

Basic gelato course

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Weekly calendar



- DAY 1

- What is gelato and gelato history - How to recognize quality gelato – Gelato and ice-cream - Artisan vs. Industrial – Raw materials and Production methods

- DAY 2

- Production cycle – Different types of gelato business – Toppings – Garnished gelato

- DAY 3

- Concentrated sauces – Direct Method – Premium Soft Serve

- DAY 4

- Milk based fruit gelato – Fruit sorbet – Granita – Profitability

- DAY 5

- Crystal Gelato – Shops layout and gelato Marketing – Recap – Final Exam

- What is gelato and gelato history
- Differences between fresh artisan-made gelato and an industrial product
- Raw materials for making gelato:
 - WATER – AIR – SOLIDS – COLD
- Direct Method and Indirect Method
- Pasteurization and pasteurizers
 - White base, yellow base and chocolate base preparation
- Freezing a finished flavor
 - Flavoring with turbomix
 - Extracting the gelato
 - Cleaning the batch freezer

History of Gelato

ca.1000 – birth of the “shrb” in the Middle East

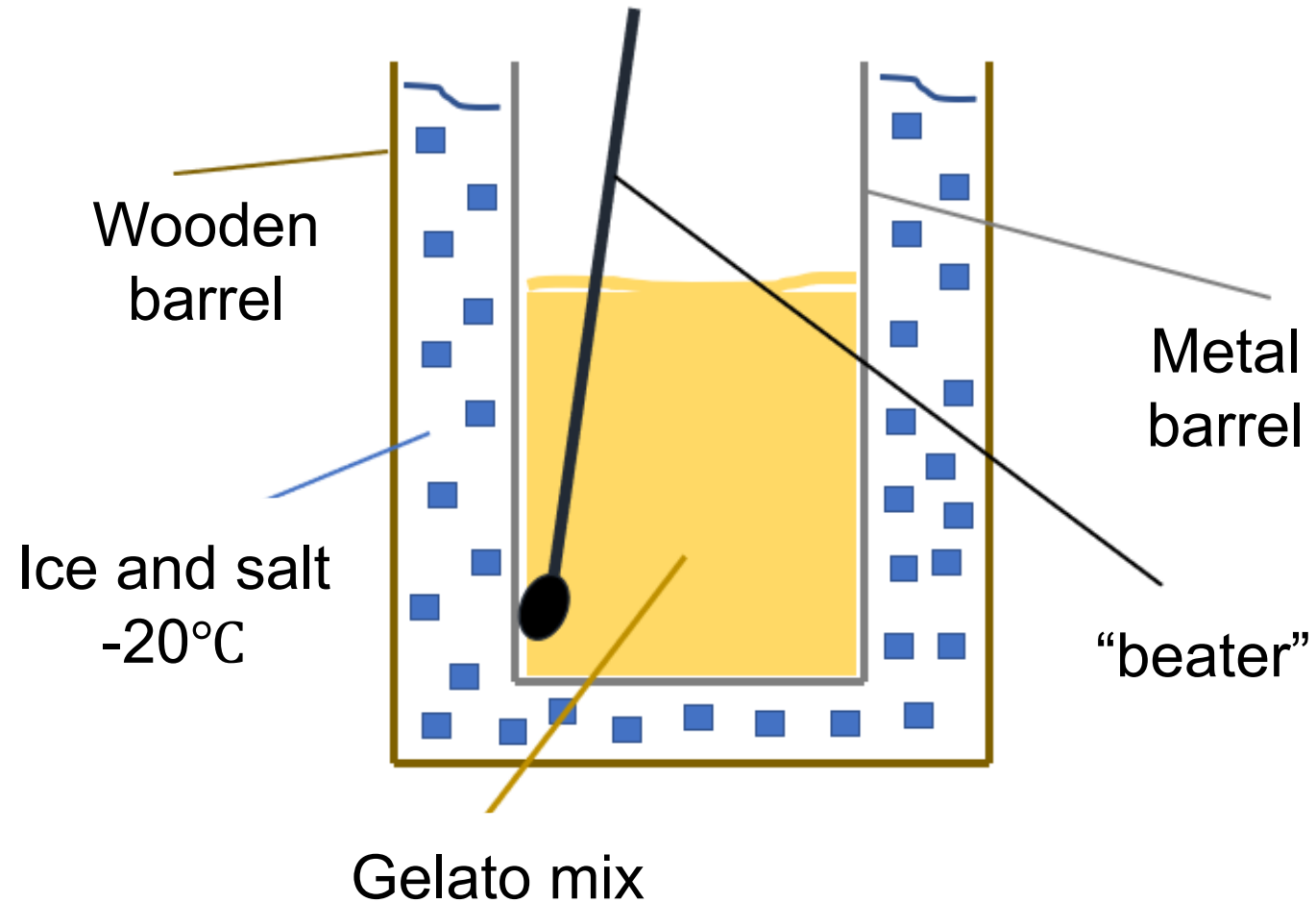
ca.1600 – first gelato produced in Europe

1660 – first gelato parlor opened in Paris

**ca. 1900 – first gelato machine that
uses refrigerated gas**



Gelato machines before 1900



Quality Gelato

TASTE	TEXTURE	STRUCTURE	COLD
Recognizable Persistent	Velvety Smooth Crystal-free	Not too hard Not too soft	Correct freezing process

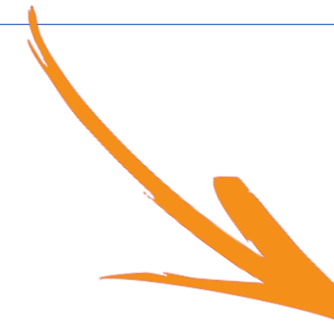
Ice
crystals



Sugar
crystals



Fat
Crystals



Scoopable

Artisan Gelato vs Industrial Product



ARTISAN gelato		INDUSTRIAL product	
CONSISTENCY			
Creamy		Compact	
			
INCORPORATED AIR			
25-40%		80-120%	
			
SERVING TEMPERATURE			
-12°C/-14°C		-18 °C/-20 °C	
			
PRODUCTION			
Discontinuous and flexible production		Continuous high-volume production	
			
STORAGE			
Product consumed within a few days		Long-term storage	



Quality Gelato



CONSUMPTION	• Within 4 to 5 days (if kept correctly)
QUALITY INGREDIENTS	• Fresh raw materials
BALANCING	• Compliance with parameters %
SPECIFIC FREEZING CYCLE	• Fast • Dynamic

Small ice crystals

Uniform freezing process

Air incorporation

25-40% OVERRUN



Components of gelato: Water

WATER



**MAIN INGREDIENT OF THE
RECIPE approximately 55-70%**



**THE ONLY INGREDIENT THAT
FREEZES**



Components of gelato: Air (Overrun)



ICE CUBE
0% Overrun

AIR
[Overrun]



GELATO
25-40% Overrun

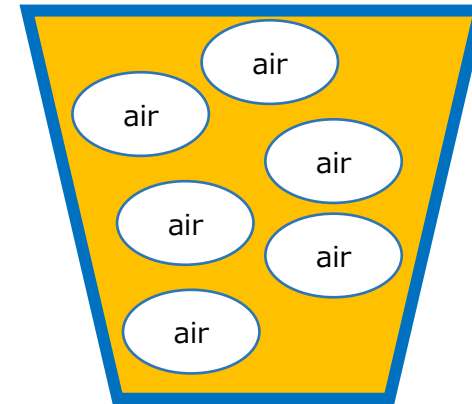
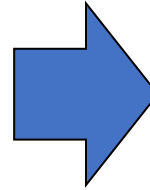
Components of gelato: Air (Overrun)

Batch freezing = Freezing + Beating



volume : 100ml

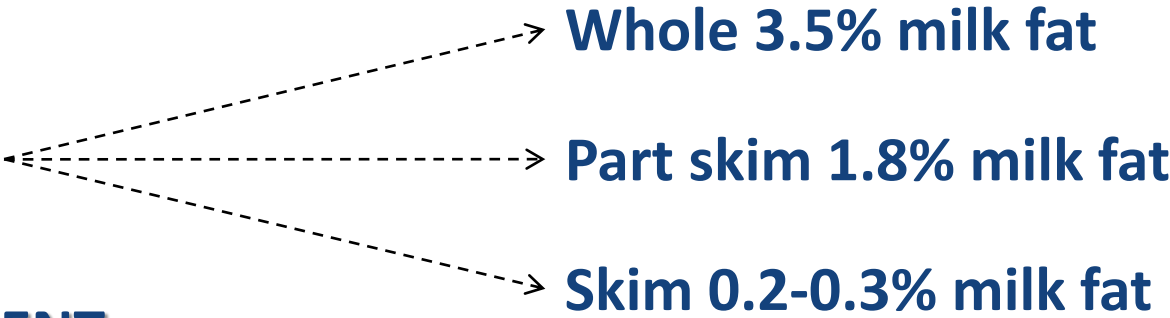
overrun : 0 %



volume : 140ml

overrun : 40%

1. MILK



approximately 87% Water

approximately 89% Water

approximately 91% Water

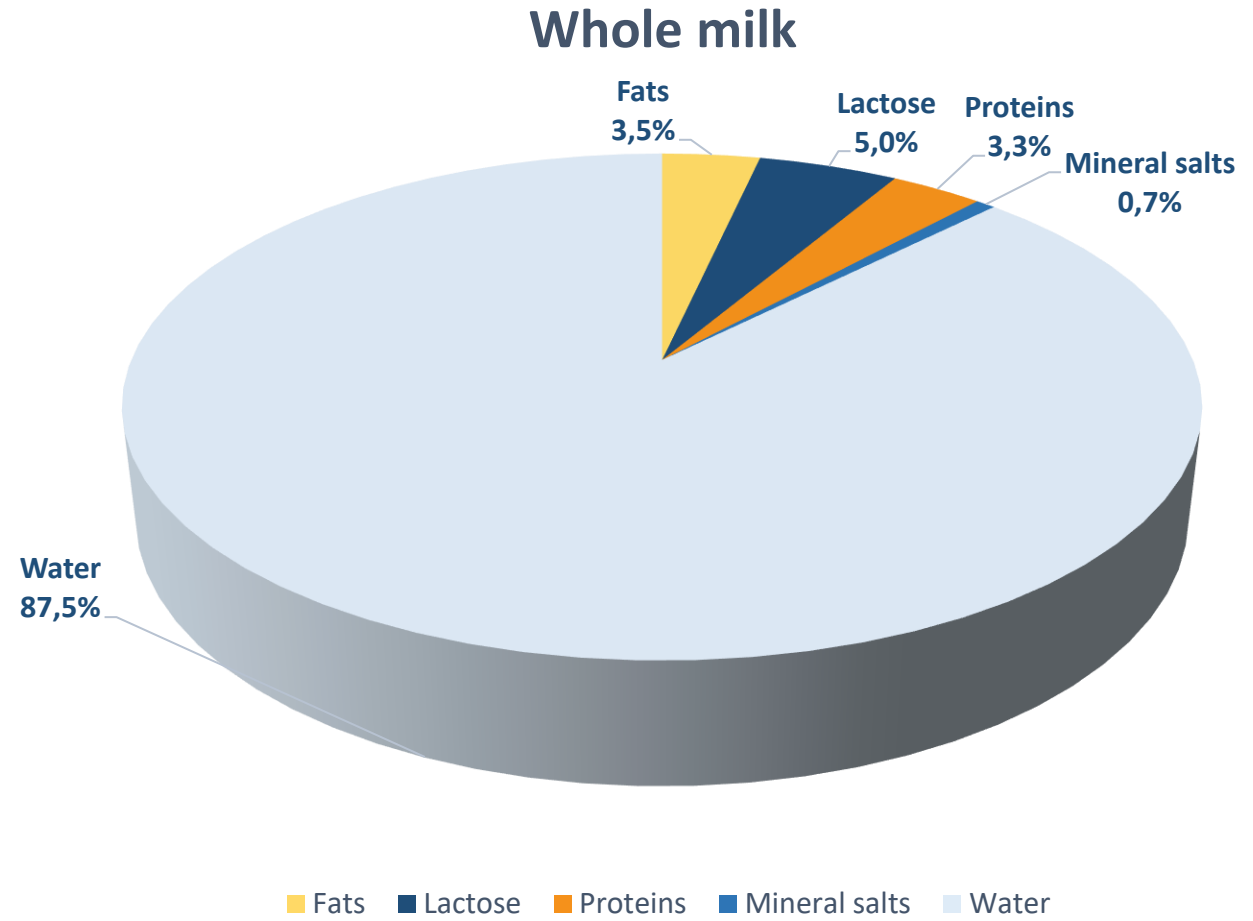
HEAT TREATMENT

Main types of milk	Heat treatment	Storage	Storage temperature
Pasteurized	Low pasteurization (about 72°-75 °C)	5 – 10 days	+4°C
Microfiltered	Fat and bacteria are filtered and pasteurized separately from the liquid and protein portion before being added and homogenized.	10 – 15 days	+4°C
UHT	Sterilization (142 °C for a few seconds)	3 – 6 months	Room Temperature (18°-20 °C)

- **Whole milk**

- Fats
- Lactose
- Proteins
- Water
- Mineral salts

Approximate composition



2. **CREAM**
- 20% fat (cooking cream) / about 75% Water
 - 35% fat (traditional cream) / about 60% Water
 - 45% fat (double cream) / about 50% Water

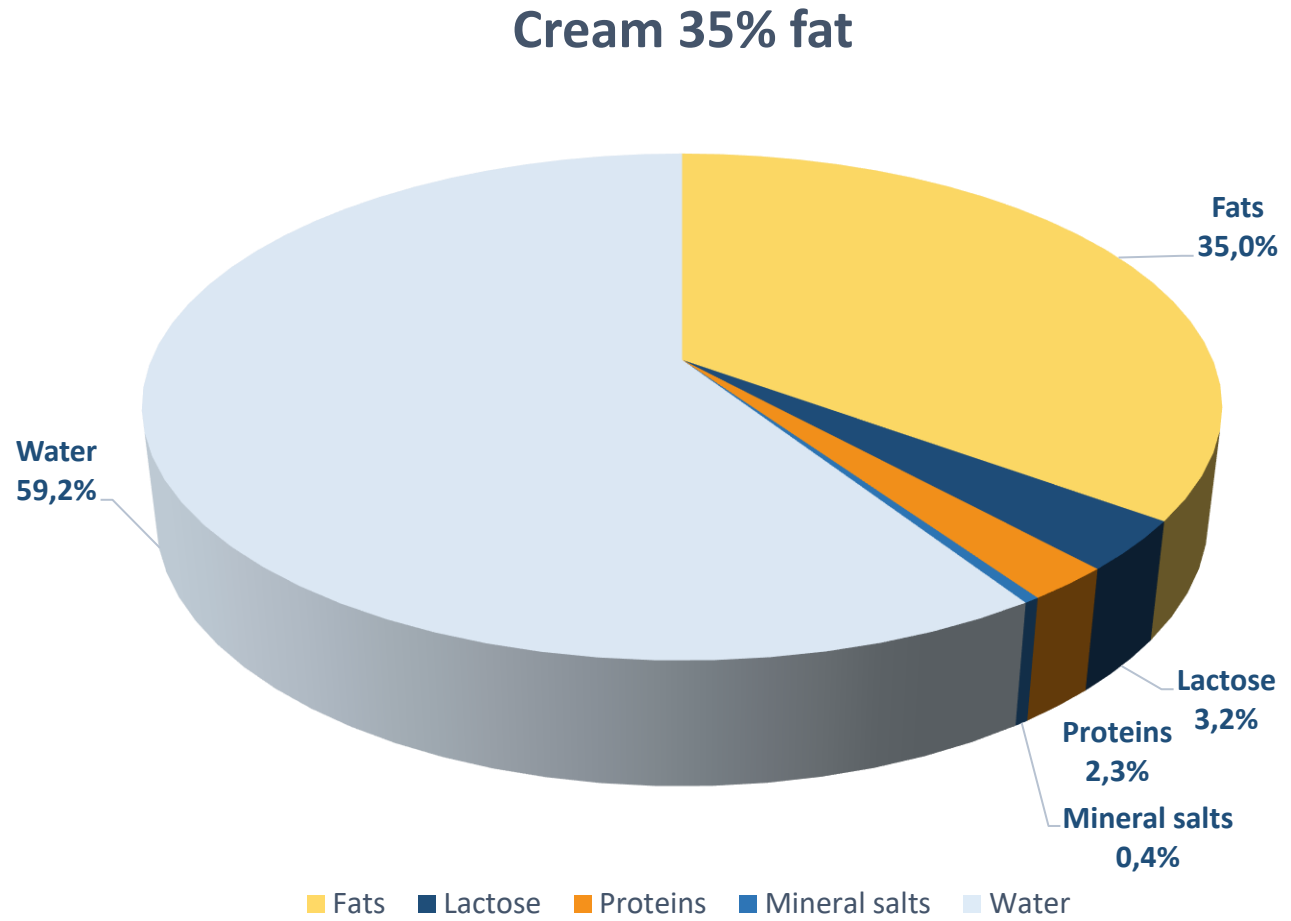
HEAT TREATMENT

Main types of cream	Heat treatment	Storage	Storage temperature
Pasteurized	Low pasteurization (about 72°-75 °C)	5 – 10 days	+4°C
UHT	Sterilization (142 °C for a few seconds)	3 – 6 months	Room Temperature (18°-20 °C)

• Cream (35% fat)

- Fats
- Lactose
- Proteins
- Water
- Mineral salts

Approximate composition



3. SUGARS

- Sucrose
- Dextrose
- Dry Glucose Syrup
- Agave syrup
- Inverted Sugar
- Maltodextrin
- ETC.

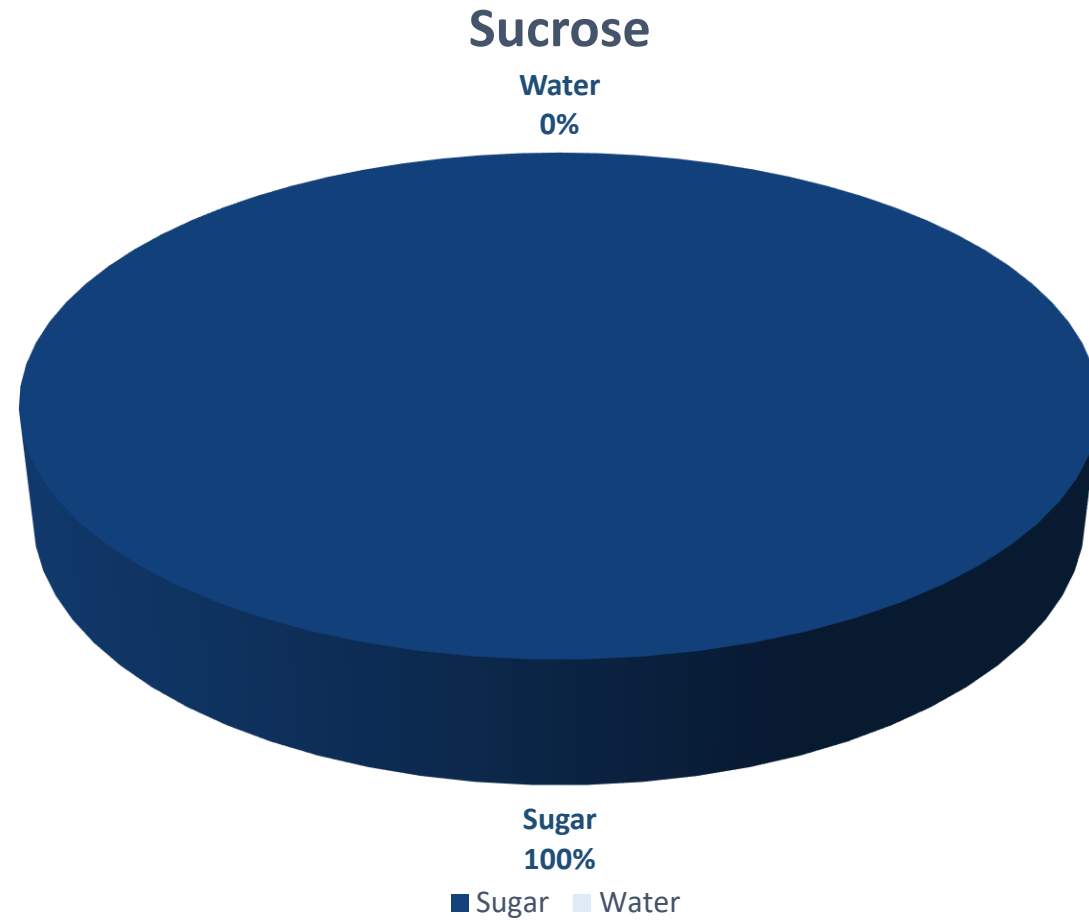
Anti-freezing Power

Sweetening Power

- Sucrose

- Sugar
- Water

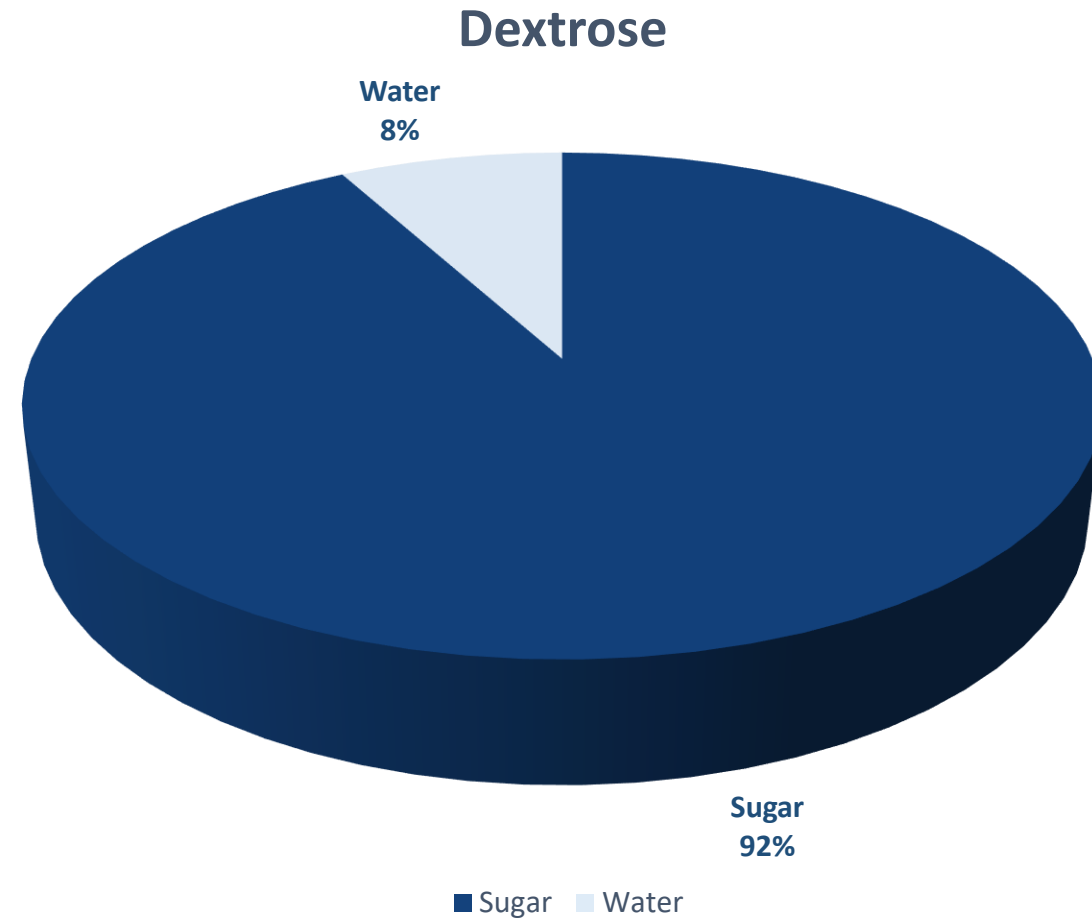
Approximate composition



- **Dextrose**

- Sugar
- Water

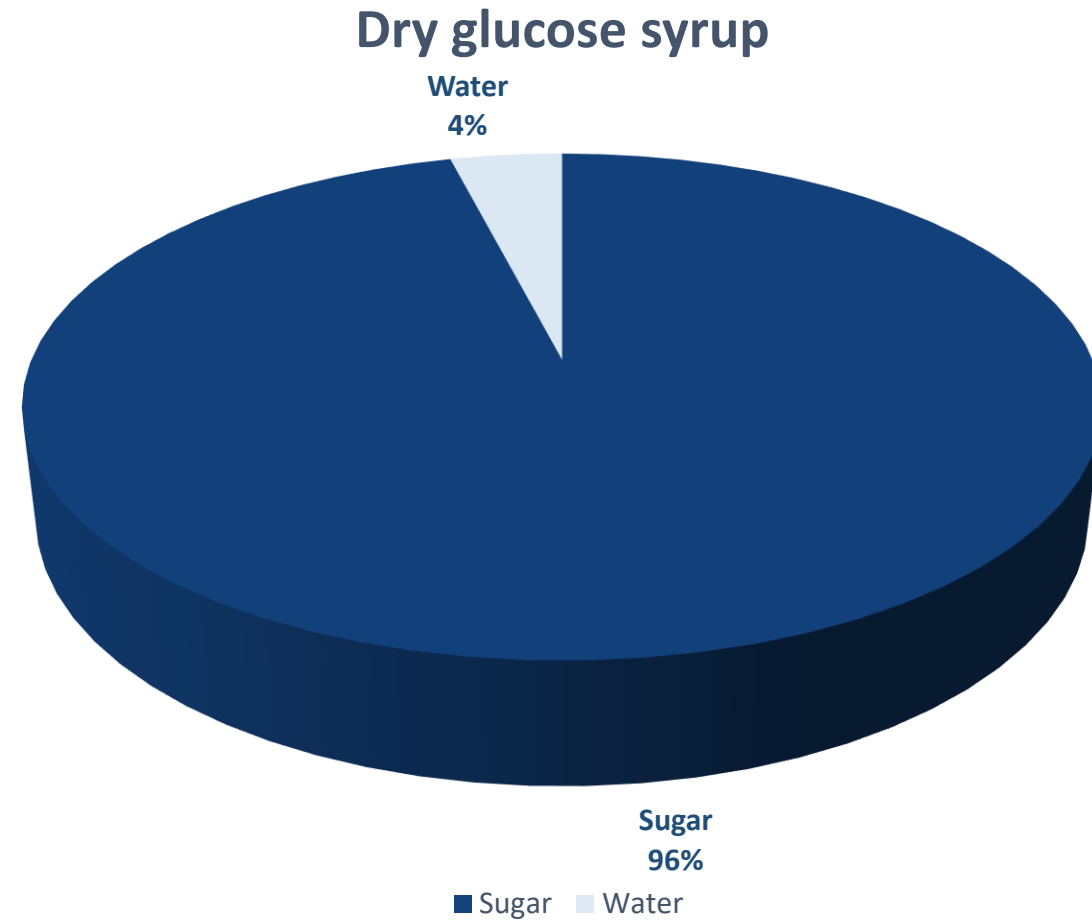
Approximate composition



- Dry glucose syrup

- Sugar
- Water

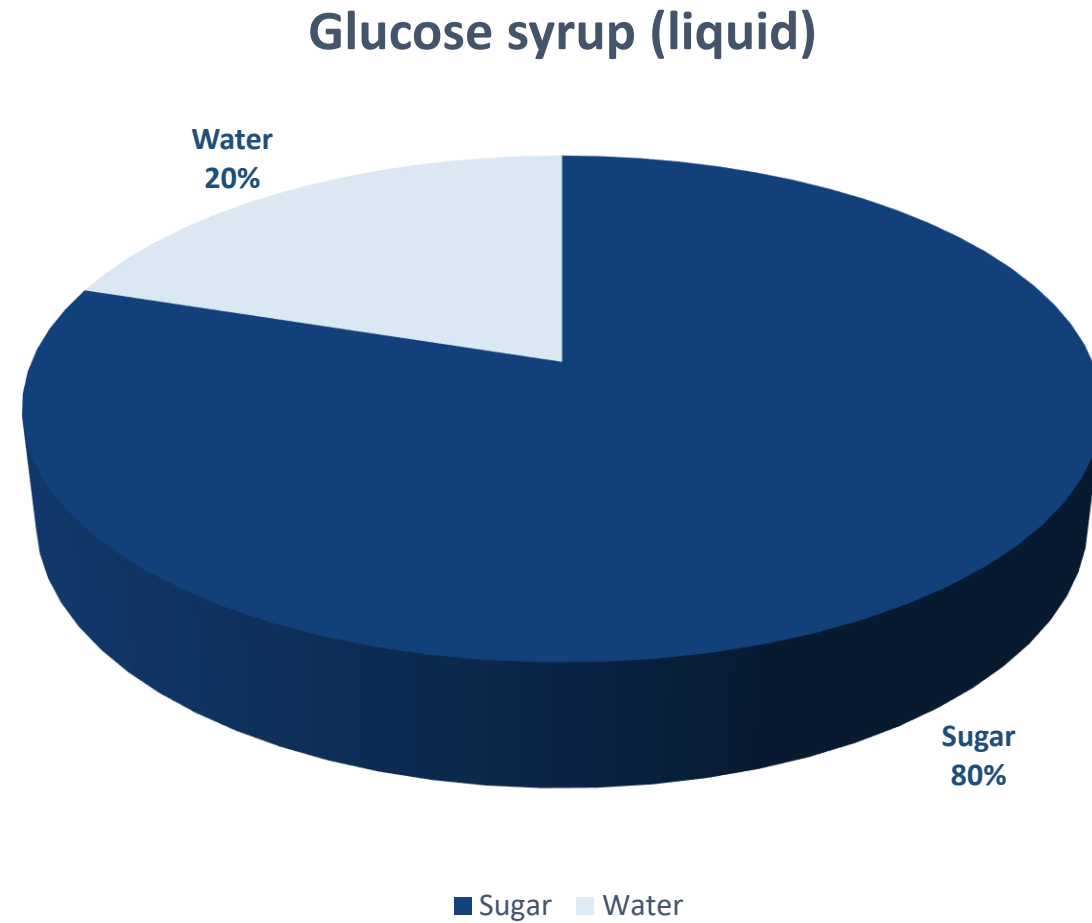
Approximate composition



- **Glucose syrup (liquid)**

- Sugar
- Water

Approximate composition



4. SKIM MILK POWDER

- Proteins
- Lactose
- Mineral Salts



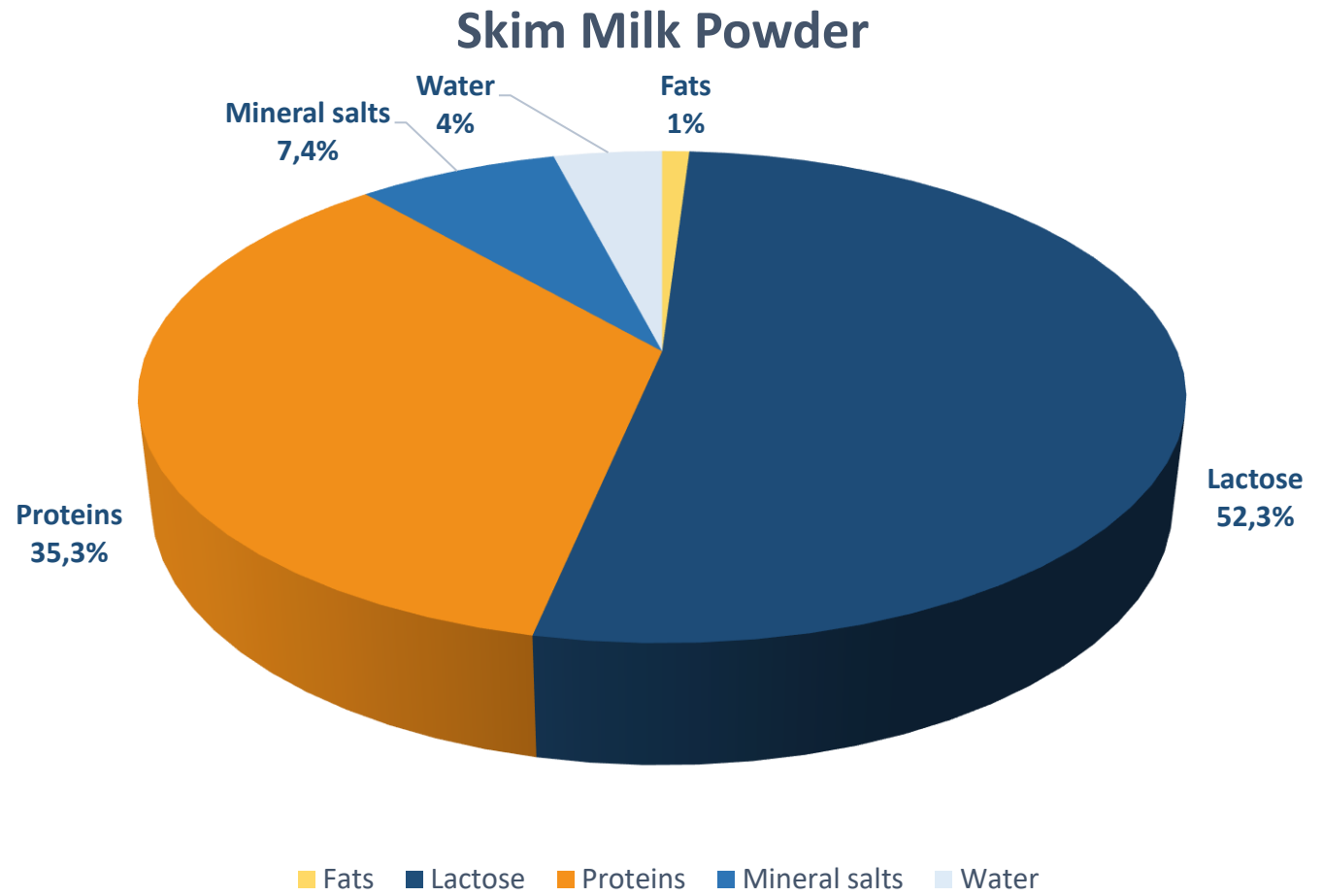
- Water
- Fats



• Skim milk powder

- Fats
- Lactose
- Proteins
- Water
- Mineral salts

Approximate composition



5. STABILIZER (or Neutral)

3 – 6 g per kg (0.3% to 0.6%)



Thickeners

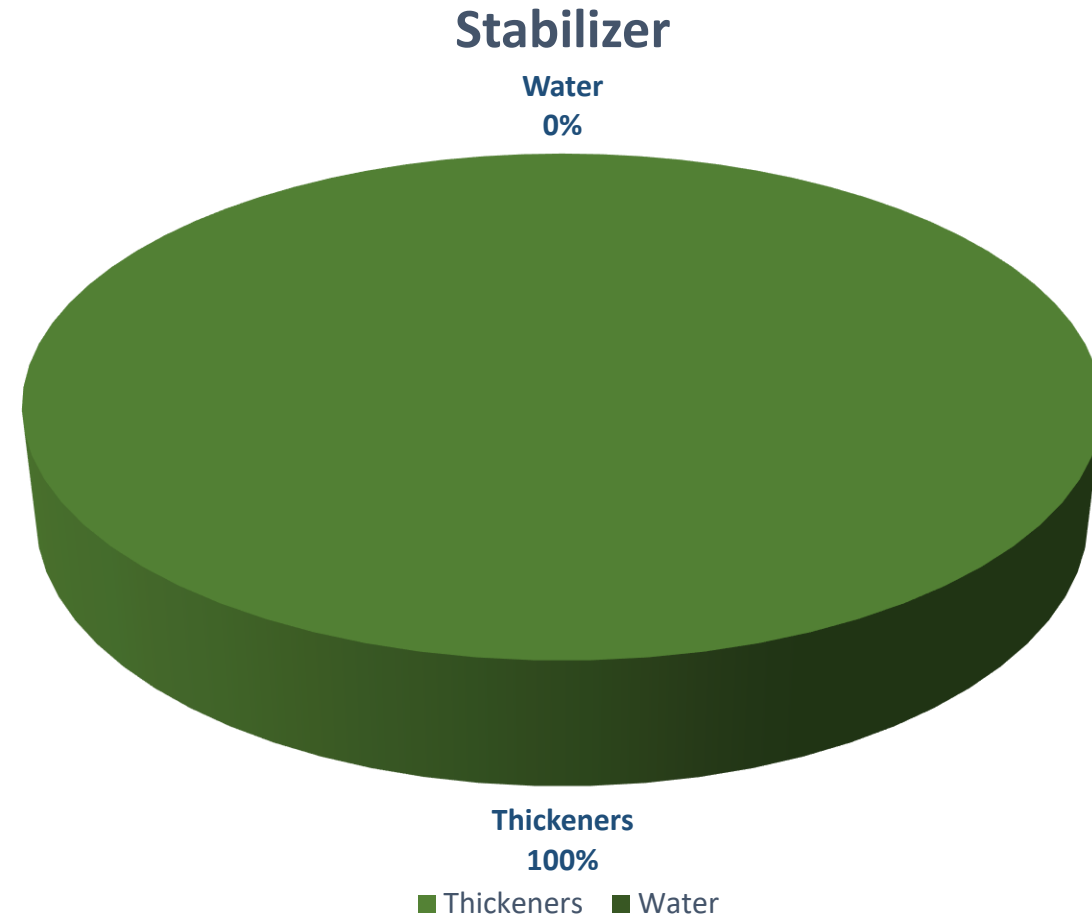
Emulsifiers



- **Stabilizer**

- Thickeners
- Water

Approximate composition



Pre-weighed powder mix consisting of

STABILIZER

**and added ingredients
to "construct" or complete the mix**

DOSAGE

Base 50 = 50g /kg or L of Milk / Water

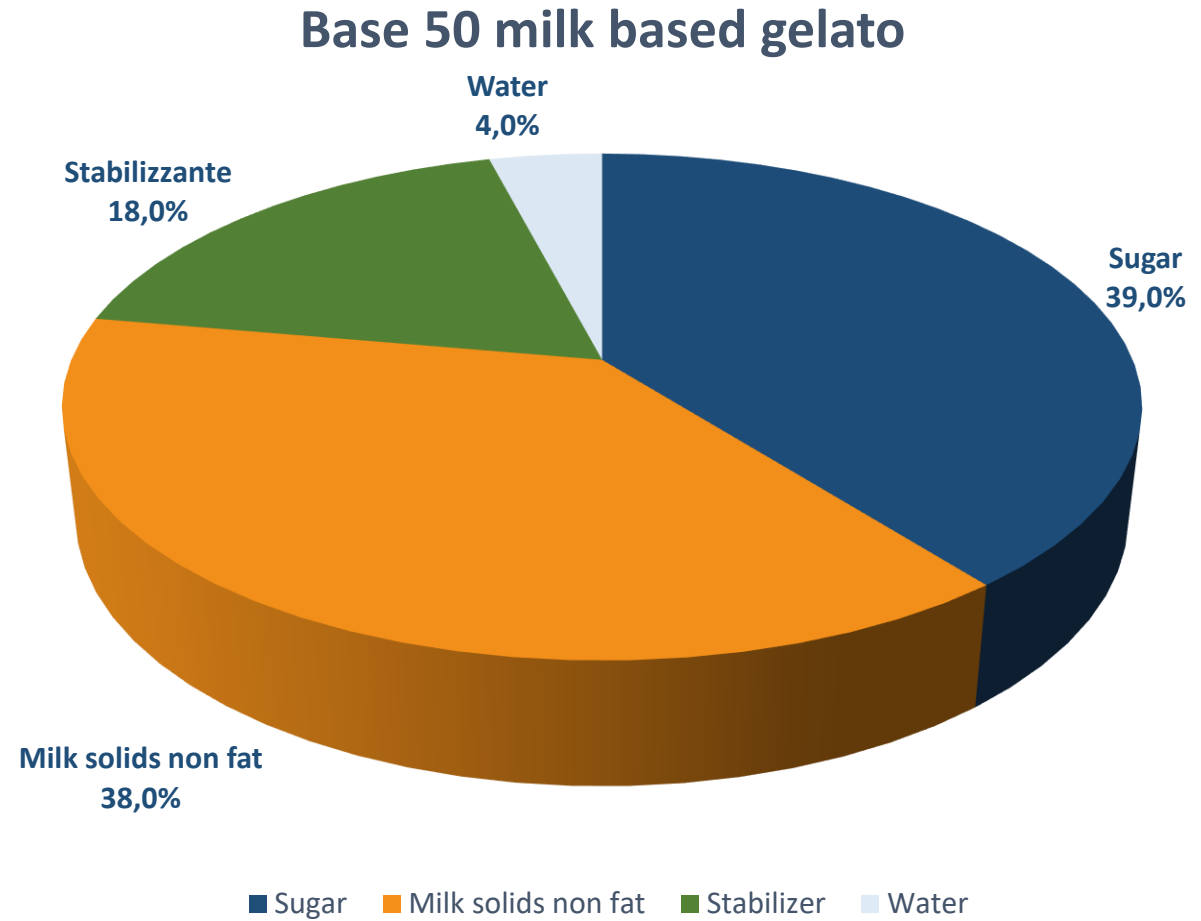
Base 100= 100g /kg or of L Milk / Water

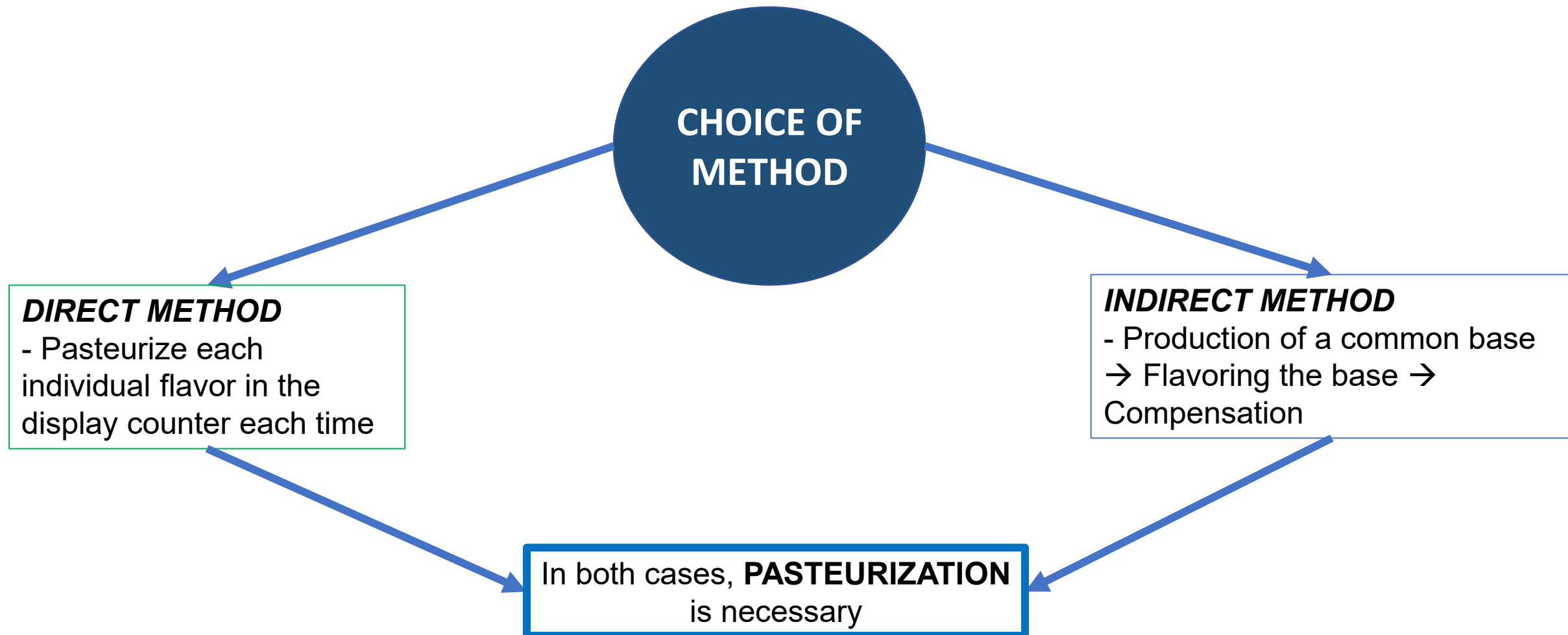
Base xxx = xxxg /kg or L of Milk / Water

- **BASE 50 c.h.**

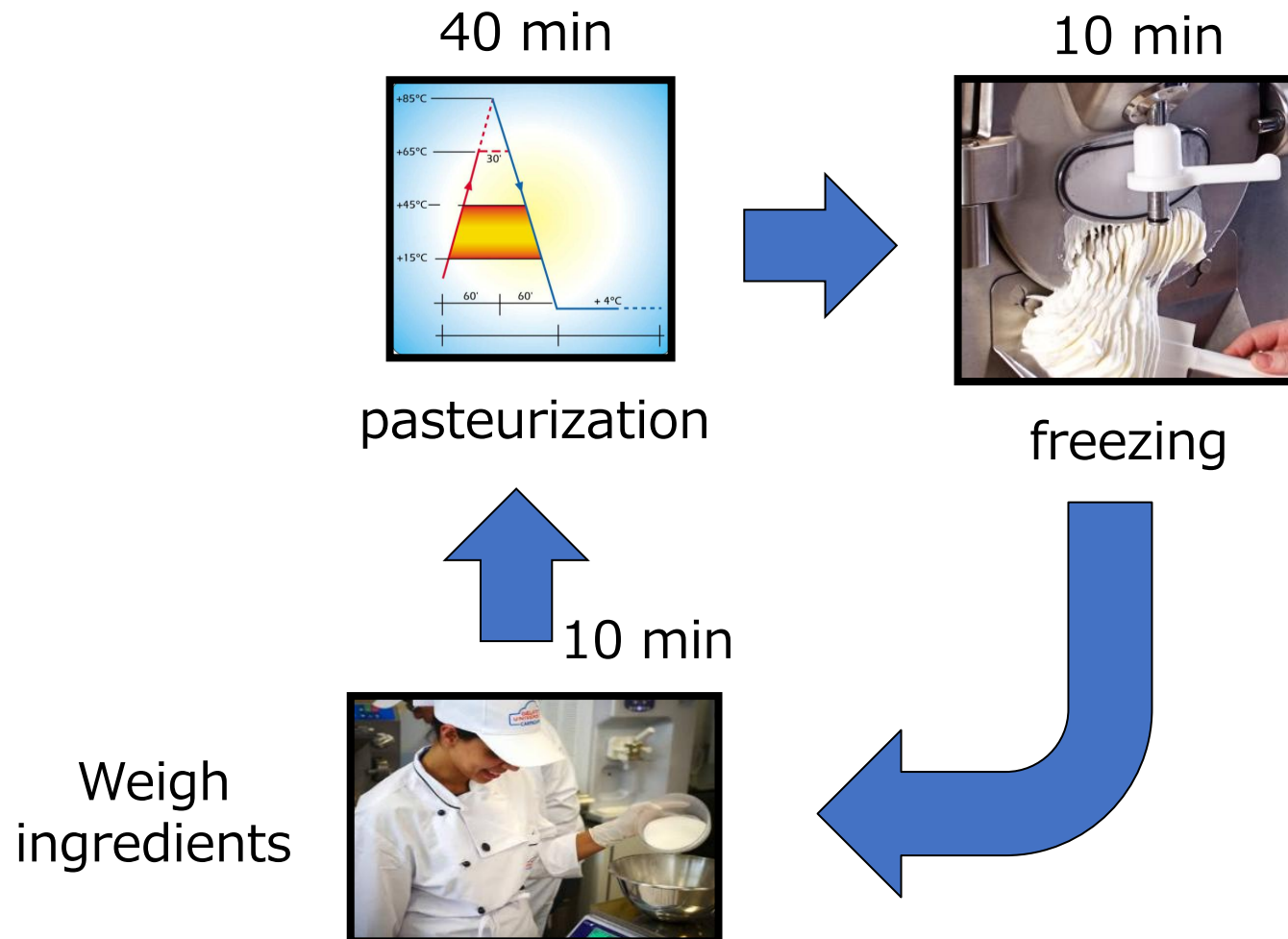
- Neutral stabilizer
- Sugar
- Milk Solids Non Fat

Approximate composition





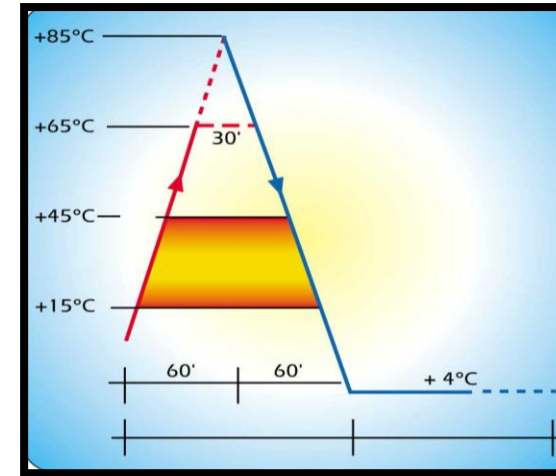
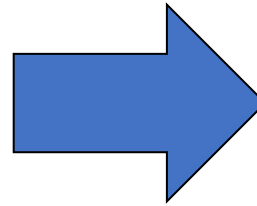
Direct method



Indirect Method



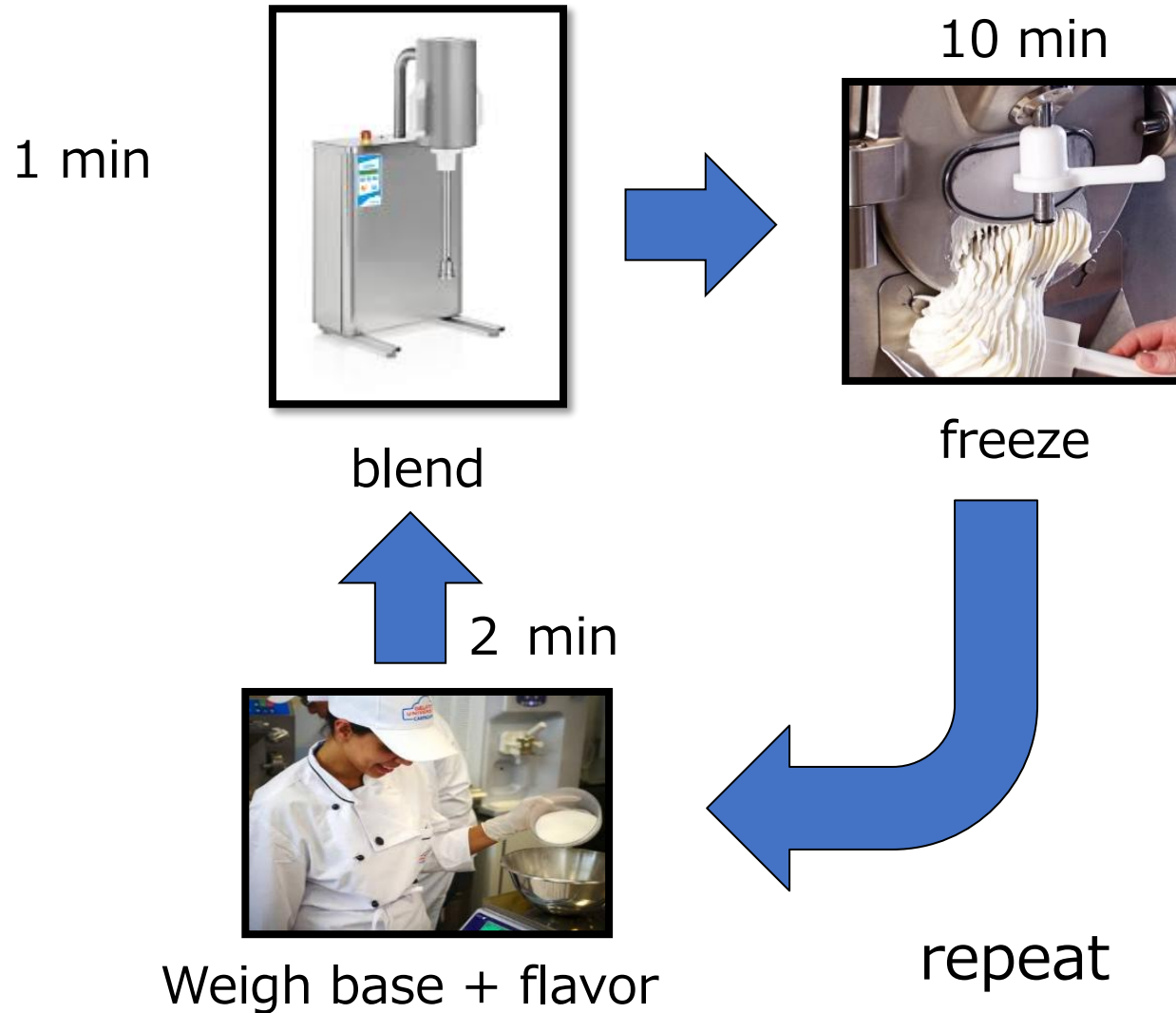
Prepare bases



pasteurizing

To prepare for the next day

Indirect Method



Indirect Method (Classic method)

- WHITE BASE
- YELLOW BASE
- CHOCOLATE BASE



White Base

Ingredients	Q.TY	%	Q.TY
Whole milk	667.0 g	66.70	1030.0g
Skim milk powder	28.0 g	2.80	43.0 g
35% cream	104.0 g	10.40	161.0 g
Sucrose	137.0 g	13.70	212.0 g
Dry Glucose Syrup	31.5 g	3.15	49.0 g
Base 50	32.5 g	3.25	50.0 g
TOTAL	1,000.0 g	100.0	1,545.0 g

← Per liter of milk



•Sugar	18.0%
•Fats	6.0%
•MSNF	10.5%
•Other solids	0.6%
•Total Solids	35.1%

Yellow Base

Ingredients	Q.TY	%	Q.TY
Whole milk	571.0 g	57.1	1030.0g
Skim milk powder	24.0 g	2.4	43.0 g
35% cream	85.0 g	8.5	153.0 g
Egg yolk	100.0 g	10.0	180.0 g
Sucrose	136.0 g	13.6	245.0 g
Dextrose	15.0 g	1.5	27.0 g
Dry Glucose Syrup	41.0 g	4.1	74.0 g
Base 50	28.0 g	2.8	50.0 g
TOTAL	1,000.0 g	100.0	1,802.0 g



•Sugar	20.0%
•Fats	8.0%
•MSNF	9.0%
•Other solids	2.3%
•Total Solids	39.3%

Chocolate base

Ingredients	Q.TY	%	Q.TY
Whole milk	605.5 g	60.55	1030.0g
35% cream	70.0 g	7.0	119.0 g
Skim milk powder	5.0 g	5.0	9.0 g
Dark chocolate. 70%	70.0 g	7.0	119.0 g
22-24% Cocoa	50.0 g	5.0	85.0 g
Sucrose	125.0 g	12.5	213.0 g
Dextrose	23.0 g	2.3	39.0 g
Dry Glucose Syrup	22.0 g	2.2	37.0 g
Base 50	29.5 g	2.95	50.0 g
TOTAL	1,000.0 g	100.0	1701.0 g

← Per liter of milk



•Sugar	20.0%
•Fats	8.5%
•MSNF	7.5%
•Other solids	6.2%
•Total Solids	42.2%

Sanitizing the Gelato Machine



- **END OF DAY (Cleansing)**
 - Rinse with hot water to remove processing residues
 - Quick cleanse and rinse
 - Removing, washing and rinsing of individual components
 - Placing removed components in a dry and safe place
- **START OF THE DAY (Disinfection)**
 - Lubrication and assembly of components
 - Disinfection
 - Rinsing, if necessary

- The gelato production process and processing steps
- Processing Toppings and Syrups
- Garnished gelato (variegated, inclusions, composed flavors)

Production Cycle



1. INGREDIENT SELECTION

2. METHOD OF PRODUCTION

3. RECIPE FORMULATION (BALANCING)

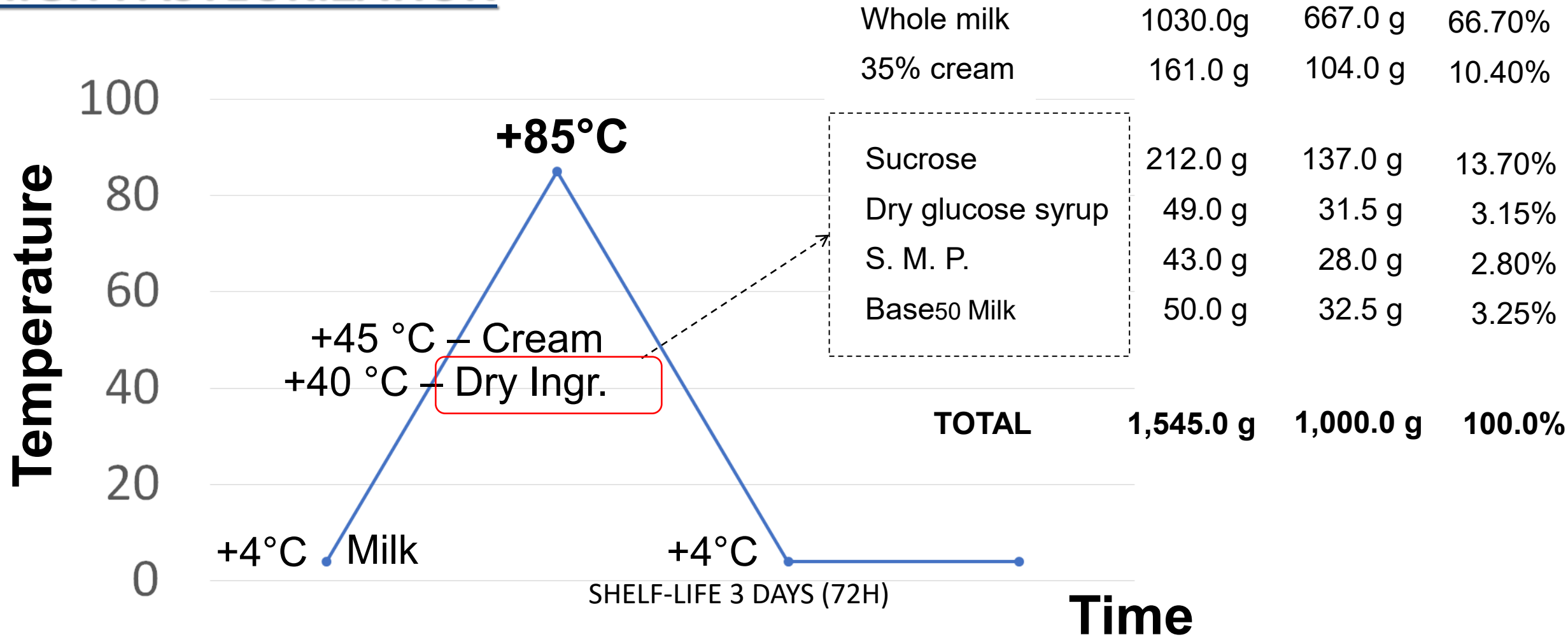
4. PASTEURIZATION

- Elimination of pathogens
- Dissolution of sugars
- Micronization of fat globules
- Activation of stabilizer
- Uniform the flavor

Production Cycle

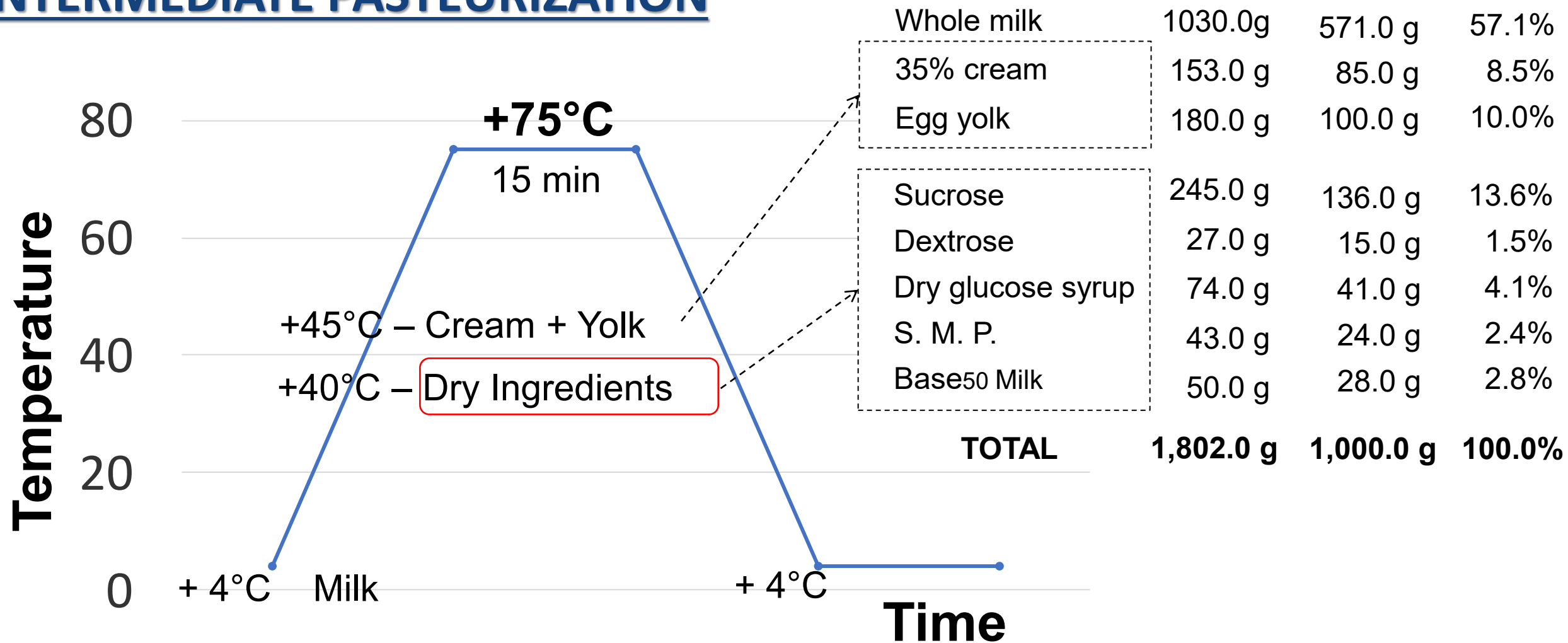


HIGH PASTEURIZATION



Production Cycle

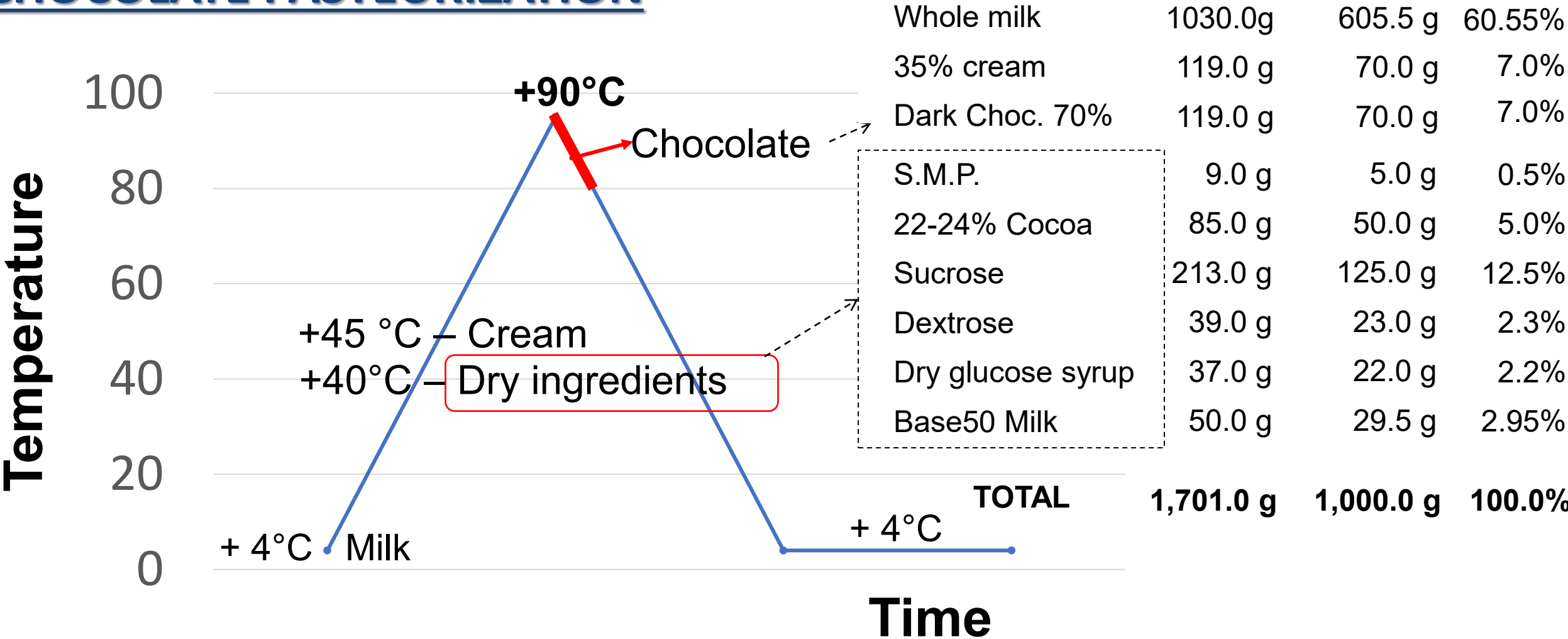
INTERMEDIATE PASTEURIZATION



Production Cycle



CHOCOLATE PASTEURIZATION



5. AGING

- Improved creaminess, texture and stability
- Increased resistance to dripping
- Reduced sensation of cold on the palate
- Improved overrun
- Improved final taste

HYDRATION %	Immediately after Pasteurization	4-12 h after Pasteurization
STABILIZER	30-40%	90-100% (approx.)
PROTEINS	30-40%	90-100% (approx.)

6. CHARACTERIZATION / COMPENSATION

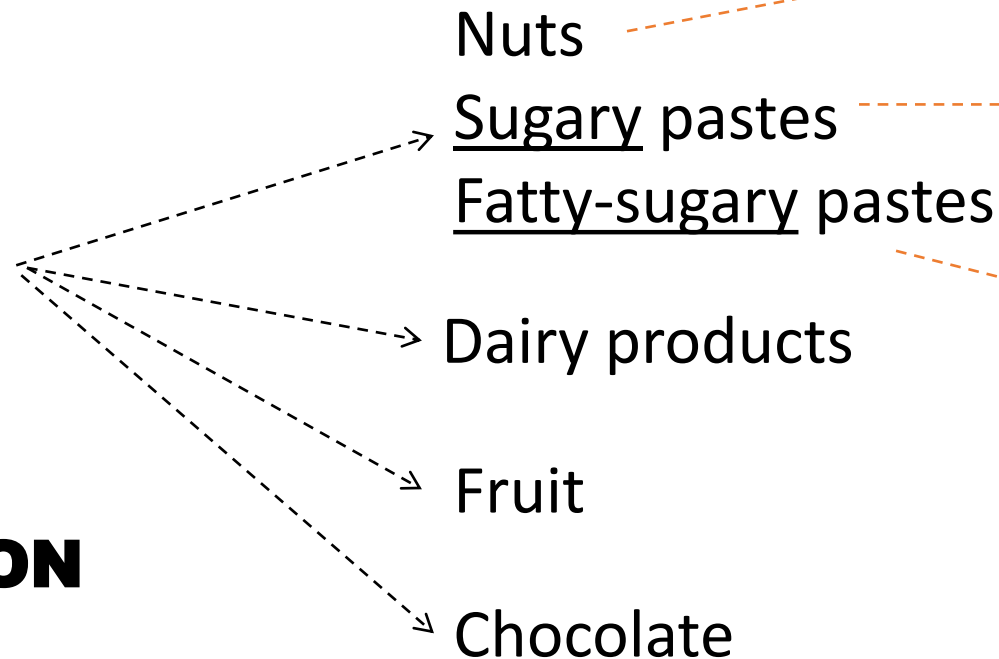
Gelato BASE

+

**FLAVORING
INGREDIENT**

+

COMPENSATION



Sugars No
Fats Yes

Fats No
Sugars Yes

Fats Yes
Sugars Yes

Nuts / fresh fruit / dairy products: **sugars**

Sugary pastes: **cream / milk / water**

Fatty-sugary pastes / Chocolate: **variable depending on composition**

Characterization and simple Compensation

Flavoring	Amount of base	Amount of flavoring (recommended)	Compensation	Compensation dosage (recommended)
Nuts	1000 g	80 – 150 g	Dextrose	15 – 45 g
Dairy products	1000 g	100 – 400 g	Sucrose	40 – 140 g
Dairy products	1000 g	100 – 400 g	Dextrose	20 – 70 g
Sugary pastes	1000 g	20 – 100 g	Cream	30 – 110 g
Sugary-fatty pastes	1000 g	50 – 100 g	Milk	30 – 100 g
Fruit	1000 g	50 – 600 g	Sucrose	50 – 200 g
Chocolate	1000 g	100 – 300 g	Water/milk	30 – 100 g

7. MIXING

- Effective dispersion of the characterizing ingredient



8. BATCH FREEZING CYCLE

- about 6 to 10 minutes
- Extraction temperature -7°C / -9°C
- Fast and dynamic freezing



9. BLAST FREEZING (HARDENING)

- Maintains the structure and organoleptic characteristics of the product
 - Protects against temperature fluctuations
-
- a. Daily production (crusting: 10-15 minutes at $-35^{\circ}\text{C}/-40^{\circ}\text{C}$)
 - b. Medium-term storage (core freezing to $-10^{\circ}/-12^{\circ}$: 1.00 hour at $-35^{\circ}\text{C}/-40^{\circ}\text{C}$)
 - c. Long-term storage (core freezing to -18°C : ca. 2.00 hours at $-35^{\circ}\text{C}/-40^{\circ}\text{C}$)

10. CONSERVATION AND STORAGE

- a. -18°C
 - Medium/long-term storage

- b. -12°C/-14°C
 - Overnight storage of tubs already on sale in the display counter
 - Additional tubs (for ready-to-sell flavors)
 - Overnight tempering from -18°C to -12°C/-14°C

11. DISPLAY AND SALE (-12°C/-14°C)

- Display counters and air pozzetti (-12°C/-14°C)
- Glycol pozzetti (-10°C/-12°C)



11b. SHOWCASING ACCORDING TO SEASONALITY

- Showcases or Air cooled Pozzetti (-12°C/-14°C)
- Glycol Pozzetti (-10°C/-12°C)



5Lt Pan
360x165x h120 mm



5Lt Pan
360x250x h80 mm



7Lt Carapina
Diam 200 h250 mm



3,5Lt Half Carapina
Diam 200 h128 mm

1. **CHOCOLATE CHIP (STRACCIATELLA)**
2. **VARIEGATED**
3. **INCLUSIONS**
4. **COMPOSED FLAVORS**

Garnished Gelato

1. CHOCOLATE COATING (STRACCIATELLA)

Chocolate coating for Stracciatella

Chocolate up to 60%	100%
Chocolate over 60%	85-90%
Cocoa butter	10-15%



2. VARIEGATED

Raspberry sauce (ripple)

Raspberry puree	435 g	43.5%
Sucrose	345 g	34.5%
Dry glucose syrup	195 g	19.5%
Gelatin	5 g	0.5%
Water	20 g	2.0%
TOTAL	1000 g	100%

• Sugar	60.9%
• Fats	0.0%
• MSNF	0.0%
• Other solids	1.2%
• Total Solids	62.1%



Garnished Gelato

1. INCLUSIONS

- E.g.: granules, nuts, cookies etc.

2. COMPOSED FLAVORS

E.g. Tiramisù:

- Tiramisù gelato mix
- Ladyfingers/sponge cake
- Cocoa powder
- Coffee syrup/sauce



Coffee syrup

Instant coffee	60 g	6.0%
Sucrose	500 g	50.0%
Water	440 g	44.0%
TOTAL	1000 g	100%

•Sugar	50.0%
•Fats	0.0%
•MSNF	0.0%
•Other solids	5.8%
•Total Solids	55.8%

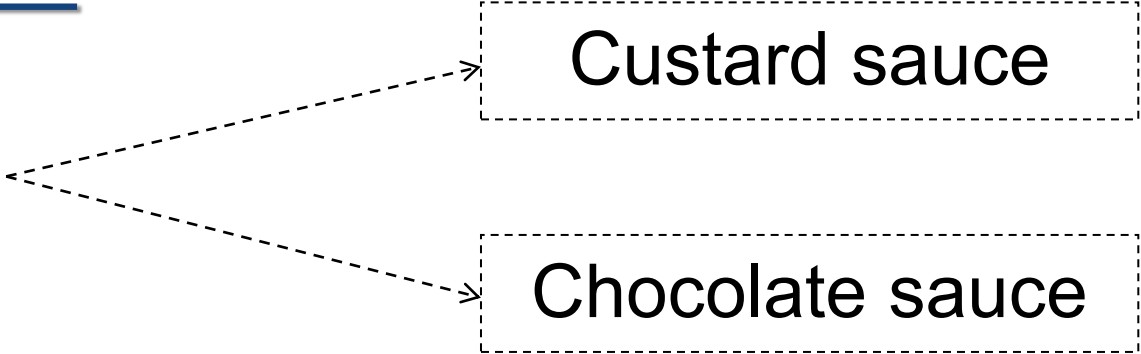
- Concentrated sauces method (universal base-concentrated sauces, custard sauce, chocolate sauce)
- Direct method (for emergencies and special flavors)
- Introduction to Gelato Soft (differences between soft and hard gelato)
- Soft Serve Trends (Premium)

CLASSIC:

- White base
- Yellow base
- Chocolate base

UNIVERSAL BASE:

- White base
- Concentrated sauces



Custard sauce

Chocolate sauce

Indirect Method – Concentrated Sauces



UNIVERSAL BASE:

70%

CONCENTRATED SAUCES:

30%

Indirect Method – Concentrated Sauces



CUSTARD SAUCE

Ingredients	Q.ty	%
Whole milk	350.0 g	35.0%
35% cream	40.0 g	4.0%
S.M.P.	24.0 g	2.4%
Egg yolk	333.0 g	33.3%
Sucrose	133.0 g	13.3%
Dextrose	57.0 g	5.7%
Dry Glucose Syrup	63.0 g	6.3%
Total	1,000.0 g	100.0%

•Sugar	24.6%
•Fats	12.6%
•MSNF	5.7%
•Other solids	6.0%
•Total Solids	48.9%

1 vanilla pod

Indirect Method – Concentrated Sauces



YELLOW BASE WITH CUSTARD SAUCE

Ingredients	Q.ty	%
White base	700.0 g	70.0%
Custard sauce	300.0 g	30.0%
Total	1,000.0 g	100.0%

•Sugar	20.0%
•Fats	8.0%
•MSNF	9.1%
•Other solids	2.2%
•Total Solids	39.3%

Indirect Method – Concentrated Sauces



CHOCOLATE SAUCE

Ingredients	Q.ty	%
Dark chocolate 70%	233.0 g	23,3%
Cocoa powder 22-24%	167.0 g	16,7%
Sucrose	97.0 g	9,7%
Dextrose	87.0 g	8,7%
Water	416.0 g	41,6%
Total	1,000.0 g	100.0%

•Sugar	24.8%
•Fats	13.2%
•MSNF	0.0%
•Other solids	19.0%
•Total Solids	57.0%

Indirect Method – Concentrated Sauces



CHOCOLATE BASE WITH CHOCOLATE SAUCE

Ingredients	Q.ty	%
White base	700.0 g	70.0%
Chocolate sauce	300.0 g	30.0%
Total	1,000.0 g	100.0%

•Sugar	20.0%
•Fats	8.2%
•MSNF	7.4%
•Other solids	6.1%
•Total Solids	41.7%

Indirect Method - Concentrated Sauces (Hazelnut Gelato)



HAZELNUT GELATO

Ingredients	Q.ty
White base	1500 g
Yellow base	1500 g
Hazelnut paste	360 g
Dextrose	50 g
Total	3,410 g

Ingredients	Q.ty
White base	2550 g
Custard sauce	450 g
Hazelnut paste	360 g
Dextrose	50 g
Total	3,410 g

•Sugar	18.5%
•Fats	12.9%
•MSNF	8.6%
•Other solids	4.5%
•Total Solids	44.5%

Indirect Method - Concentrated Sauces (Gianduia gelato)



GIANDUIA GELATO

Ingredients	Q.ty
White base	1400 g
Chocolate base	1600 g
Hazelnut paste	360 g
Dextrose	50 g
Total	3,410 g

Ingredients	Q.ty
White base	2520 g
Chocolate sauce	480 g
Hazelnut paste	360 g
Dextrose	50 g
Total	3,410 g

•Sugar	18.5%
•Fats	13.5%
•MSNF	7.6%
•Other solids	6.4%
•Total Solids	46.0%

- **Special flavors**
- **Emergencies**
- **Method of production**

What is Soft serve gelato

BATCH FREEZER



SOFT SERVE MACHINE



Soft gelato

- Fresh hard gelato
- Increased air incorporation (pump/gravity)
- Less cold on the palate
- Softer
- High Returns
- From Impulse: cone, cup, cup at the table
- From Takeout: single portions, small cups



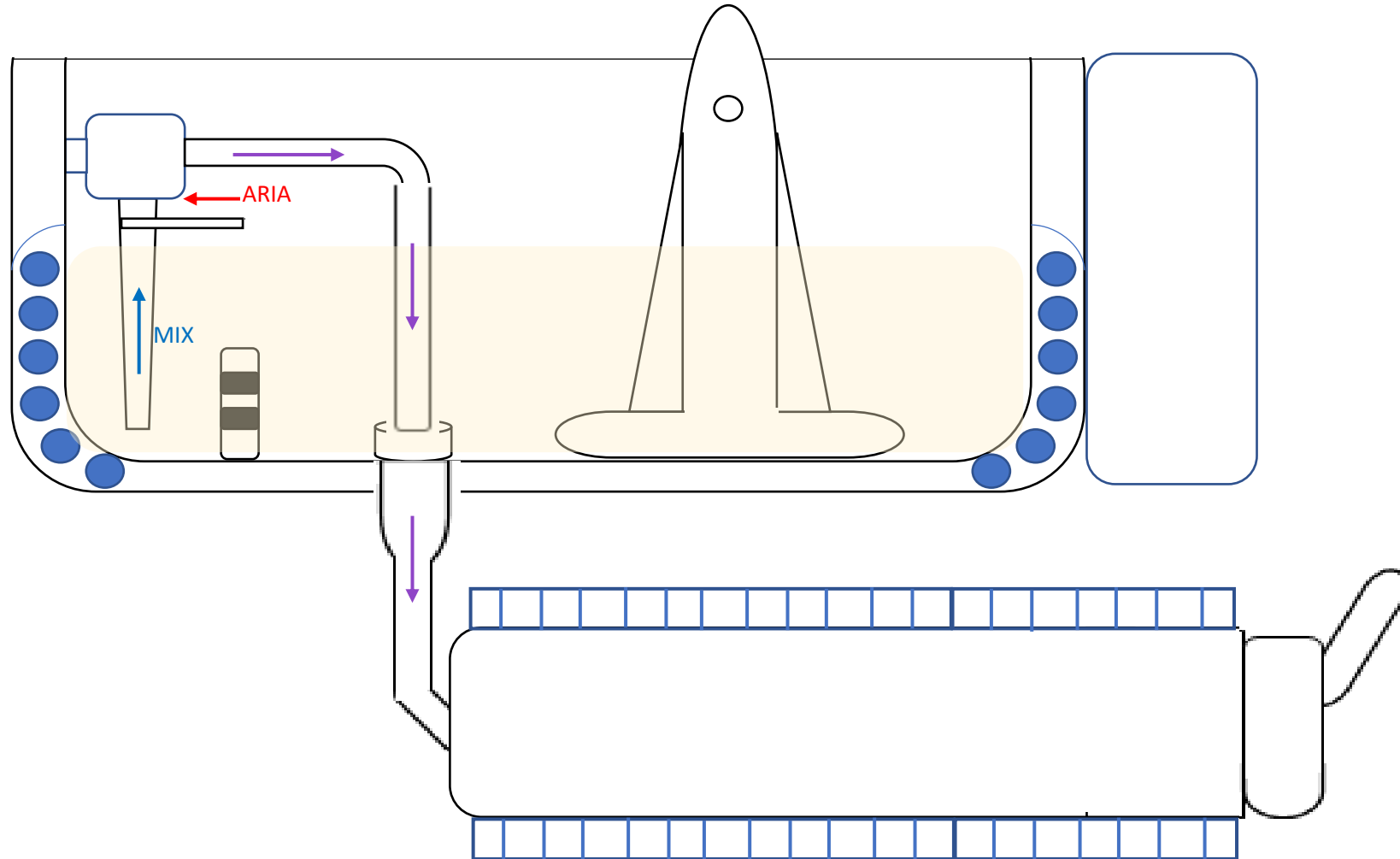
Soft gelato



Features	Artisan	Soft
Overrun	25 - 40%	30 - 70%
Extraction temperature	-7°C / -9°C	-5°C / -7°C

Soft gelato

Example: Soft serve pump machine



Soft Serve and Shake Consulting



Carpigiani Soft Serve & Shake Consultants turn your idea into a successful business with your perfect cup!



**Machine
Configuration
& Settings**

Food Style

**Mix & Recipe
Development**

**Operations
Management**

Go to your personal
online area to learn
more about this
topic

- Analysis and preparation of milk-based fruit gelato
- Water based flavors: Sorbets
- Balancing a fruit sherbet with base 50
- Granita and Cremolata
- Profitability

- FRESH FRUIT **OK**

- FROZEN FRUIT **OK**

- FROZEN FRUIT PUREE **OK**

100% Fruit

or

10-15% added sugars

Pasteurization

Milk based fruit gelato



BASE 1000 g

+

FRUIT 100 - 600 g (5 - 45%)

+

COMPENSATION BY ADDING SUGAR

Milk based fruit gelato



MILK BASED RASPBERRY

Ingredients	Quantity	%
White base	630.0 g	63.0%
Raspberry	283.0 g	28.3%
Sucrose	87.0 g	8.7%
TOTAL	1,000.0 g	100.0%

•Sugar	22.0%
•Fats	3.8%
•MSNF	6.6%
•Other solids	2.8%
•Total Solids	35.2%

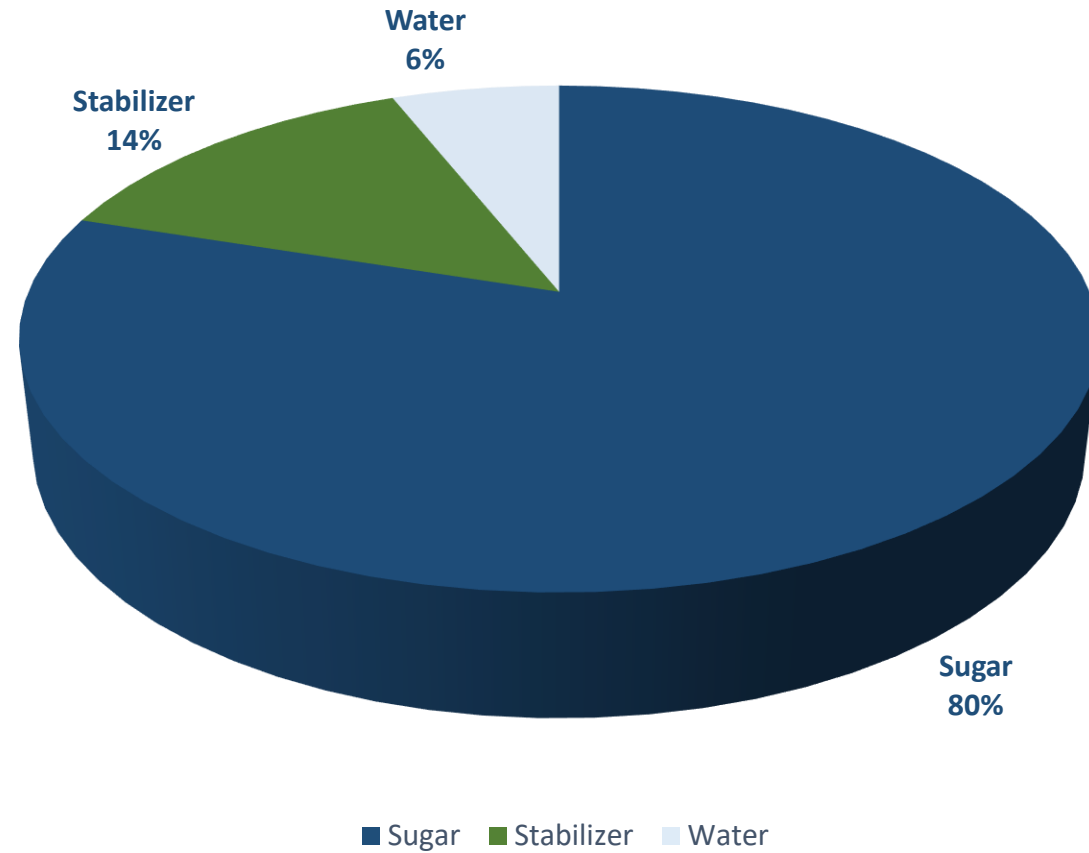
Bases for sorbets

- **BASE 50 f.c.**

- Neutral stabilizer
- Sugar

Approximate composition

Base 50 for fruit sorbets



Sorbets

RULES:

1

% SUGAR
26 - 31%

2

% FRUIT
Strong = **15 – 35%**
Medium = **35 - 55%**
Weak = **55 - 75%**

3

% LEMON JUICE
0 - 2%

4

% BASE 50

Pulp



Juice

1%

2%

3%

4%



PINEAPPLE

	Ingredients	Quantity	Sugar
(2)	Pineapple	500.0 g	x12% 60.0 g
	Sucrose		
(3)	Lemon juice	10.0 g	x5% 0.5 g
(4)	Base 50 fruit	30.0 g	x80% 24.0 g
	Water		
	TOTAL	1,000.0 g	290.0 g (1) 29%

PINEAPPLE

	Ingredients	Quantity	Sugar
(2)	Pineapple	500.0 g	x12% 60.0 g
	Sucrose	205.5 g	205.5 g
(3)	Lemon juice	10.0 g	x5% 0.5 g
(4)	Base 50 fruit	30.0 g	x80% 24.0 g
	Water	254.5 g	//
	TOTAL	1,000.0 g	290.0 g (1) 29%

Granita and Cremolata

RULES:

1

% SUGAR
16 - 22%

3

% LEMON JUICE
0 - 2%

2

% FRUIT
Strong = **15 – 35%**
Medium = **35 - 55%**
Weak = **55 - 75%**

4

**% BAKED /
STABILIZER**



Granita and Cremolata

Ingredients	Quantity	Sugar
Strawberry	500.0 g	*25.0 g
Sucrose	155.0 g	155.0 g
Lemon juice	10.0 g	//
Water	350.0 g	//
TOTAL	1,000.0 g	180.0 g

***STRAWBERRY SUGAR: (5% of fruit weight)**

1
% SUGAR
18%

2
% FRUIT
50%

3
% LEMON JUICE
1%

4
% FRUIT /
STABILIZER

- Definition of Gelato Crystal and its applications (management, production and sales)
- Production of gelato on sticks, gelato cakes and in jars with crystal
- Layout of a gelato shop and the importance of marketing and communication
- Recap
- Final exam

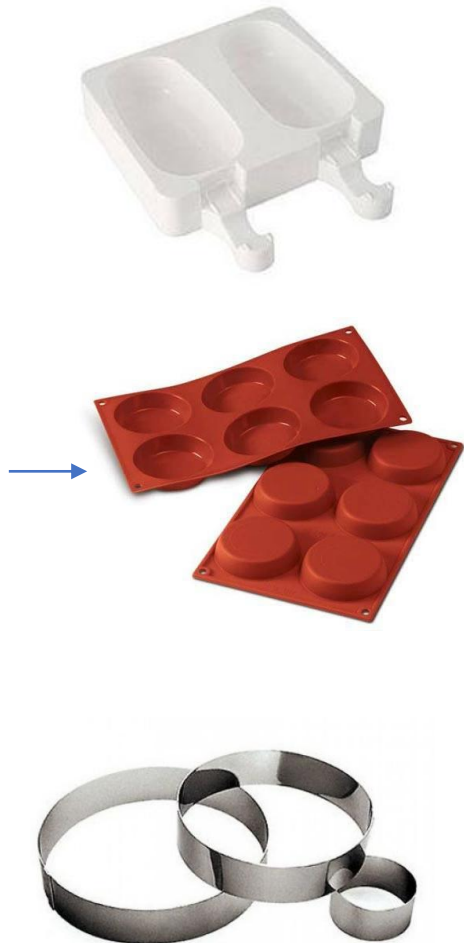
- **Gelato with increased air content (45 - 55%)**
- **Manageable at -18°C**
- **Long Shelf-life**
- **Diversification and expansion of the offer**

Crystal

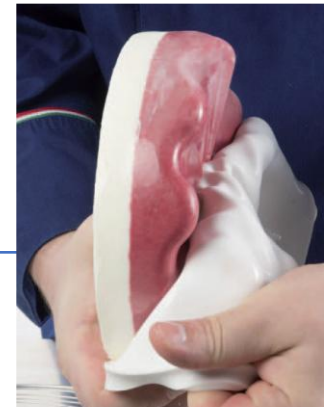
1. Extraction



2. Mold filling



3. Hardening



4. Removal from molds and decoration



Crystal



Weekly summary



- DAY 1

- What is gelato and gelato history - How to recognize quality gelato – Gelato and ice-cream - Artisan vs. Industrial – Raw materials and Production methods

- DAY 2

- Production cycle – Different types of gelato business – Toppings – Garnished gelato

- DAY 3

- Concentrated sauces – Direct Method – Premium Soft Serve

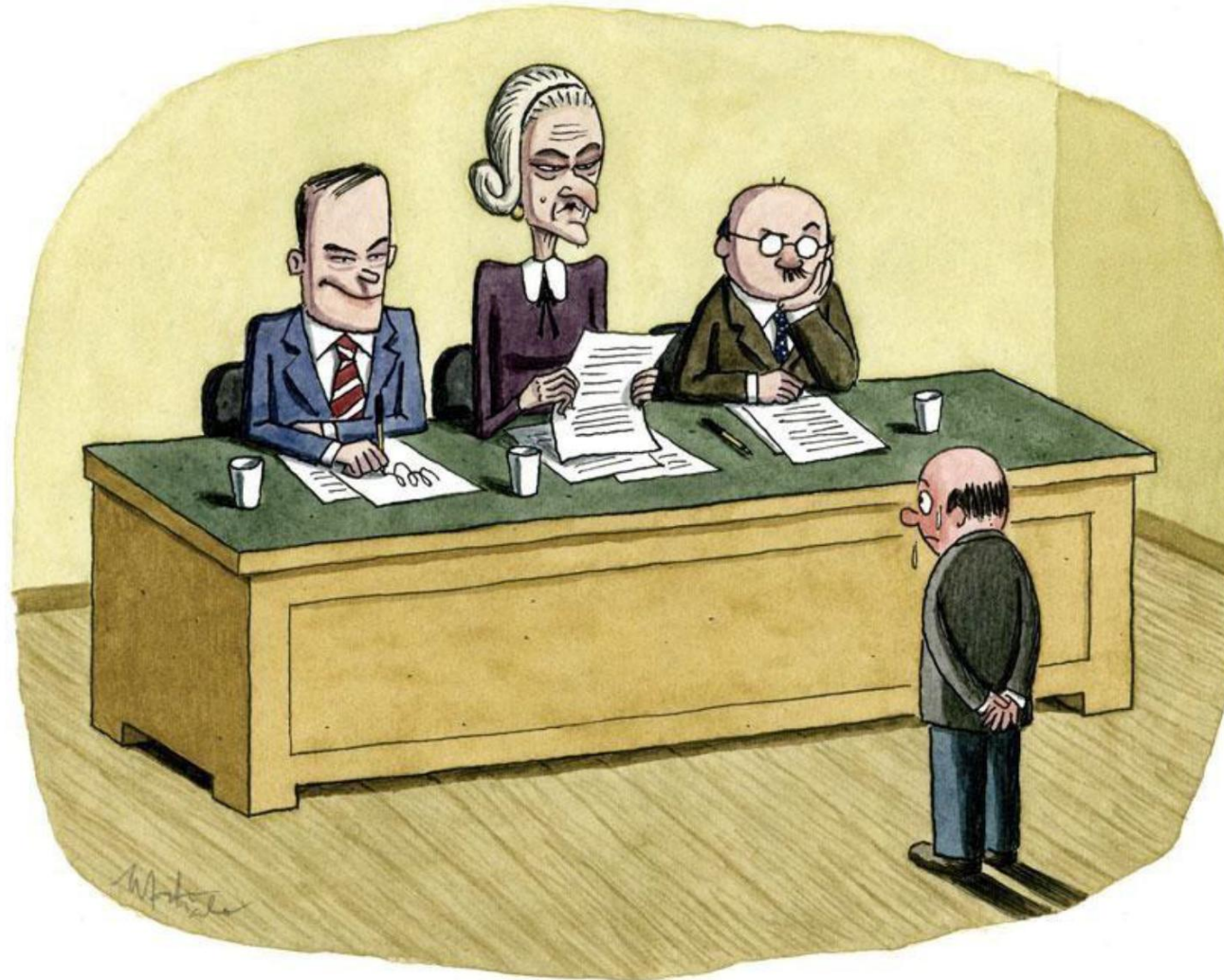
- DAY 4

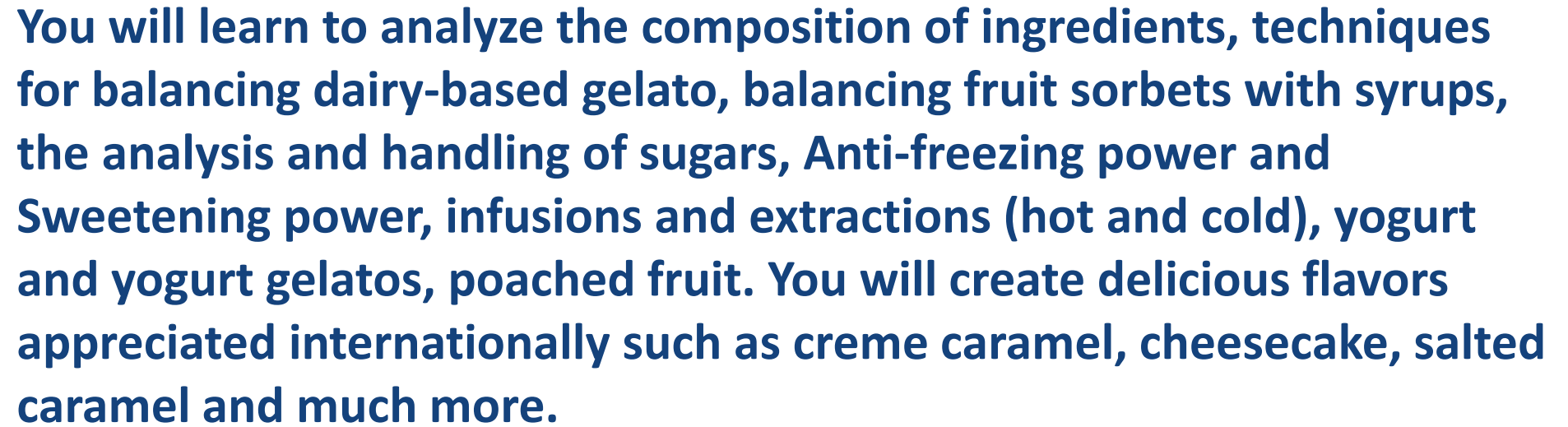
- Milk based fruit gelato – Fruit sorbet – Granita – Profitability

- DAY 5

- Crystal Gelato – Shops layout and gelato Marketing – Recap – Final Exam

Final Exam





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Course for becoming a Gelato Maker

2. Intermediate gelato course



Day	
Day 1	– Analysis and functionality of raw materials – Balancing milk-based gelatos – Substituting ingredients
Day 2	– Sugars classification – Anti-freezing power (AFP) and Sweetening power (SP): analysis and calculation – Characterization of a flavor and compensation
Day 3	– Balancing fruit sorbets with stabilizer and sugar syrups
Day 4	– Yogurt, yogurt gelatos, frozen yogurt and poached fruit – Hot infusions and extractions – Location, Targeting customers and the importance of the Branding
Day 5	– Cold Infusions and extractions – Analysis and calculation of recipes for International Flavors