Procedure

Prepare basic fondant.

Boil bob all together to 240°F.

Pour the bob into the fondant, mix well, then add Frappé No. 3.

Casting temperature 150–155°F. Density of centers when coated is 82.6.

To make a whipped cream cast the batch into half egg shaped molds, then the cast cream egg yolk center, previously prepared, is dropped into the whipped cream and immediately another half of the whipped cream is placed on top.

BASIC FONDANT:

Granulated sugar	20 lb
Sweetose corn syrup	20 lb
Water (to dissolve the sugar)	

Procedure

Boil altogether to 242°F, then cool and beat into fondant.

FRAPPÉ NO. 3:

Corn syrup	50 lb
Nulomoline	50 lb
Gelatin	1.5 lb
Water	3 lb
Albumen	1.5 lb
Water	3 lb

Procedure

Boil corn syrup to 245°F. Shut off the steam, add **Nulomoline**, and stir until melted. Place the batch into a beater, start the beater, then add gelatin which has been soaked in 3 lb of water, and beat until dissolved. Then gradually add albumen which has been previously dissolved in 3 lb of water and beat the batch until it is light.

Source: Crompton & Knowles

Chocolate Butter Creams

		%
		Weight
Dairy butter (salted)	5 lb	7.14
Coating chocolate	7 lb	10.00
Fondant (q.v.)	50 lb	71.43
Invert sugar	3 lb	4.29
Frappé	5 lb	7.14
Flavor (vanilla or Roman punch)		to suit
		Total 100.00

Procedure

Melt together the dairy butter with good coating chocolate. Then add 50 lb of good fondant which you ordinarily use in making cast cream centers. Stir together thoroughly. Add the invert sugar and frappé. Add vanilla flavor or Roman punch. Mix well and heat to approximately 135°F and cast into starch.

FONDANT:

Sugar	75 lb
Corn syrup	25 lb

Procedure

Cook to 245°F.

Source: Crompton & Knowles

Chocolate Patties

Sugar	10 lb
Glucose (corn syrup)	2.5 lb
Water	1 qt
Chocolate liquor	2 lb
Vanilla bean or cinnamon oil	

Procedure

Cook sugar and glucose (corn syrup) with water to 236°F, and before you start to work the batch, add good chocolate liquor and the seeds of one vanilla bean, or a drop or two of cinnamon oil. Great care should be exercised, for these wafers will spot more easily than any other color or flavor.

Do not heat the cream more than is absolutely necessary.

Source: Savage Brothers Co.

Chocolate Pudding Dessert

(To be Cast into Starch)

PART 1:

Corn syrup	10 lb
Condensed milk (skimmed or whole)	30 lb
Coconut oil (76°F m.p.)	5 lb
Nulomoline (invert sugar)	10 lb
Unsweetened chocolate	10 lb

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