

THE  UNPLUGGED  
APPLE PIE







**CHARLOTTE DELATTRE**

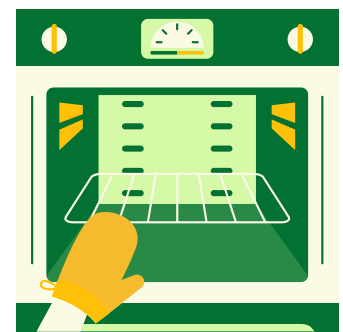
→ NOTE BY NOTE COOKING  
CONTEST 2024



# INSPIRATION & RELEVANCE

My inspiration came from the comforting memories of a homemade apple pie, a dessert that's both nostalgic and universally loved. The challenge was to capture that familiarity while adhering to the principles of Note by Note cooking

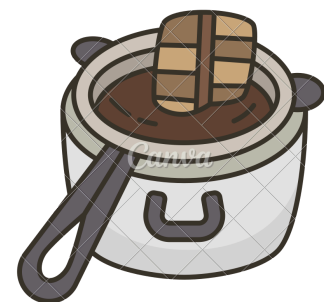
- |   |   |   |
|---|---|---|
|  Tarte Tatin    |  Apple Crumble   |  Äppelkaka   |
|  Apfelstrudel |  Torta Di Mele |  Szarlotka |



No oven



No long cooking time



Minimal heat



Short list of ingredients



# MATERIALS

## WITHOUT ENERGY CONSUMPTION

- 2 kind of silicon molds
- 6 bowls
- 1 saucepan
- 1 spatula
- 1 whisk
- 1 water container
- 1 piping bag



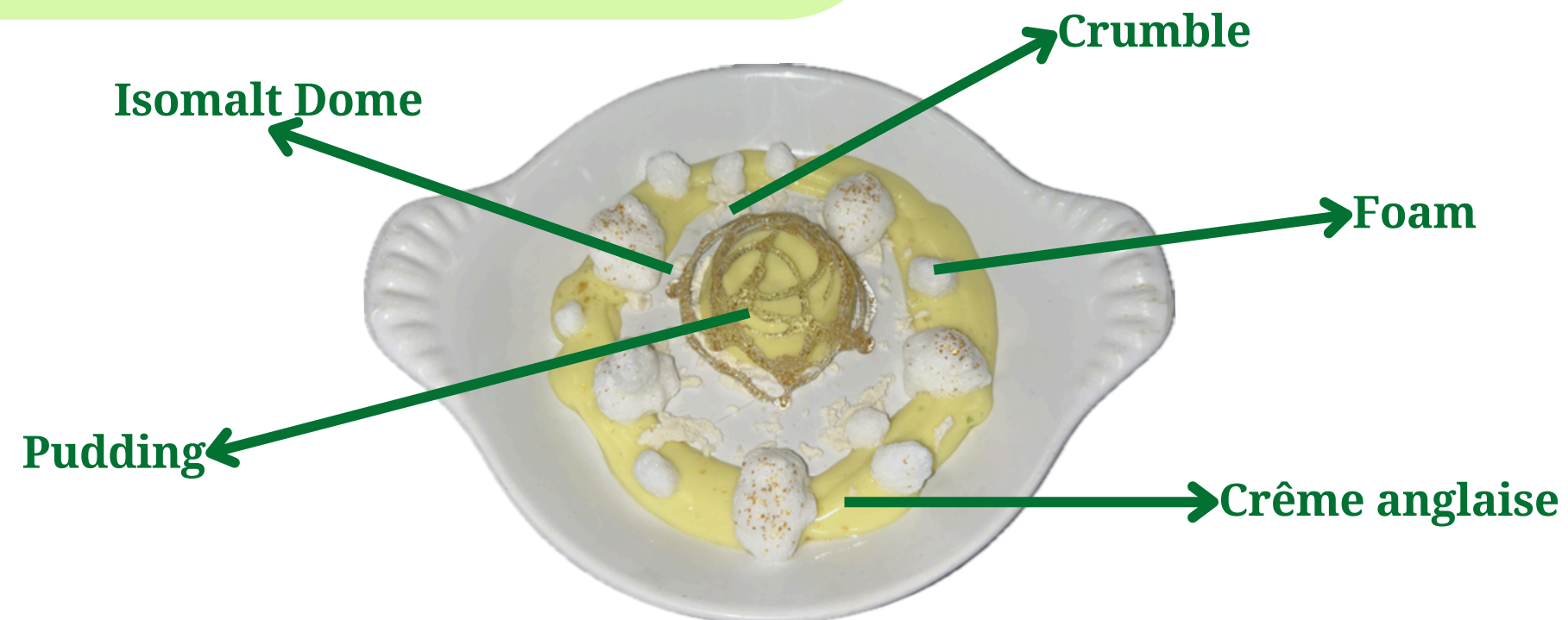
## WITH ENERGY CONSUMPTION

- 1 stand mixer
- 1 immersion blender
- 1 microscale
- 1 fridge
- 1 gas cooker



03

# INGREDIENTS



<b>Crème anglaise</b>	Corn Starch, K-carrageenan, Sucrose, Yellow Coloring, Apple Pie Aroma, <b>Note By Note Milk</b> (= Rapeseed oil, Water, Casein Powder, Whey Powder, Lactose Powder)
<b>Pudding</b>	
<b>Crumble</b>	Cocoa Butter, Olive oil, Sucrose, Maltodextrin, Vanilla Aroma, White Coloring, Yellow Coloring, Acid Manic
<b>Foam</b>	Gelatin Leaves, Caramel Aroma, Xanthan Gum, White Coloring Powder, Water
<b>Isomalt Dome</b>	Gold Color Powdered, Isomalt, Caramel Aroma

# THE 5 ELEMENTS

## CRÈME ANGLAISE / PUDDING

### Transformative Power of Temperature

Highlights the versatility of the ingredients and adds depth to the dish by introducing a new texture, enhancing the overall complexity.



## CRUMBLE

### Replicating the Traditional Tart's Brittle Texture Without Heat



By employing cold methods to solidify the fats and bind the components, the crumble adheres to the energy-saving theme while introducing a novel textural element to the dessert.

## FOAM & ISOMALT DOME

### Mimicking the caramelization

Visually and sensorially echoes the caramelized aspects of traditional desserts

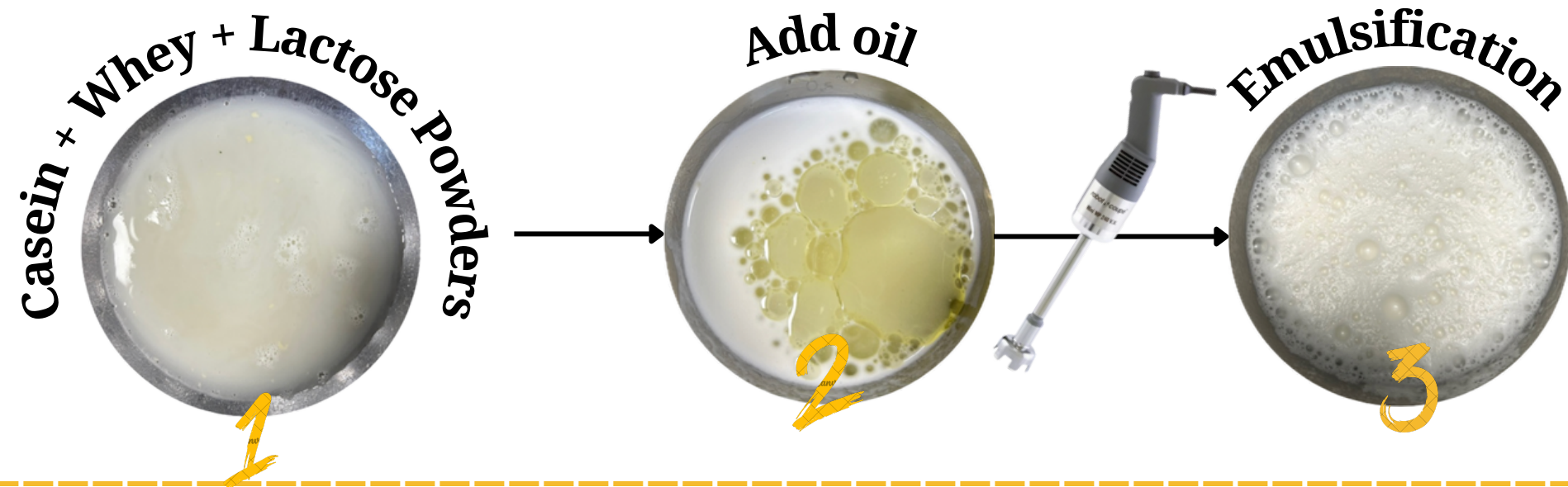
### Textural Contrast



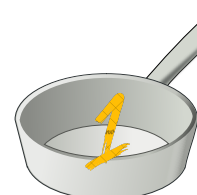


# METHODS

## CRÈME ANGLAISE / PUDDING

### STEP 1 : NOTE BY NOTE MILK



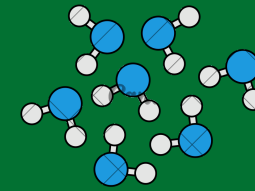
### STEP 2 : GELIFICATION

-  **Mixture 1** : Stir corn starch and k-carrageenan into 50g of note-by-note milk = 3 min
-  **Mixture 2** : Into remaining milk add sucrose and flavor and bring it to boil = 1 min
-  Mix 1 & 2, Let it heat for 3 minutes and remove from heat, add aroma.

**STEP 3** : Pour into the molds and leave it to set in refrigerator at minimum 4°C for half an hour.

## FOAM

### STEP 1 : HYDRATION



Put 10 g gelatin and 5g of xanthan in 300g of water and wait 5 minutes for hydration.

### STEP 2 : MELTING



Boil the mixture while stirring for 5 minutes.

### STEP 3 : FOAMING PROCESS



Pour the mixture in a stand mixer and use full speed for 5-10 minutes.

### STEP 4 : SHAPING



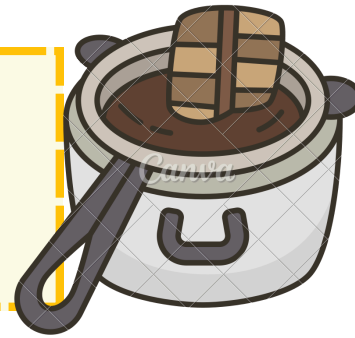
Use a piping bag. It needs to be done quickly, otherwise the foam become too thick and we can form good shapes.

# METHODS

## CRUMBLE

### STEP 1 : BAIN MARIE

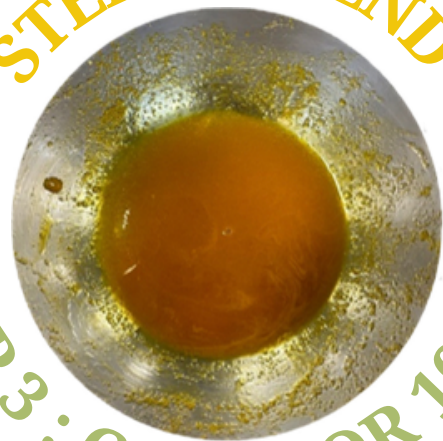
Cocoa Butter + Olive Oil



*Once melted, add the colors, flavors, sugar caster and malic acid to the fats*

### STEP 2 : BLEND

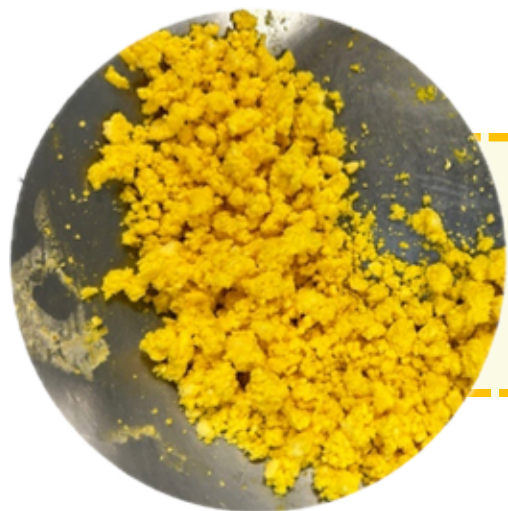
STEP 3 : COOL FOR 10MIN



*Add Maltodextrin*

### STEP 4

Break into small pieces



## GOLDEN DOME

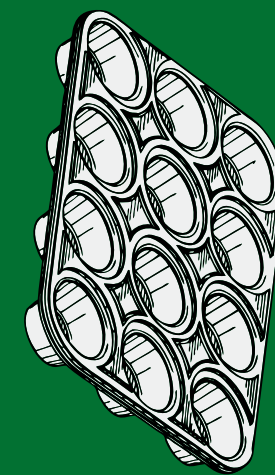
### STEP 1 : MELTING



Heat isomalt over medium heat until it completely melts and reaches 160-170°C. Avoid stirring isomalt while it heats to minimize bubble formation.

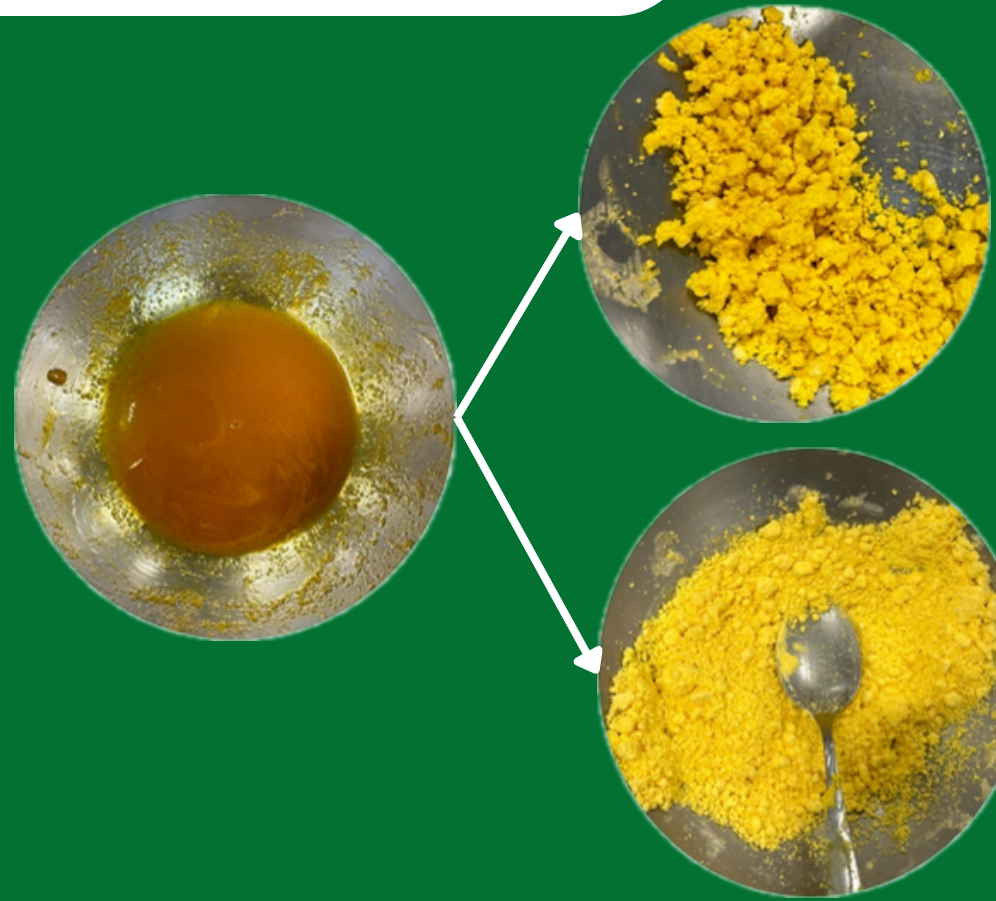
### STEP 2 : ADD GOLD POWDER

### STEP 3 : SHAPING



Pour on the outside of the half-sphere molds.  
Wait 5 minutes for it to cool.  
Carefully press the bottom of the mold.

# CRUMBLE



40 M / 60 F

60 M / 40 F

# DISCUSSION

“Fats can coat the maltodextrin particles, which leads to a sandy, soil-like texture that would not be achievable with water (Evoniuk, 2024)”

# FOAM

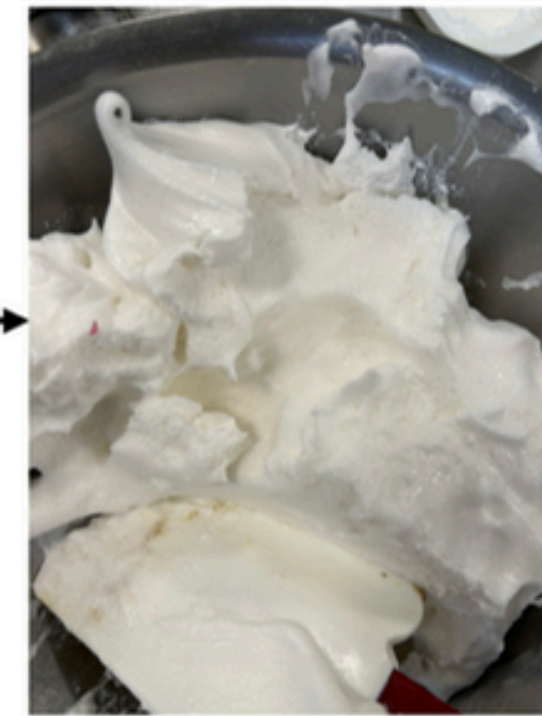
WEEK 1



6g gelatin + 3g xanthan

300g water

WEEK 2



10g gelatin + 3g xanthan

300g water

WEEK 3



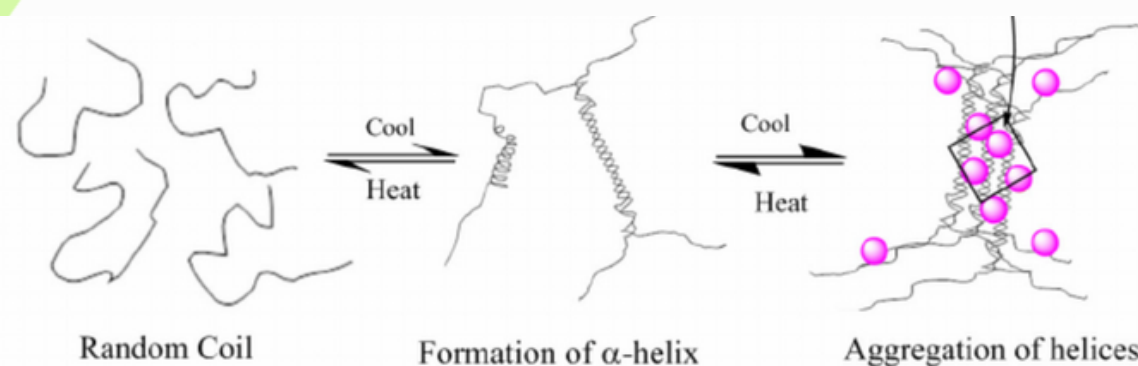
10g gelatin + 5g xanthan

300g water

# CRÈME ANGLAISE

“Synergetic Effect

Kappa-carrageenan provides the structural rigidity, while corn starch contributes creaminess and prevents the gel from being too brittle. The combination can improve the stability of the final product against syneresis (Wardhana et al., 2022)”



	WEEK 1	WEEK 2	WEEK 3
Ratio Xanthan/Gelatin	50%	30%	33%
Ratio Molecules/Water	3%	4,3%	5%

**WEEK 1 :** Foam retention was satisfactory, but the mouthfeel was too watery + a little too sticky.

**WEEK 2 :** Increase the molecule/water ratio and decrease the xanthan/gelatin ratio, as the stickiness is provided by the properties of gelatin. Good mouthfeel but still a bit too sticky

**WEEK 3 :** It was the expected texture.

# COMPARISON

$$\text{Energy Consumption (kWh)} = \text{Power (kW)} \times \text{Time of use (h)}$$

## NOTE BY NOTE

Material	Power (kW)	Time of use	Energy consumption (kWh)	Price
Fridge	0,27kW	30min	0,135kWh	0.0334395€
Stand mixer	0,35 kW	5min	0,035kWh	0.00722458€
Hand blender	0,29kW	1min	0.004843 kWh	0.00119722€
Gas cookers	5,5kW	15min	1.375 kWh	0.340588€
<b>Total</b>			<b>1.549843 kWh</b>	<b>0,382€</b>

Without heat

**1,6kWh**



Domestic oven

**3,8kWh**

## TRADITIONAL

Material	Power (kW)	Time of use	Energy consumption (kWh)	Price
Oven	20 kW	70min	23.751 kWh	5.77967€
Stand mixer	0,35 kW	10min	0.05845 kWh	0.0144492€
Hand blender	0,29kW	5min	0.02407 kWh	0.00598608€
Fridge	0,27kW	60min	0,27kWh	0.064402€
<b>Total</b>			<b>24.10352kWh</b>	<b>5.834€</b>

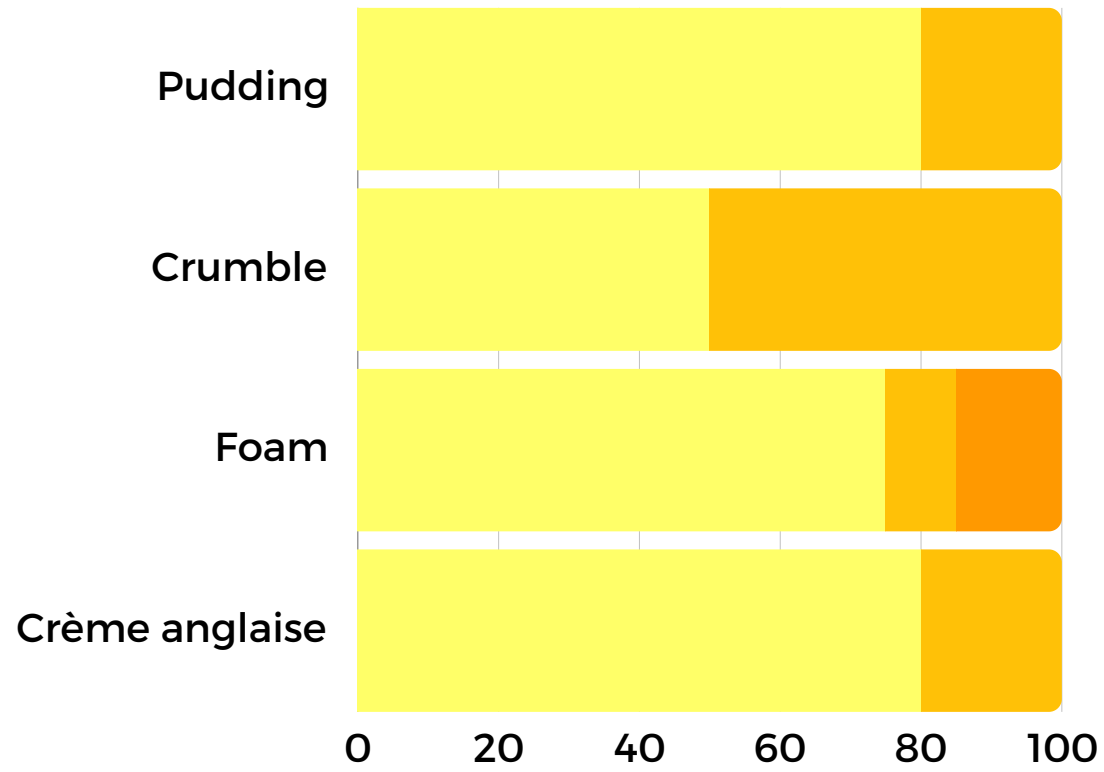


No upstream valuation



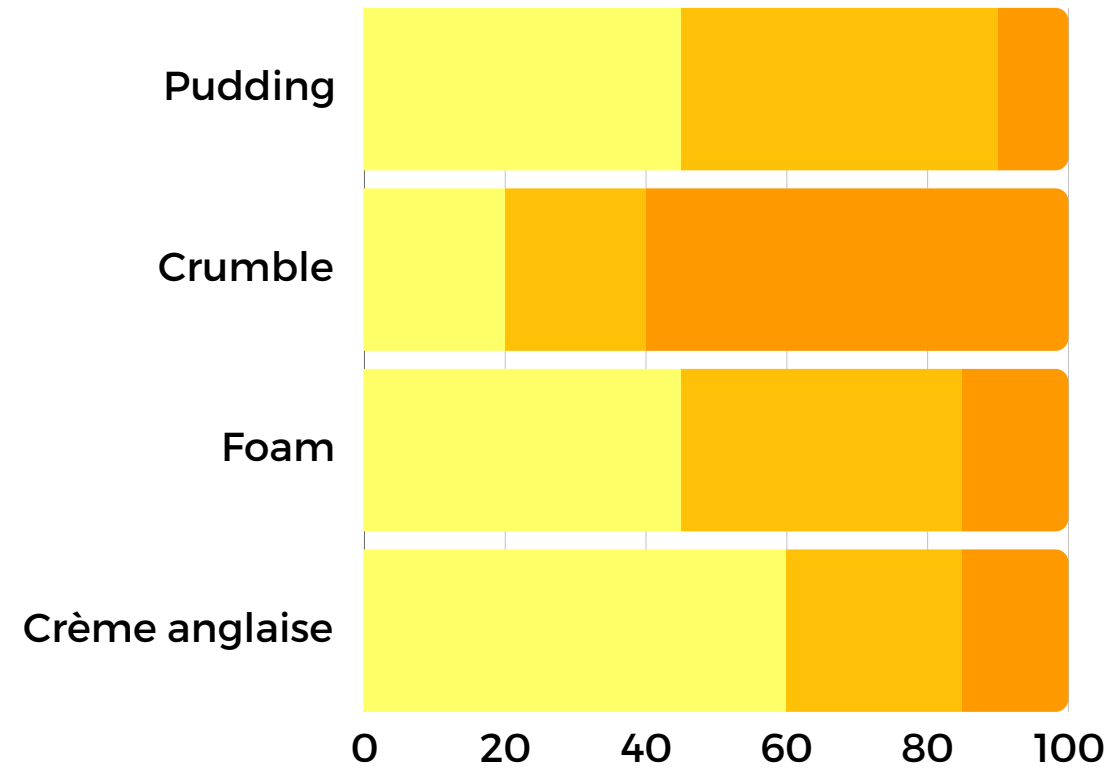
# SENSORY ANALYSIS

Like very much Slightly Like  
Neither/Nor



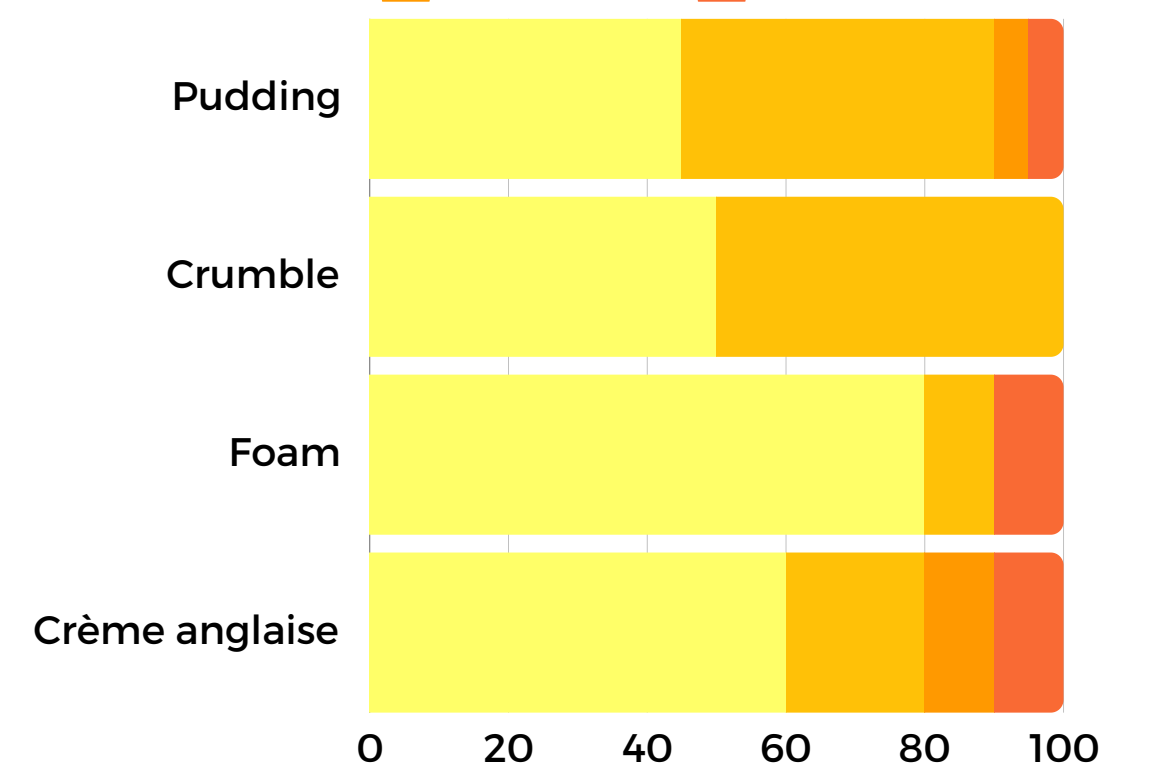
APPEARENCE

Like very much Slightly Like  
Neither/Nor



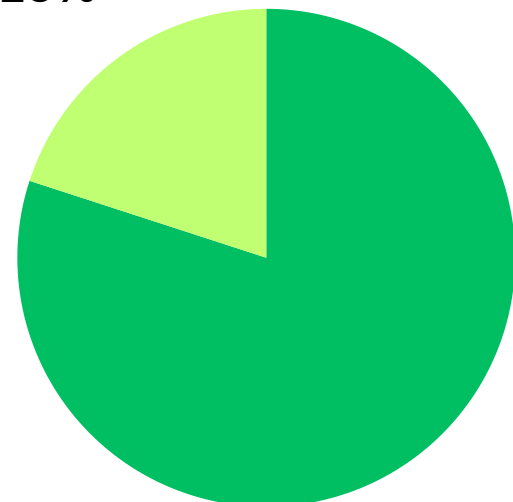
TEXTURE

Like very much Slightly Like  
Neither/Nor Slightly Dislike



AROMA

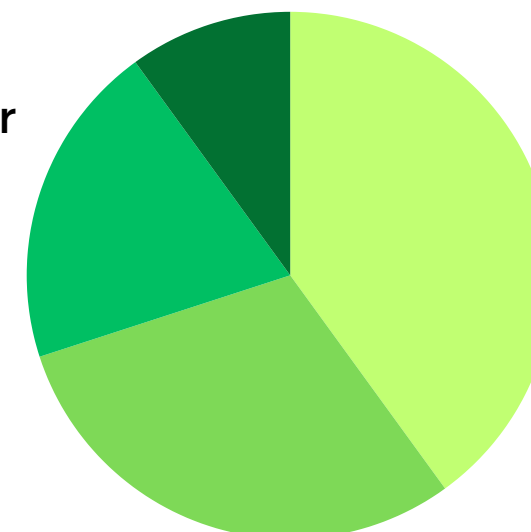
Neither/Nor  
20%



Like very much  
80%

Slightly Dislike  
10%

Neither/Nor  
20%



Slightly Like  
30%

Like very much  
40%







OVERRRAL  
APPEARENCE

OVERRRAL  
LIKING






**THANK YOU**

# ANNEX

CRUMBLE			
Ingredient	Brand	Quantity (g)	Quantity (%)
Cocoa butter		8g	19%
Olive oil		10g	23%
Castor Sugar		3g	6%
Maltodextrin		20g	46%
Vanilla Aroma		4 drops	
White coloring - powder		2g	5%
Yellow coloring - liquid		1 drop	
Acid malic		0,5g	1%




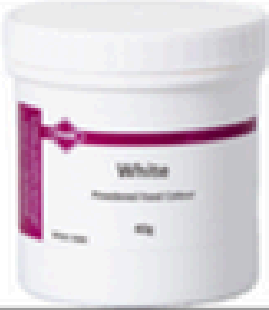
CRÈME ANGLAISE AND PUDDING			
Ingredient	Brand	Quantity (g)	Quantity (%)
Castor Sugar			
Corn Starch		9g	4,8%
K-carrageenan		1g	0,5%
Sucrose		3g	1,4%
Yellow coloring		1 drop	
Apple Pie Aroma		2 drops	
Rapeseed oil		8g	3,7%

Water		174g	81%
Casein powder		5,4g	2,5%
Whey powder		3,5g	1,6%
Lactose powder		9,6g	4,5%

BY NOTE MILK

# ANNEX

GOLDEN DOME			
Isomalt		Quantity (g)	Quantity (%)
Color powdered Gold		2g	2%
Isomalt		96g	96%
Caramel Aroma		2g	2%

FOAM			
Water		Quantity (g)	Quantity (%)
Gelatin leaves		10g	3,1%
Caramel Aroma		5 drops	
Xanthan gum		5g	1,6%
White Coloring Powder		1g	0,3%
Water		300g	95%