



SYNDEO® GELLING
A plant-based gelling agent *for ultimate textures*

BIRTH OF THE IDEA - APPROCH

GELATIN CHARACTERISTICS

- Widely used all over the world
- Outstanding versatility
- No real interesting existing substitute

WHY REPLACING GELATIN?

- Vegan and vegetarian trends
- Environmental reasons, animal well fare
- Religious reasons

➔ BIG CHALLENGE

BIRTH OF THE IDEA - APPROCH

WHY GELATIN?

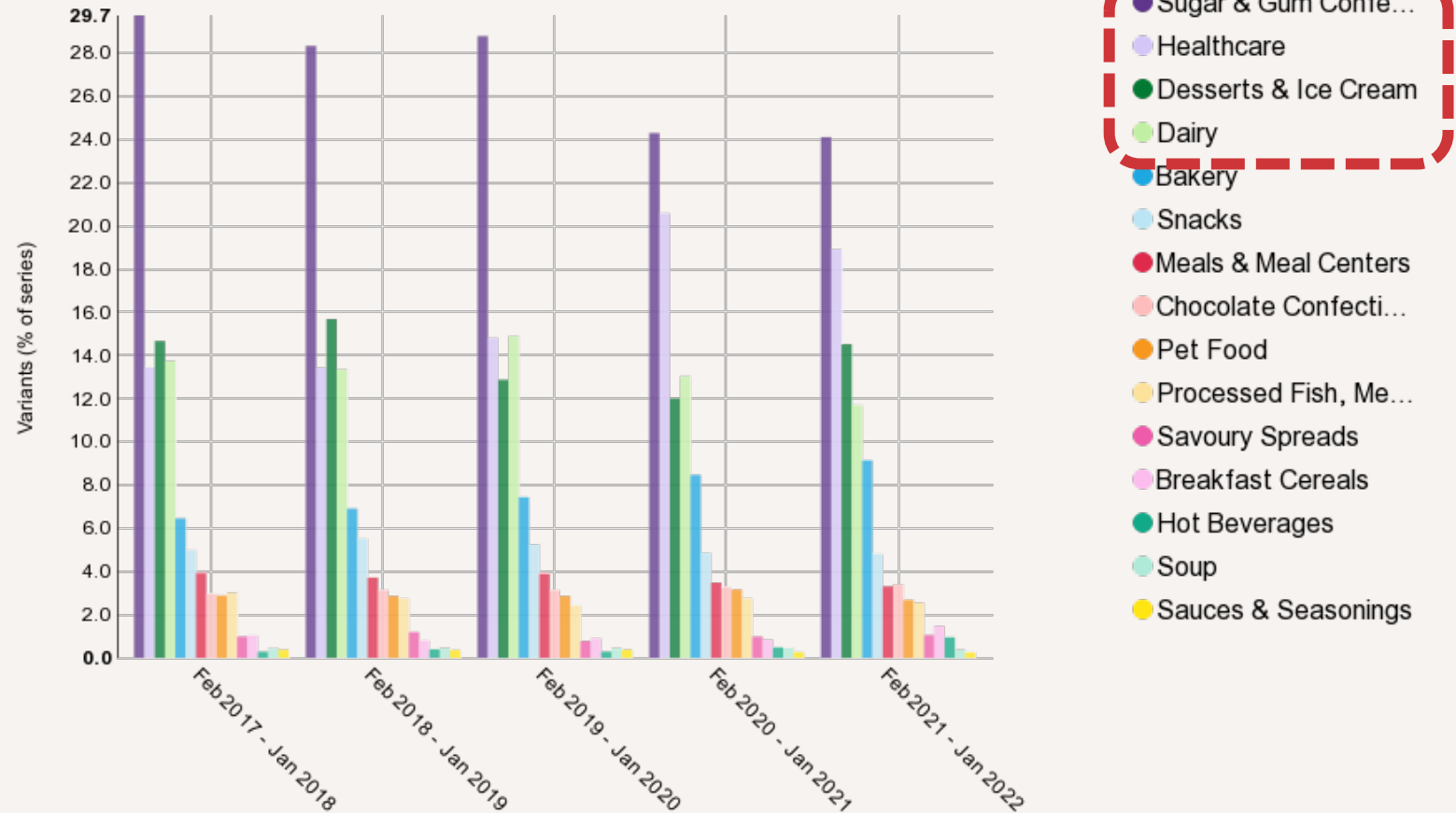
- Food industries = more than 50% of gelatin applications
- Many functionalities and properties like acacia gum = many options to the developers
- Uses : clarifying agent, emulsifier, gelling or whipping agent, stabilizer, thickener

➔ BIG CHALLENGE

BIRTH OF THE IDEA - APPROCH

70% of products formulated with gelatin:

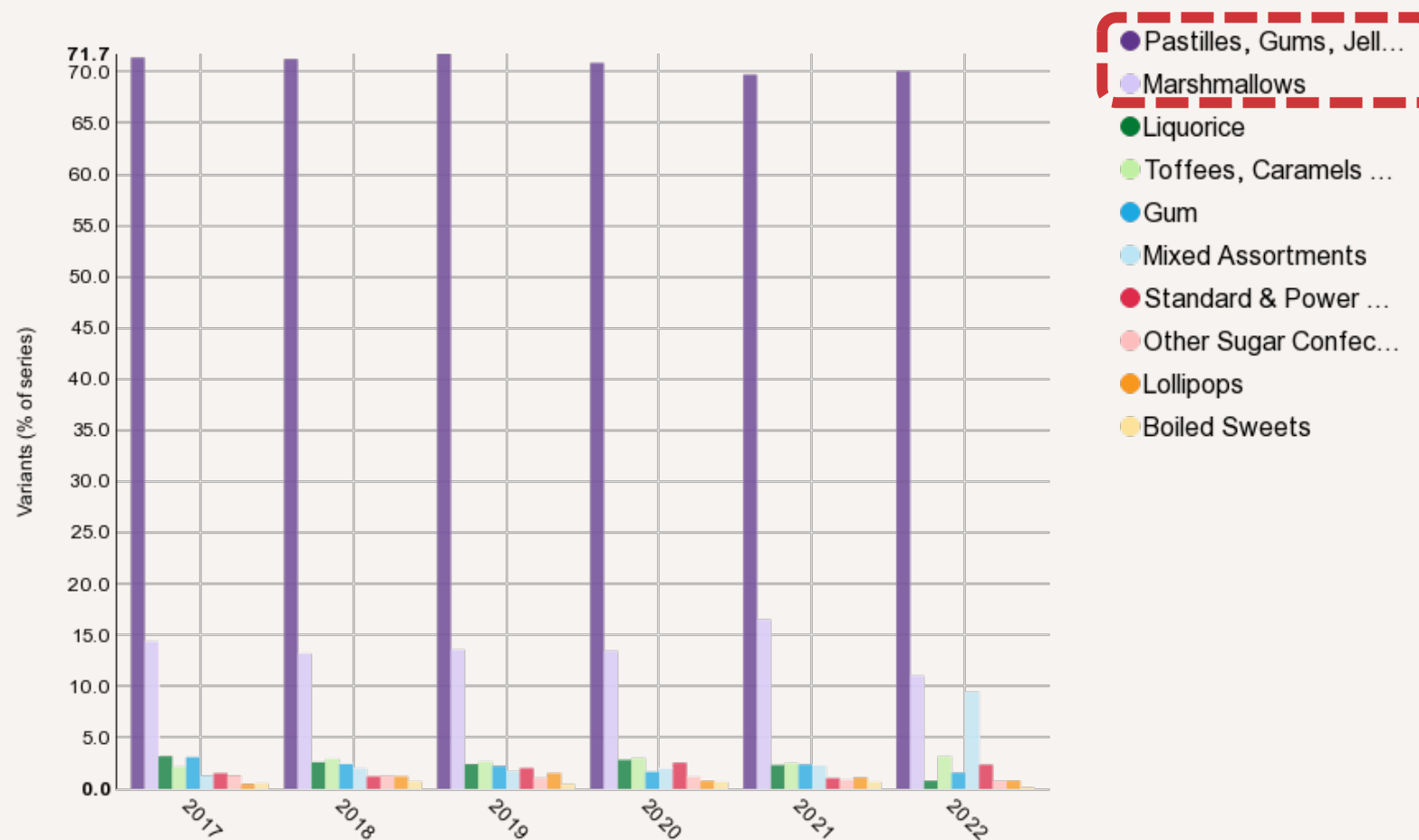
- Confectionery
- Healthcare
- Desserts & ice creams
- Dairies



BIRTH OF THE IDEA - APPROCH

80% of confectionery formulated with gelatin

- Pastilles, gummies
- Marshmallows



SYNDEO® GELLING, **A PLANT-BASED** **GELLING AGENT** for ultimate textures

HUNDREDS OF LAB TESTS IN ORDER TO REACH THE RIGHT TEXTURES

- Asset : one technician specialized in gummies and candies (trained at German ZDS school)
- Tools: instrumental (texturometer) and sensorial tests
- Sensory analysis / trained internal panel
- Industrial validation done for gummies (not yet for marshmallows)



GUMMIES



MARSHMALLOWS



MOUSSES

THE FORMULATION

- Blend of :

Acacia gum – E414

Carrageenans – E407

Agar – E406

- Hydrocolloids commonly used in food
- Part C - Group I of REGULATION (EC) No 1333/2008 on food additives
- Carrageenan controversy : not degraded in Syndeo G



SYNDEO® GELLING, A PLANT-BASED GELLING AGENT for ultimate textures

FOR THE FORMULATION OF VEGAN GUMMIES IN USUAL INDUSTRIAL CONDITIONS



Vegan jellified candies

Ingredients (in % weight)

Water	38.4
Sucrose	19.2
Glucose syrup 40 DE	11.5
Glucose syrup 60 DE	26.9
SYNDEO® GELLING	3.1
Citric acid (E330)	0.6
Sodium citrate (E331)	0.4

Instructions

- 1/ Mix water, glucose syrups and sodium citrate for 2 minutes at 80°C;
- 2/ Add sucrose and the SYNDEO® GELLING under stirring: blend 8 minutes at 120°C;
- 3/ Add and mix citric acid just before starch deposit step;
- 4/ Deposit in starch trays and dry jellies for 72 to 96 hours at 32°C.



SYNDEO® GELLING, A PLANT-BASED GELLING AGENT for ultimate textures

Vegan jellified candies

Characteristics of a gelatin-free product must maintain easy depositing, sensory experience, product integrity and overall product quality.

- Gelatin is identified thanks to its elasticity and low adhesiveness. Pectin provides much harder textures, glue-like texture and low elasticity.
- Syndeo® Gelling provides low hardness and much more elasticity than pectin, while not creating adhesiveness.

Syndeo® Gelling offers a texture that's perfectly balanced between a gelatin gel and a pectin gel.

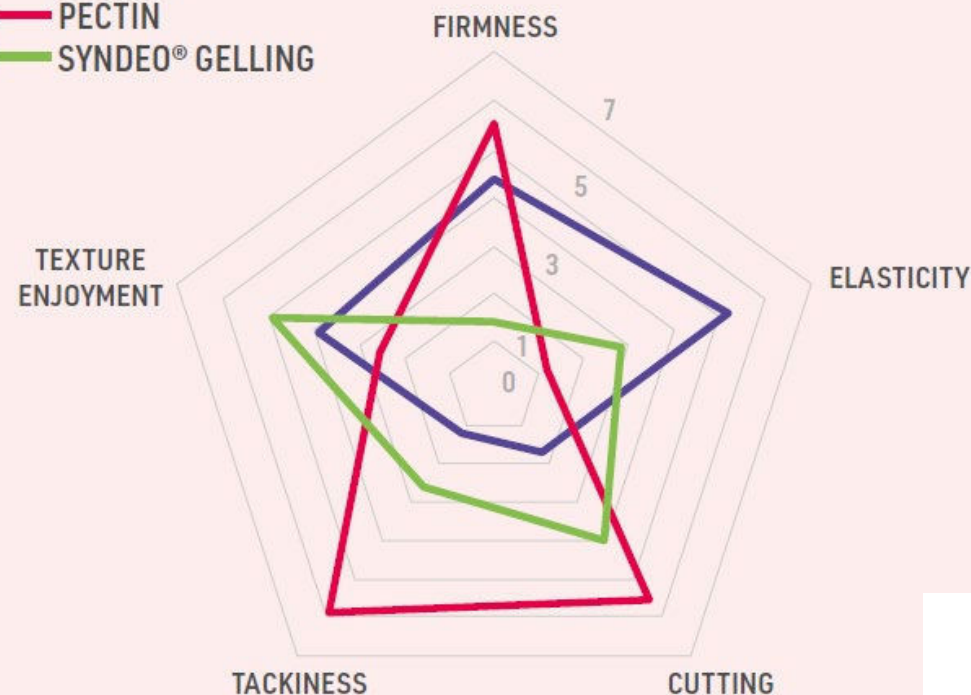
VEGAN GUMMIES

SENSORY ANALYSIS

The sensory analysis is in line with the results obtained by the texturometer.

Gummies with:

- GELATIN
- PECTIN
- SYNDEO® GELLING



SYNDEO® GELLING, A PLANT-BASED GELLING AGENT for ultimate textures

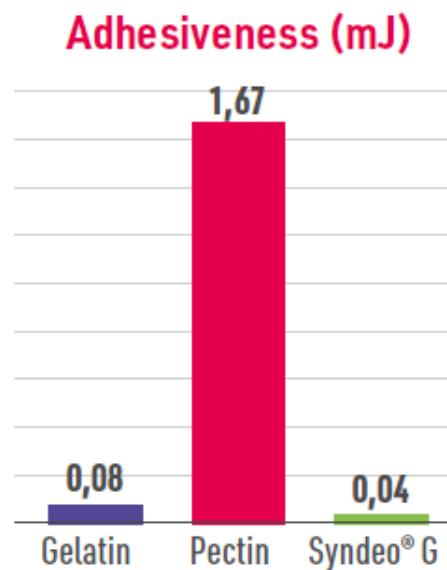
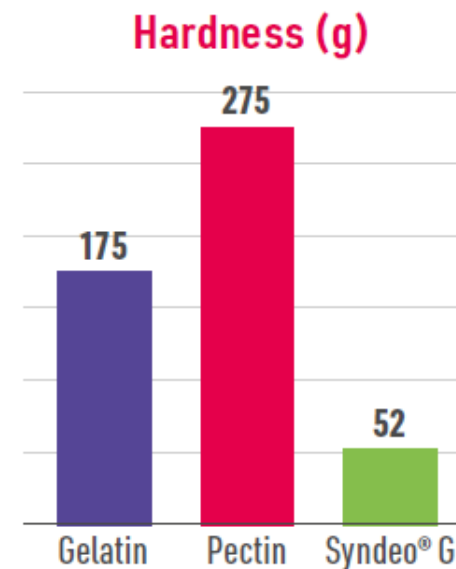
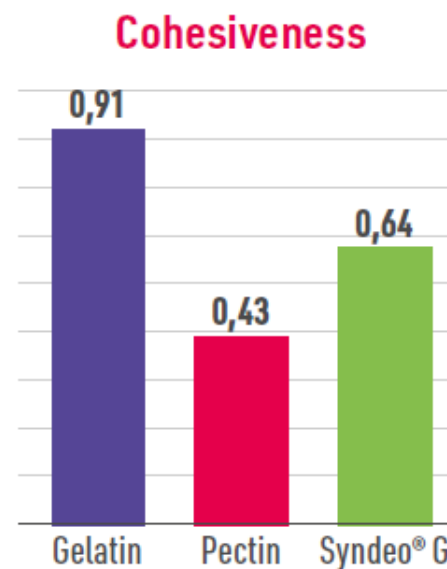
VEGAN GUMMIES

TEXTURE PROFILE ANALYSIS



The signature of a gelatin gel is high cohesiveness and relatively high hardness. Pectin gels show higher hardness and adhesiveness than gelatin. On cohesiveness, Syndeo® Gelling provide a middle ground between gelatin and pectin. Pectin shows low resilience (elastic recovery) and high adhesiveness, although Syndeo® Gelling and gelatin provide a similar expected resilience.

Syndeo® Gelling offers a texture that's perfectly balanced between a gelatin gel and a pectin gel.



PRODUCTION OF VEGAN GUMMIES

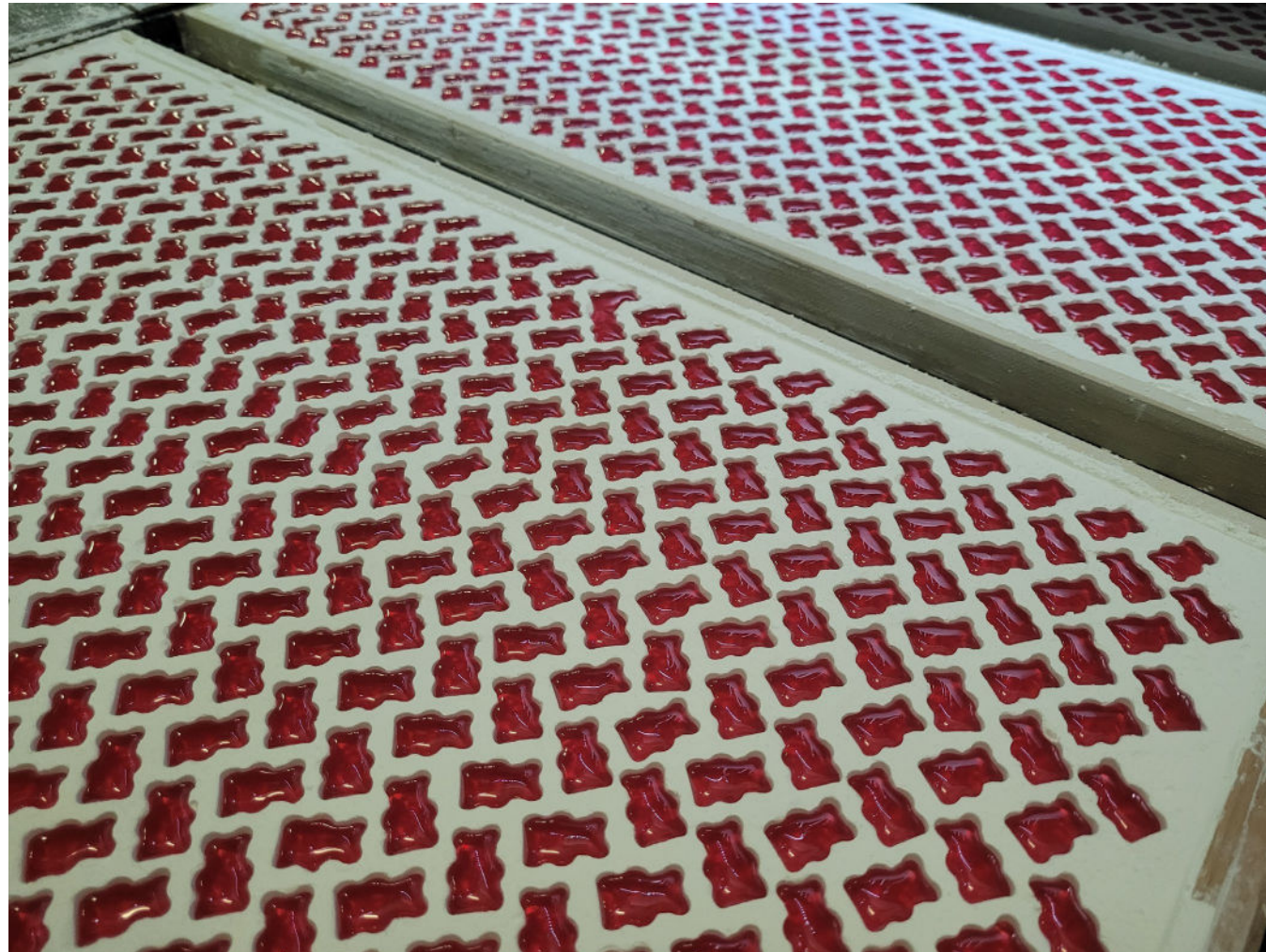
Industrial scale / French confectionery

- Identical operating conditions compared to regular gummies formulated with gelatin
- Easy depositing step (nice rheology of syrup)
- Successful drying process (even at ambient temperature)
- Very good feedback from professionals
- To take into account : water could be decreased to favour the heating step and nice Brix



PRODUCTION OF VEGAN GUMMIES

Industrial scale / French confectionery



SYNDEO® GELLING, A PLANT-BASED GELLING AGENT for ultimate textures

FOR THE FORMULATION OF VEGAN MARSHMALLOWS



Vegan marshmallows

Ingredients (in % weight)

BLEND 1

Water	18.5
Sucrose	18.5
Glucose syrup 40 DE	11.9
Glucose syrup 60 DE	27.9
SYNDEO® GELLING	2.9
Sodium citrate (E331)	0.4

BLEND 2

Water	9.2
Sucrose	9.4
Potato proteins	1.2

Instructions

- 1/ Blend 1:** mix all the ingredients with a powerful heating mixer (speed 7) for 5 minutes at 120°C;
- 2/ Blend 2:** mix all the ingredients with a powerful heating mixer (speed 7) for 5 minutes at 70°C;
- 3/** Mix the 2 blends with the mixer with a lower speed (3) for 2 minutes;
- 4/** Deposit in starch trays and dry marshmallows at least 24 hours at 32°C.



SYNDEO® GELLING, A PLANT-BASED GELLING AGENT for ultimate textures

Vegan marshmallows

Syndeo® Gelling is an effective substitute for gelatin that does not compromise on the sensory properties or the stability of marshmallows.

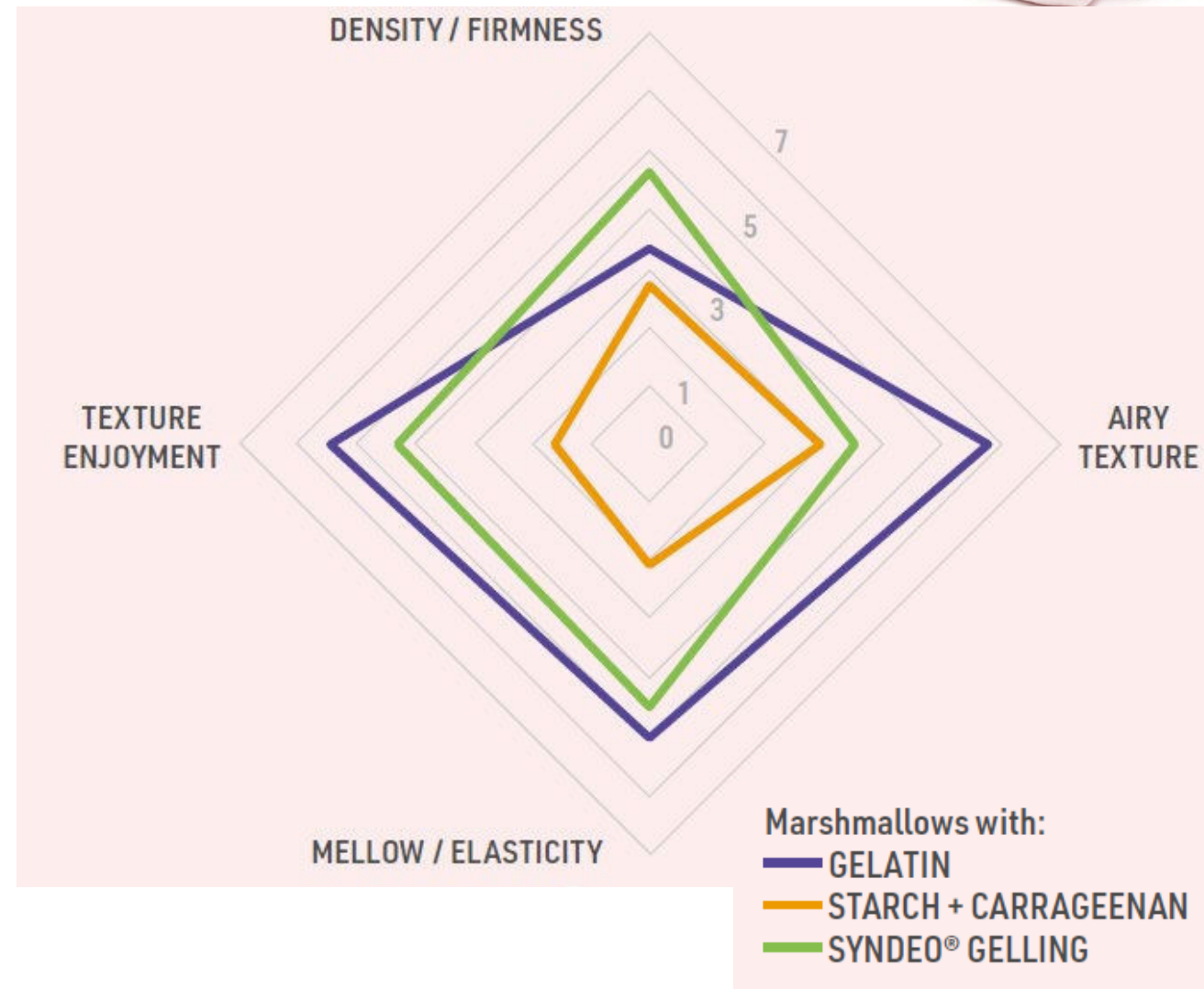
SENSORY ANALYSIS

The sensory analysis is in line with the results obtained by the texturometer.

It showed that Syndeo® Gelling is able to perfectly mimic the gelatin behavior, while providing the same sensory enjoyment.

Marshmallows with:

- GELATIN
- STARCH + CARRAGEENAN
- SYNDEO® GELLING



SYNDEO® GELLING, A PLANT-BASED GELLING AGENT for ultimate textures

TEXTURE PROFILE ANALYSIS



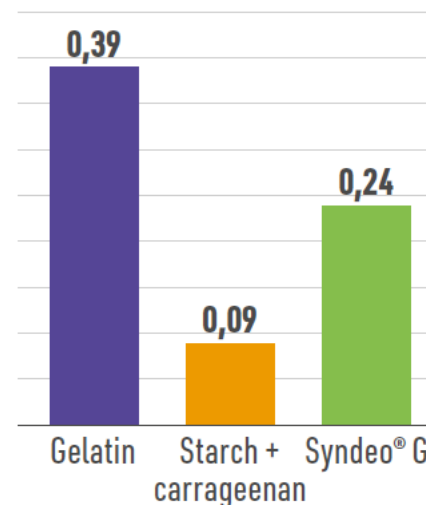
Vegan marshmallows

Marshmallows manufactured with gelatin behave similarly to vegan marshmallows prepared with Syndeo® Gelling, in terms of hardness, adhesiveness and resilience.

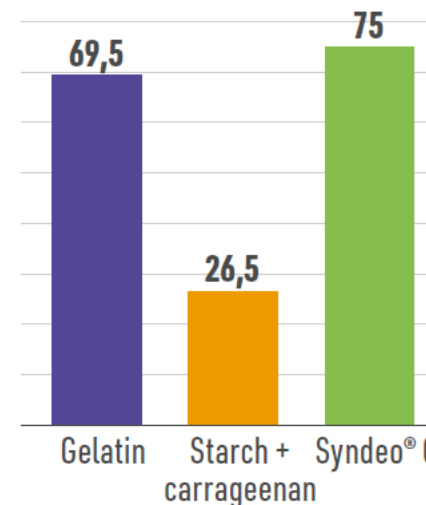
Syndeo® Gelling provides a balanced cohesiveness between the gelatin gel and the gel made with a mix a starch and carrageenan.

Syndeo® Gelling provides excellent results for the manufacturing of vegan marshmallows.

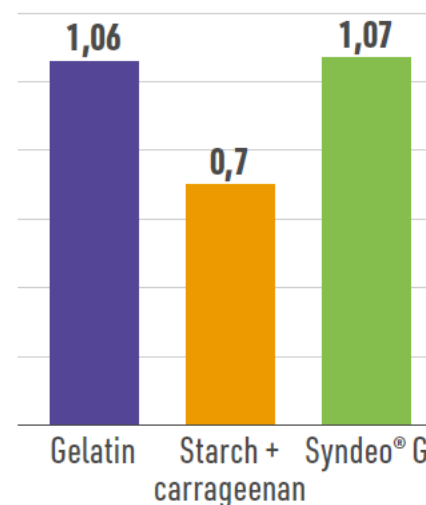
Cohesiveness



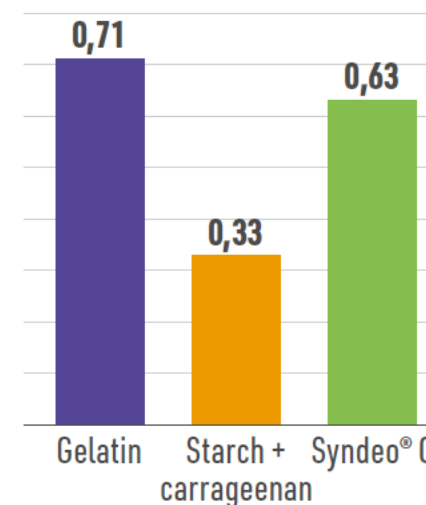
Hardness (g)



Adhesiveness (mJ)



Resilience



SYNDEO® GELLING, **A PLANT-BASED** **GELLING AGENT** for ultimate textures

FOR THE FORMULATION OF VEGAN ENGLISH JELLIES



Plant-based desserts are getting increasingly popular, as consumers are concerned by the impact of their consumption on the environment and animal welfare.

Syndeo® Gelling, an effective plant-based gelling agent for the creation of textures perfectly balanced between a gelatin gel and a pectin gel.

INGREDIENTS

% in weight

- Water 90
- Sucrose 8.5
- **SYNDEO® GELLING** 1.4
- Sodium citrate 0.1

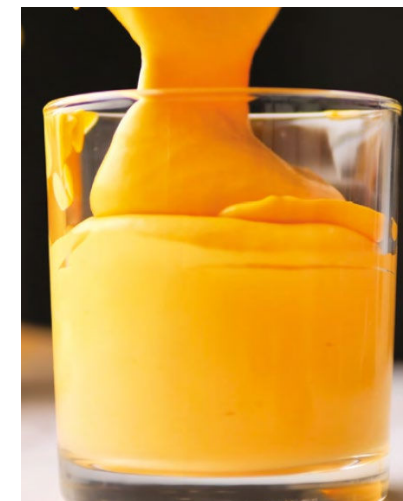
INSTRUCTIONS

- Dissolve sucrose, **SYNDEO® GELLING** and sodium citrate in 1/3 of cold water.
- Add the remaining water, then mix and boil 2 min. at 100°C (212°F).
- Add coloring and flavoring.
- Pour mixture into bowls or molds and let cool at room temperature
- Refrigerate for 1 hour.



SYNDEO® GELLING, A PLANT-BASED GELLING AGENT for ultimate textures

FOR THE FORMULATION OF VEGAN MOUSSES



Vegan mousses

Thanks to Syndeo® Gelling, replicating the mouthfeel and texture of a regular mousse as a delicious vegan mousse is possible. Whether chocolate or fruit mousse, Syndeo® Gelling provides consumers with a creamy but not fatty mouthfeel and great sensory experience, including the softness, light and airy texture.

Ingredients (in % weight)

BLEND 1	
Water	20
Vegetal protein	2.5
Icing sugar	2.5
BLEND 2	
Mango puree	37
Coconut milk	37
Sodium citrate (E331)	0.13
SYNDEO® GELLING	0.87

Vegan mousses

Instructions

Blend 1:

- 1/ Mix water and vegetal protein for 2 min at speed 5;
Whisk for 2 min at speed 8;
Add icing sugar and mix for 30 sec at speed 5;
Whisk for 2 min at speed 8;

Blend 2:

- 2/ Mix all the ingredient together for 1 min at speed 3;
Heat 90°C for 3 min at speed 3;
- 3/ Mix slowly together with a spatula until getting an homogeneous mousse;
- 4/ Pour into small glasses and refrigerate for at least 4 hours.

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for ultimate textures

GENERAL CONSIDERATIONS

Highlights

Syndeo® G dosing compared to gelatin :
2 to 3 times less
depending on the final product

- Necessitates salts (Na+) to be functionalized
- Easy to dissolve (needs minimal temperature)
- May withstands high temperature and acidic conditions compared to gelatin much more sensitive
- The Bloom notion in reference to the setting strength of gelatin is not applicable to Syndeo® G.



SYNDEO® GELLING, A PLANT-BASED GELLING AGENT for ultimate textures

GENERAL CONSIDERATIONS

Next steps



- Chewy candies whipped with gelatin
- Jellies
- Chilled desserts included plant-based trends :
pannacottas, creams (spoonable or creamy)



SYNDEO® GELLING,
A PLANT-BASED
GELLING AGENT
for ultimate textures

GENERAL CONSIDERATIONS

Conclusion

- Mastery of new hydrocolloids in our lab
- Look forward to receiving feedback from potential customers (about gummies)
- A&R technical support to develop new formulas with our Syndeo® Gelling



ALLAND & ROBERT

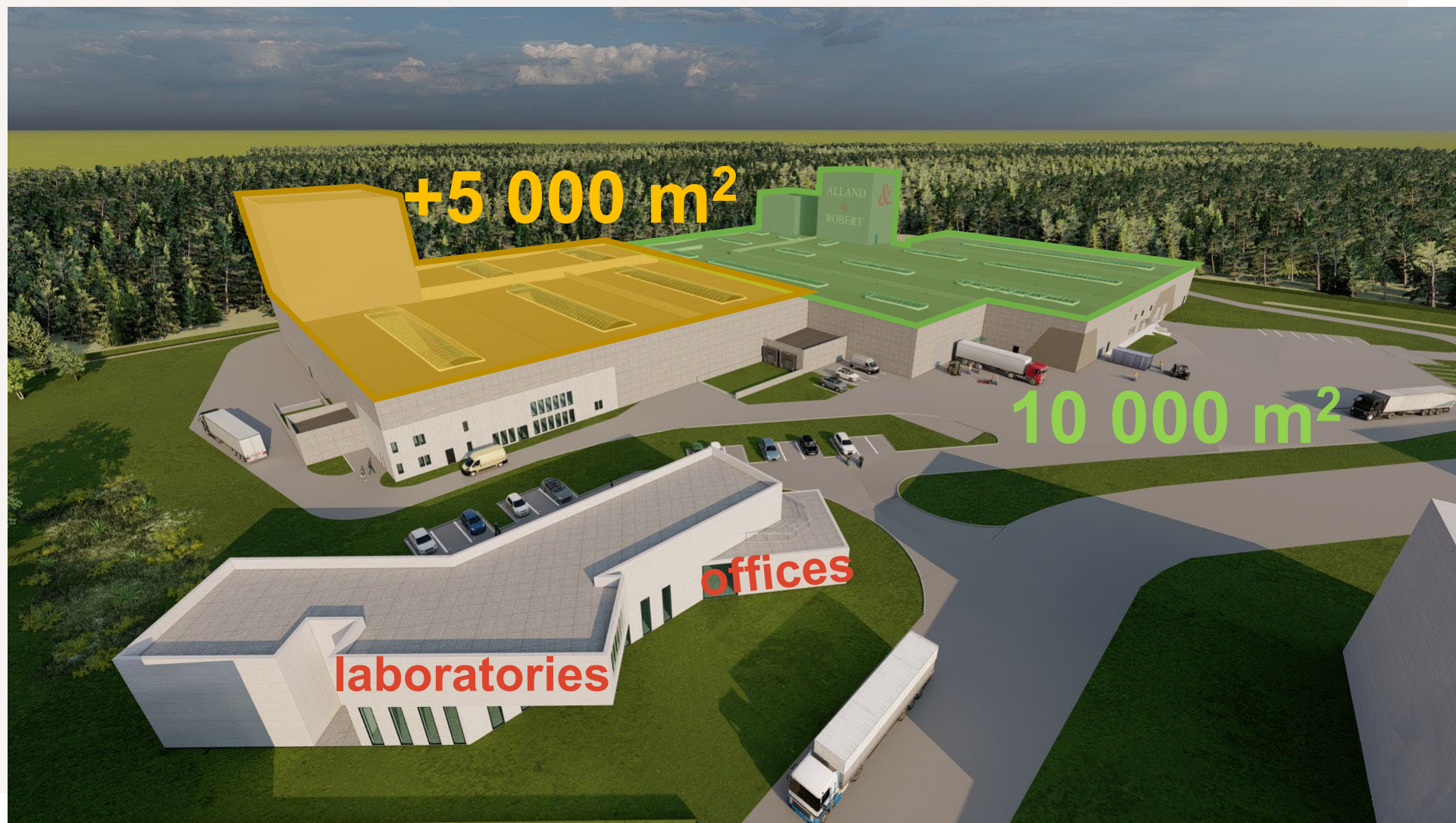
Since 1884

CORPORATE PRESENTATION

SAINT AUBIN



NEW

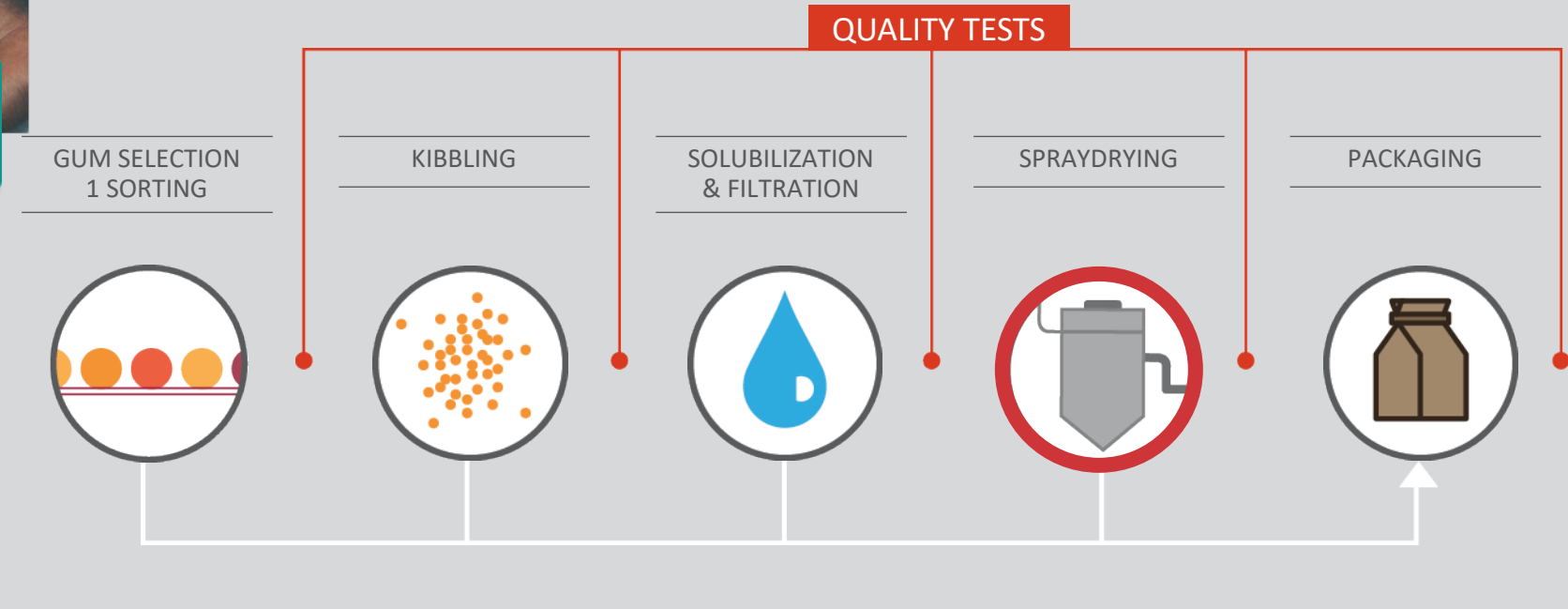


Capacity :
+ 50 % / year

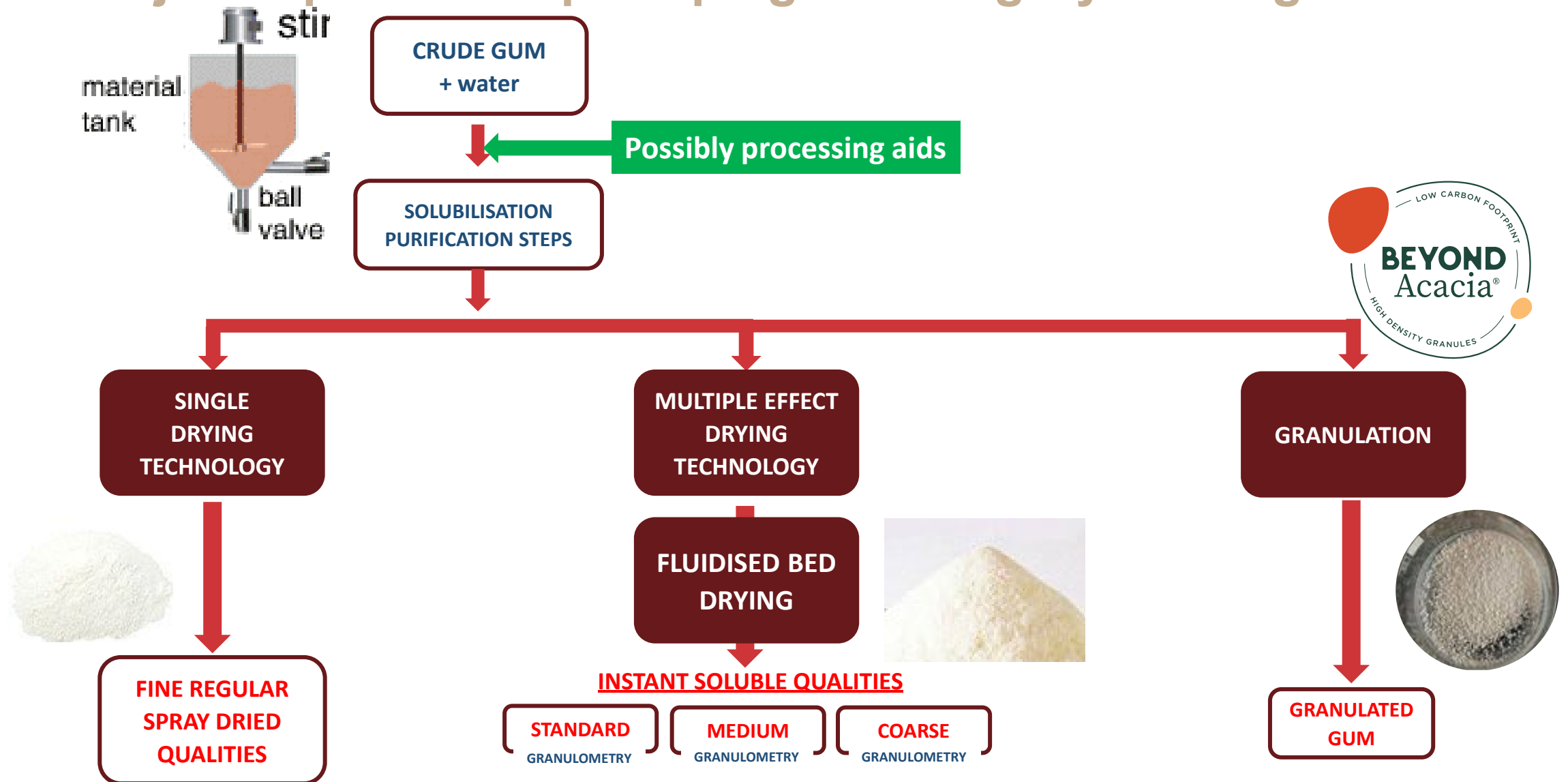
ACACIA GUM PROCESS

ACACIA SENEGAL

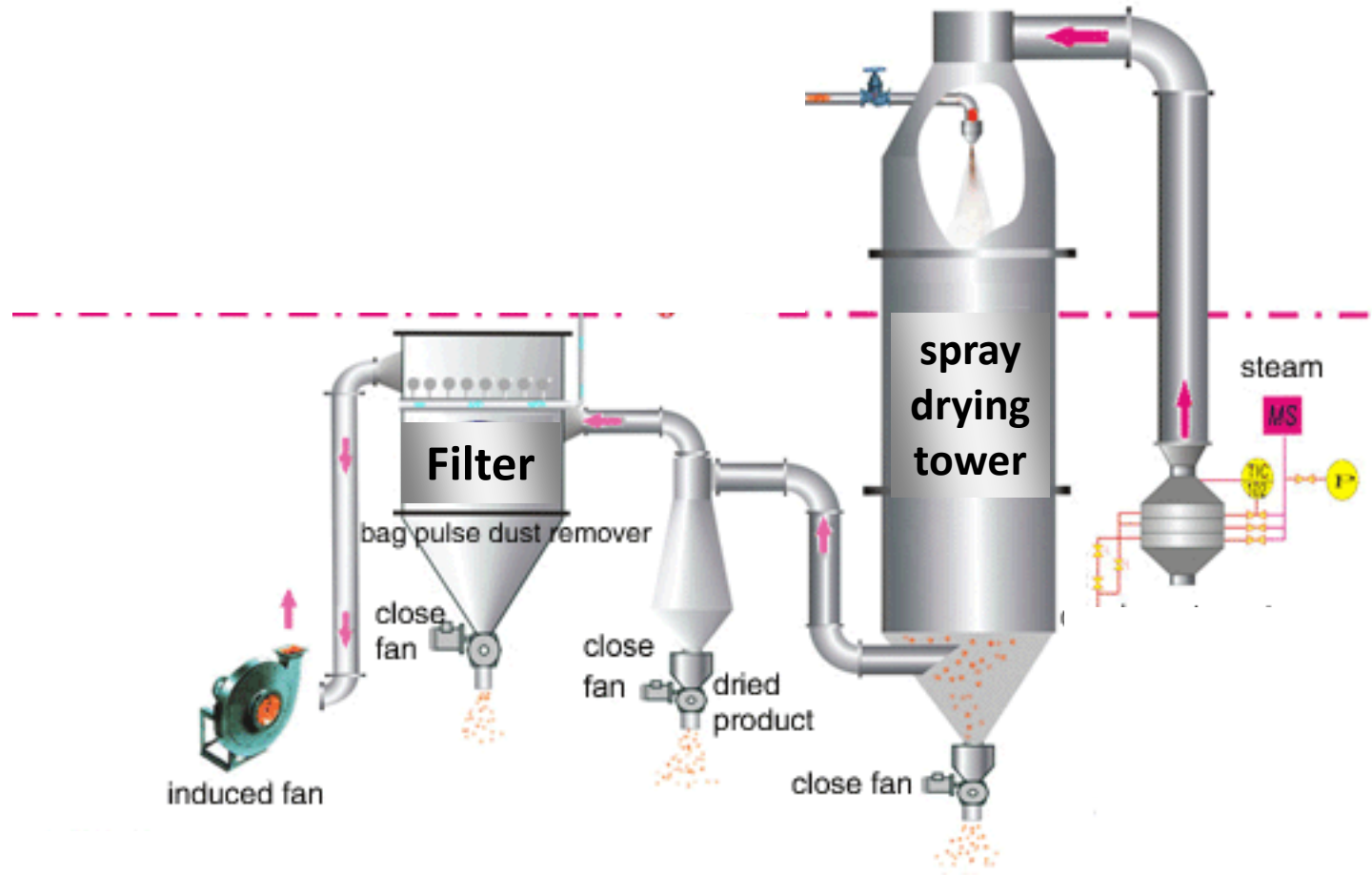
ACACIA SEYAL



Spray drying operation : no modification, just a perfect step keeping the integrity of the gum

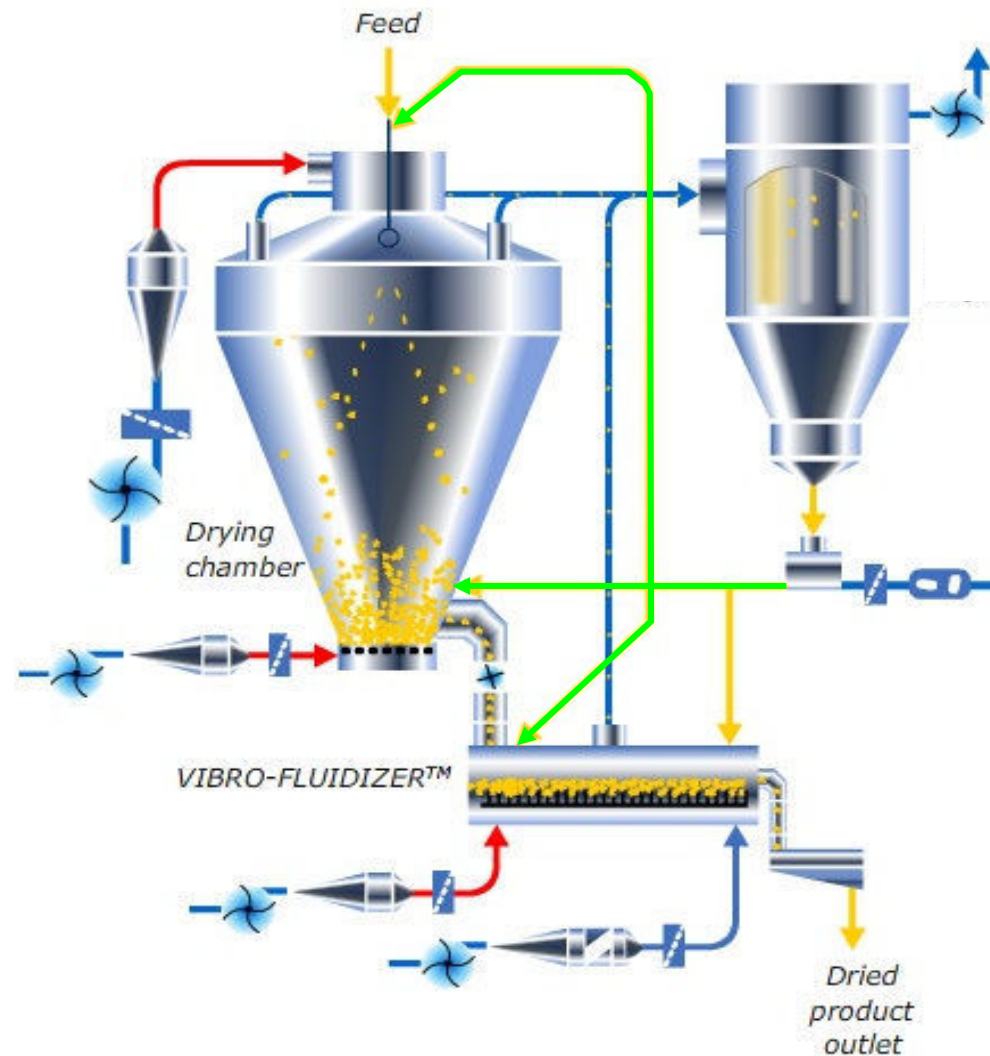


SPRAY DRYING TECHNOLOGY : towers n°1 and n°3



SIMPLE EFFECT DRYING TECHNOLOGY GENERAL OPERATING DIAGRAM

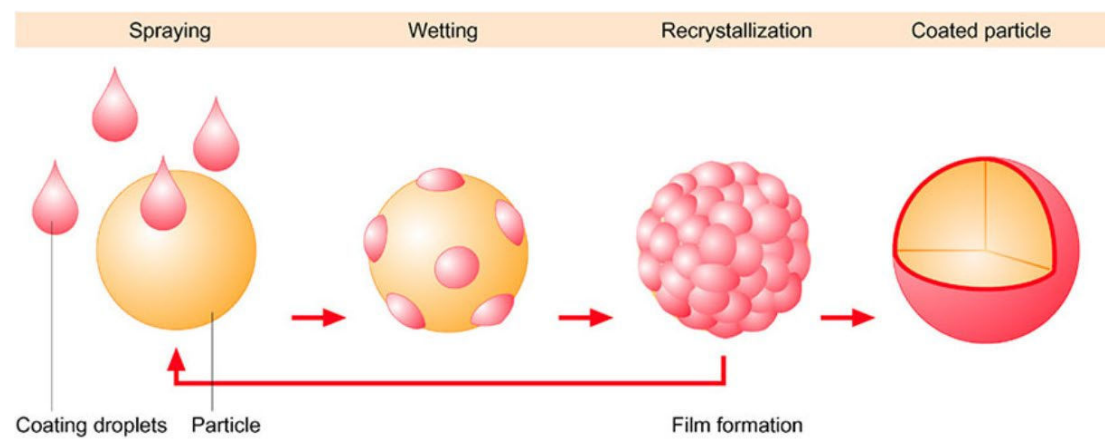
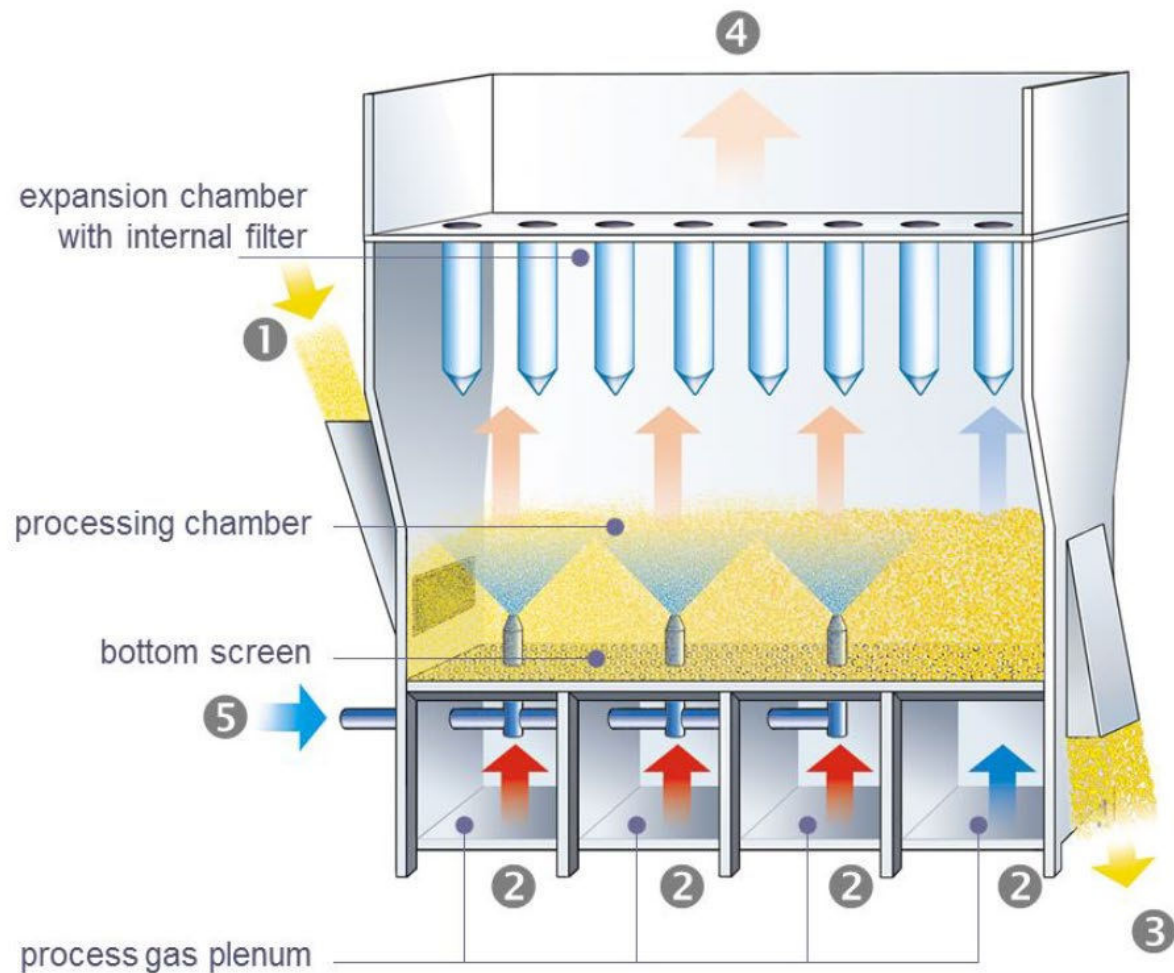
MULTIPLE EFFECT SPRAY DRYING TECHNOLOGY : tower n°2



MULTIPLE EFFECT DRYING TECHNOLOGY GENERAL OPERATING DIAGRAM

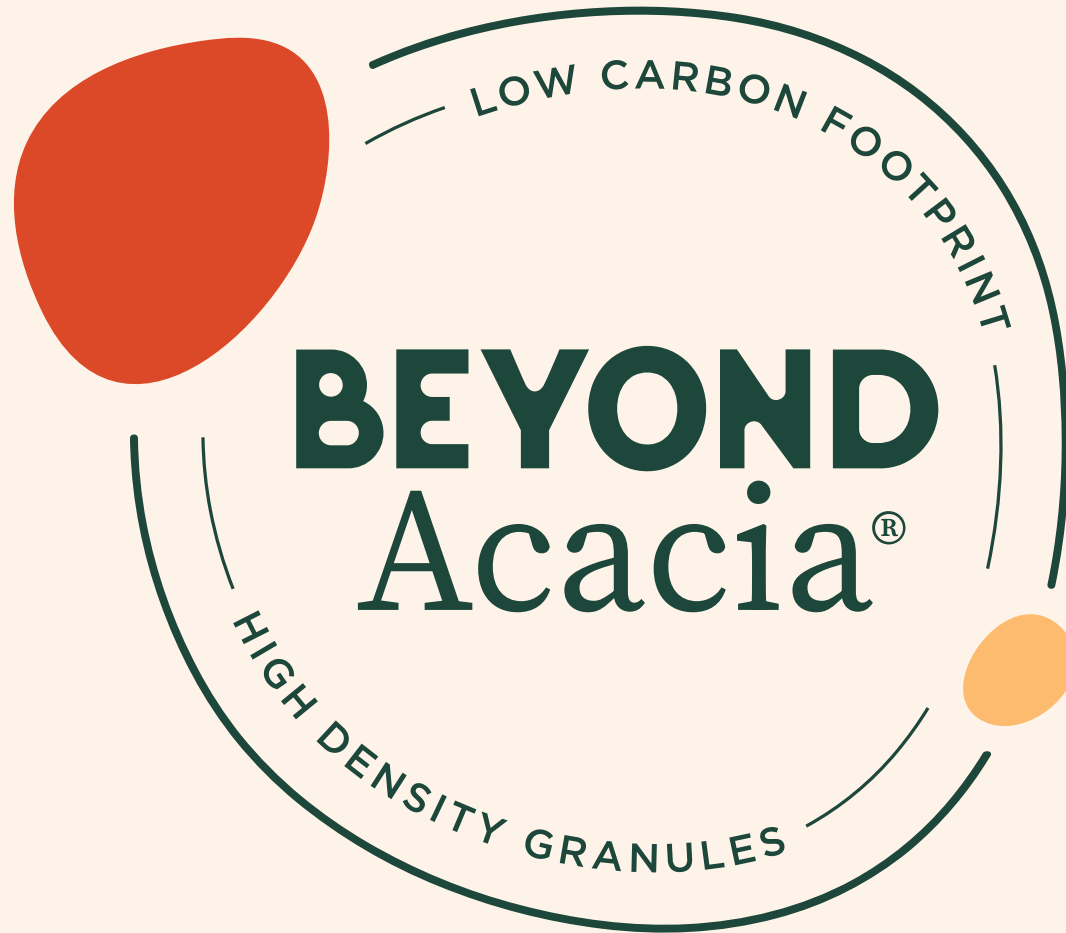


GRANULATION - SPRAY DRYING TECHNOLOGY : tower n°4



WET GRANULATION TECHNOLOGY GENERAL OPERATING DIAGRAM

ALLAND  ROBERT



Beyond Acacia®

The only range of acacia gum with **low carbon footprint** and **high dispersion ability**.



LOW CARBON

Environmental exemplarity with the lowest carbon footprint and a sustainable value chain.



HIGH DENSITY

Technological excellence with the highest density and dispersion ability.

By using Beyond Acacia®, you can positively affect the planet and the environment while using a highly technological and expert product.



Beyond Acacia®



OUR PRODUCTS MEET DEMANDING CRITERIA

Available as part of the Beyond Acacia® range :

- ✓ Acacia Fibre*
- ✓ Seyal grades
- ✓ Senegal grades



All products are packaged in 25 kg bags.

LABELLING:

- Acacia Gum / Gum Acacia
- Acacia Fibre
- Gum Arabic
- E414

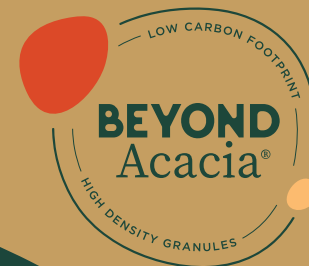
Local legislation should be checked for labelling options.

BEYOND ACACIA® PRODUCT CHARACTERISTICS

CREAMY WHITE POWDER AVAILABLE IN 25KG PAPER BAGS.
Other packaging available on request.



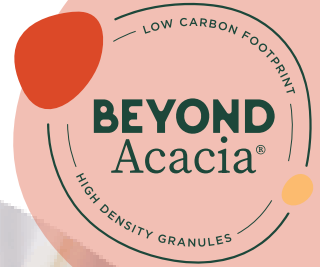
- ✓ GMO-free, allergen-free
- ✓ Halal and Kosher certified
- ✓ Vegan ingredient
- ✓ Shelf stable with a shelf life of 3 years



Technological excellence

An innovative process

for optimized acacia gum



HIGH DENSITY GRANULES



IMPROVED SOLUBILIZATION even
in cold manufacturing processes



EXCELLENT HYDRATION
Properties



HIGH DISPERSION
Ability



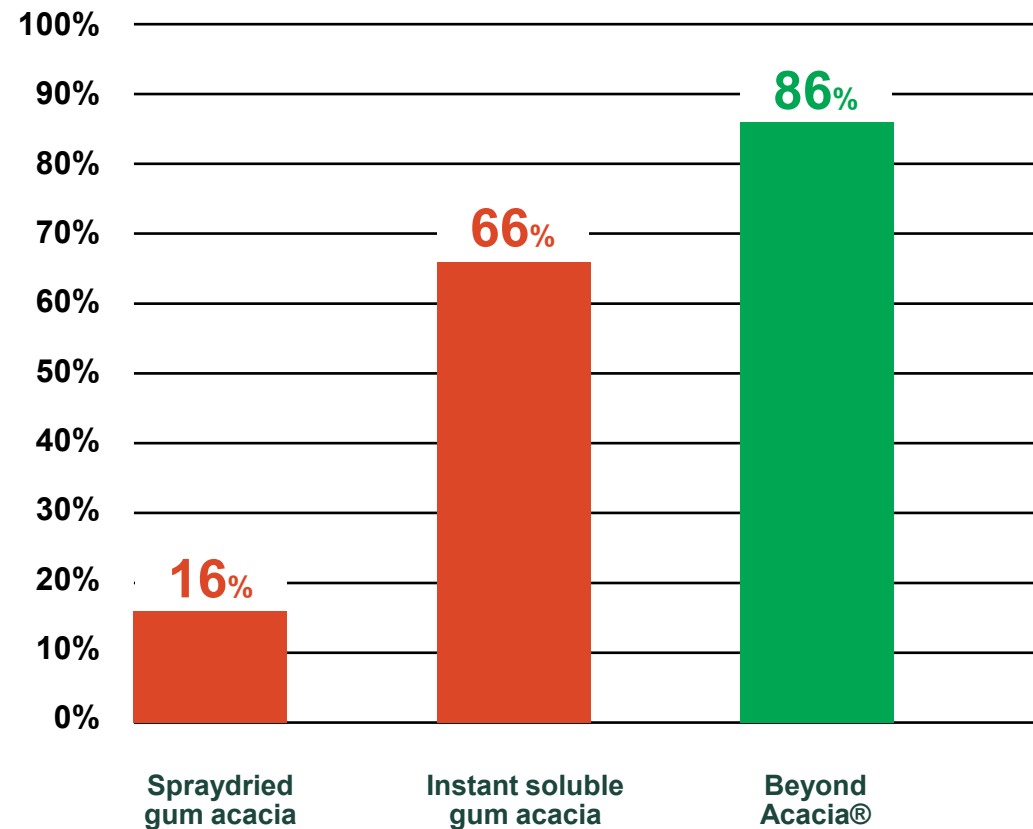
FOAMING REDUCTION
during process



LESS DUSTS during pouring,
excellent flowability & less lumps



Wettability of gum acacia in static conditions



Wettability is the measurement of liquids' ability of interaction with other fluids and/or solid surface. **Beyond Acacia® has a superior wettability**, compared to regular gum acacia.

All acacia gum functional properties are preserved: once dissolved the quality is identical to regular and instant qualities.



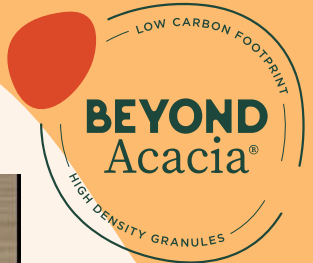
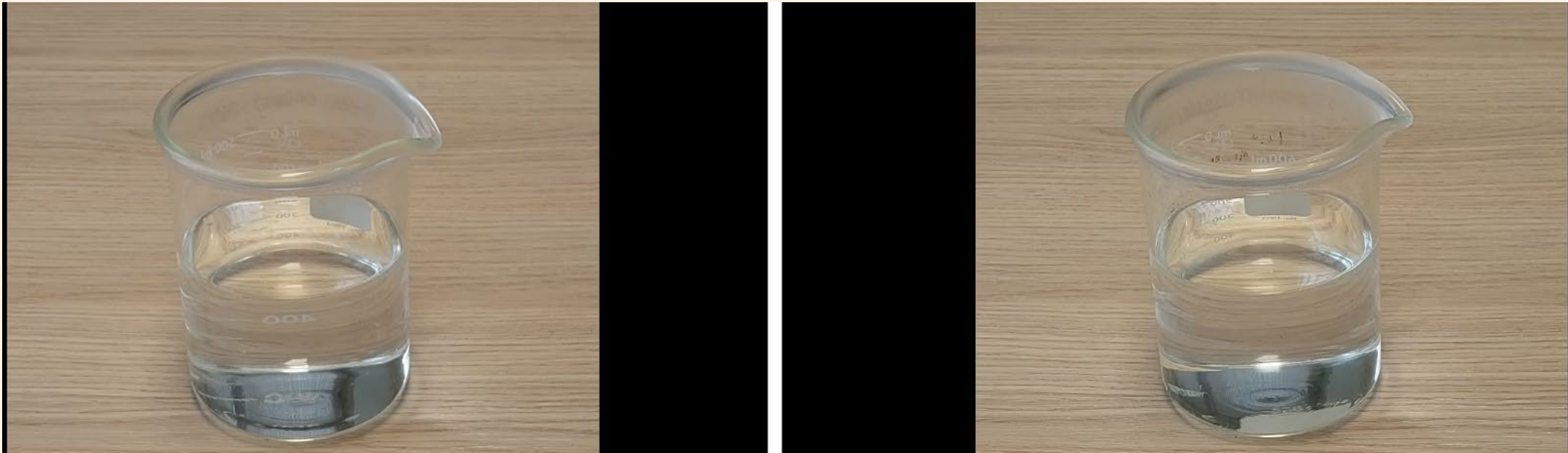


Advantages in use

Wettability of gum acacia
in static conditions

Granulated

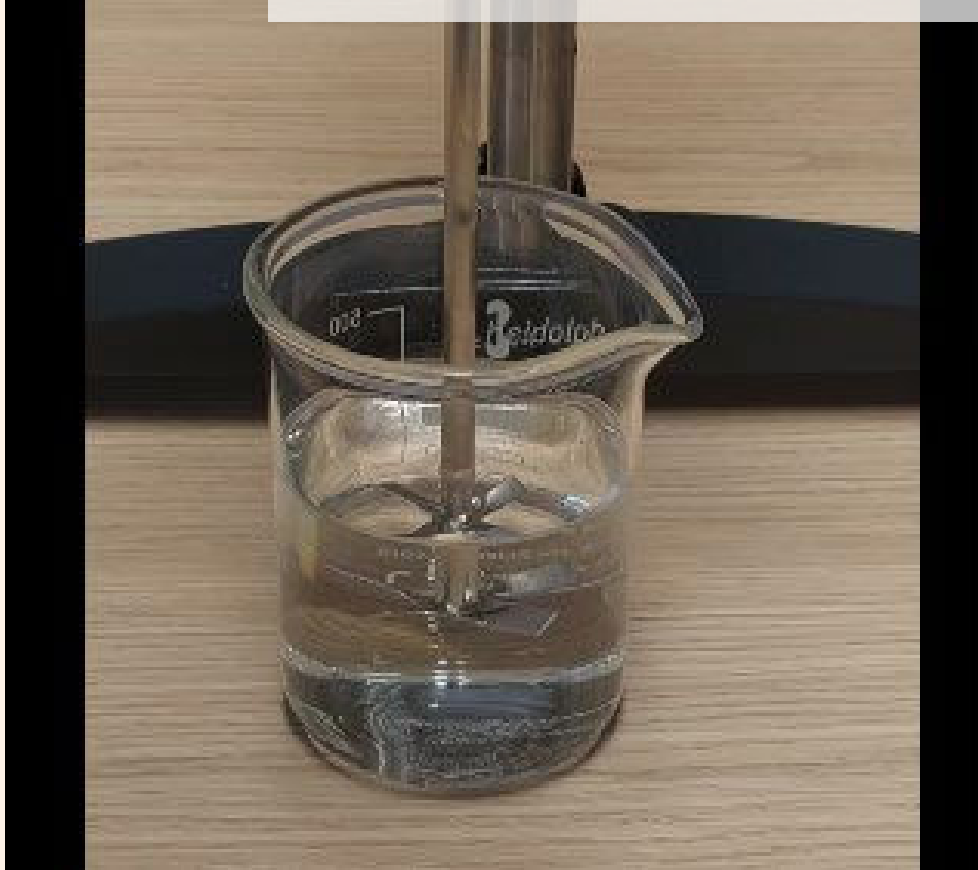
Standard Instant



Excellent HYDRATION properties

Advantages in use

Granulated

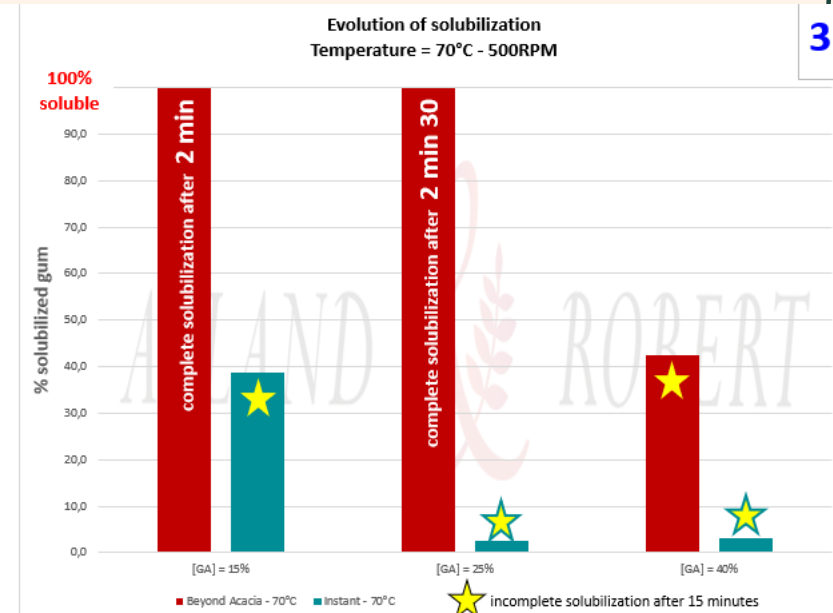
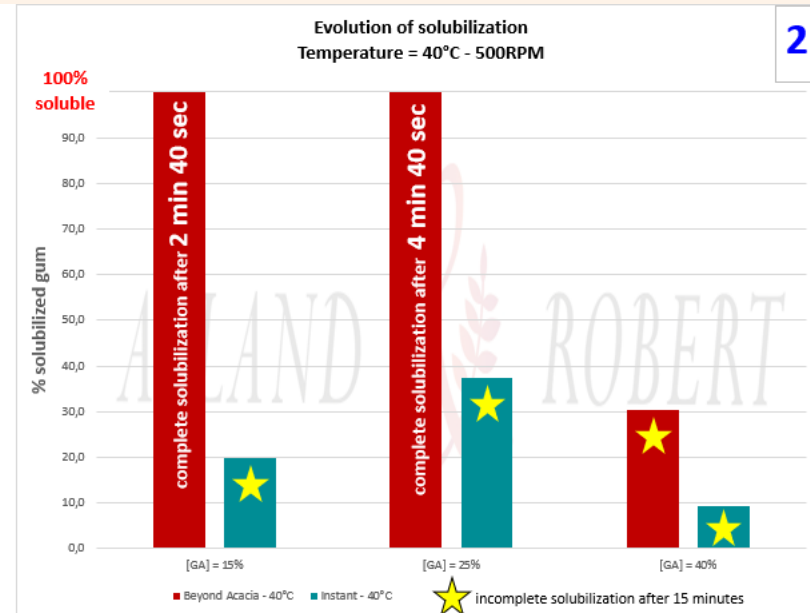
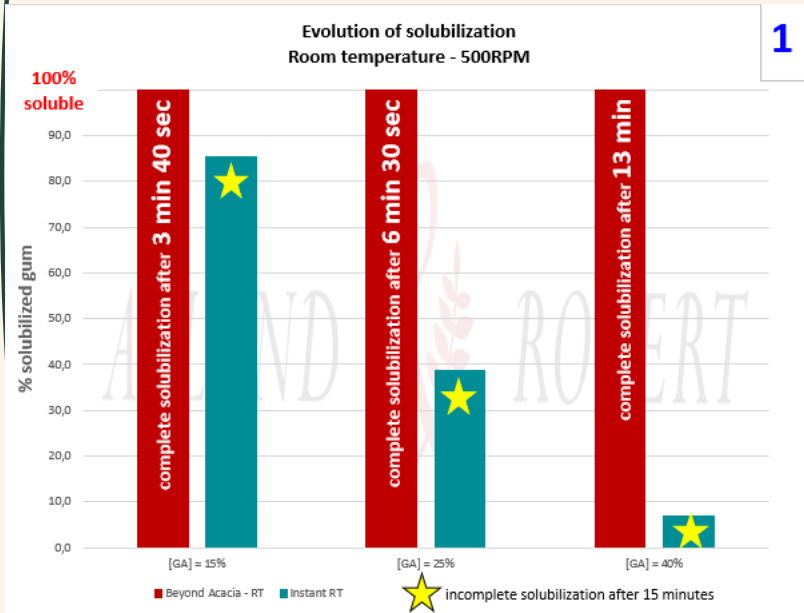


Standard Instant



**Excellent dispersion and flowability
Less lumps, low energy, less foam**

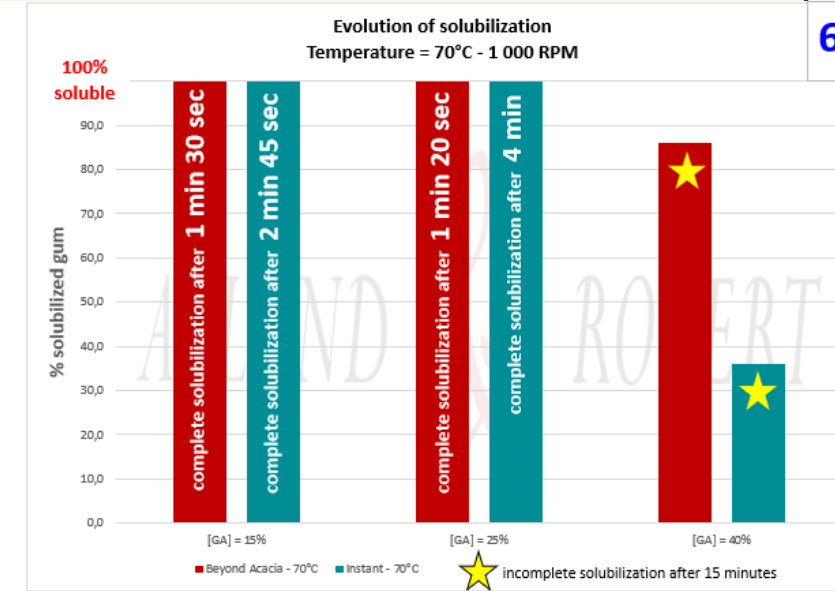
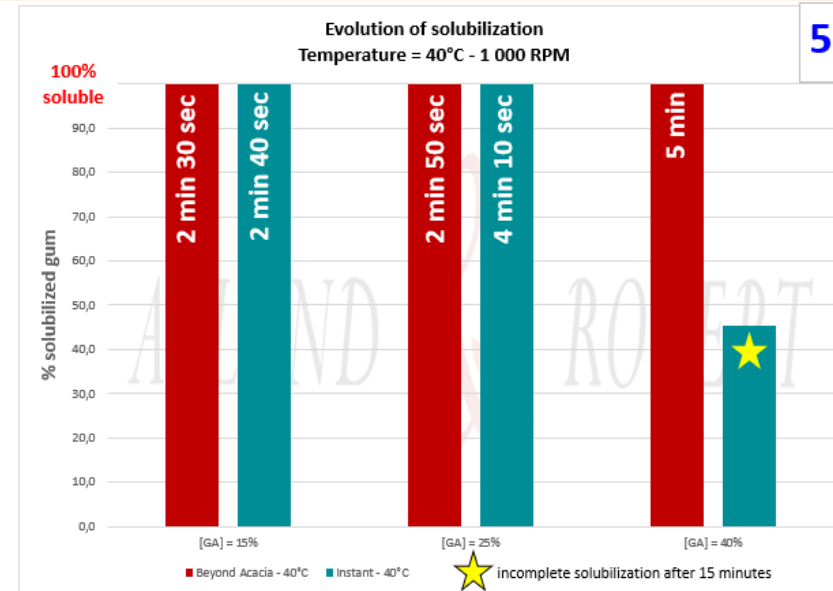
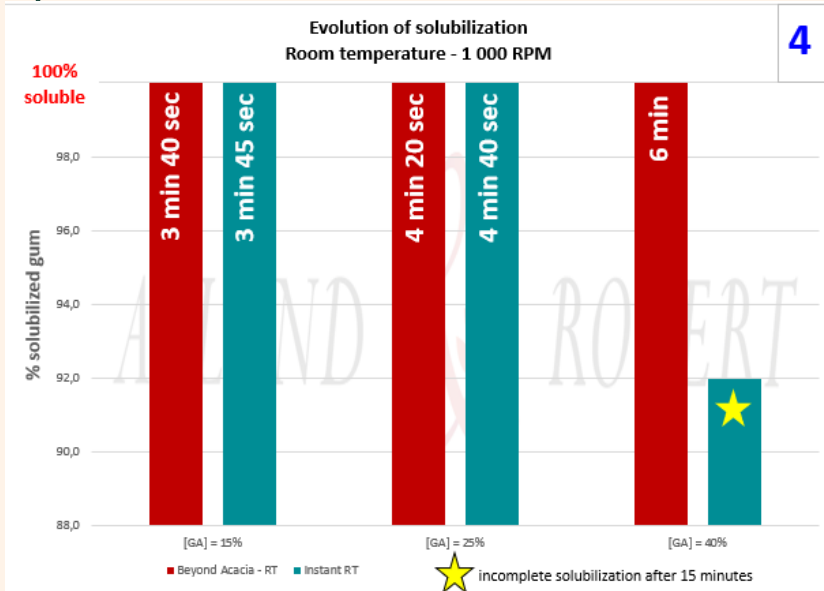
Advantages in use



Always solubilizes faster regardless of temperature or stirring speed

At concentrations below 30%, all Beyond 100% solubilized before 15 minutes under slow stirring when no instant is

Advantages in use

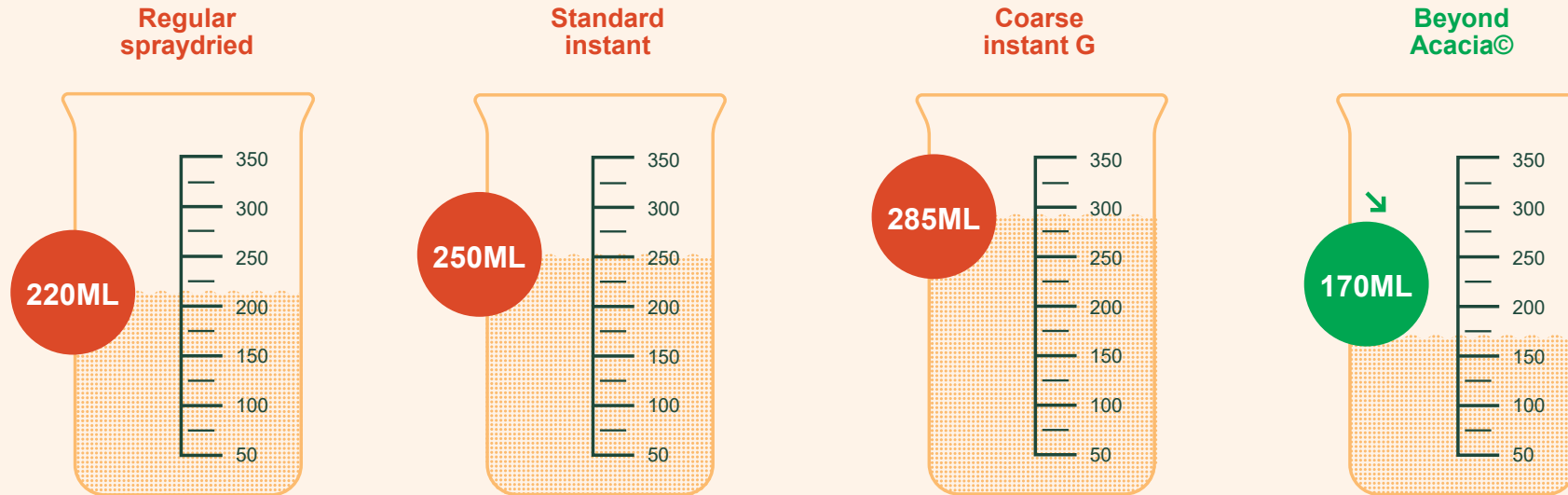


To achieve more than 35% gum solutions: favor a quite fast stirring (1000RPM) and a moderate warm temperature (40°C) = graph 5

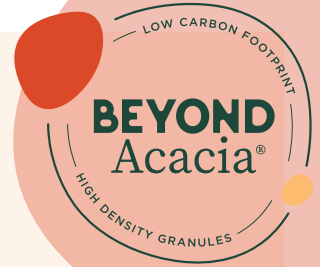
The application of high temperatures (approx. 70°C) penalizes the solubilization rate at high concentration (>30%) = graph 6

Volume of gum acacia

For a net weight of 100 grams



-23% VOLUME vs Spraydried / -32% VOLUME vs Instant



EXPLANATORY SHEET – with 2 examples

IMPACT OF PARTICLE SIZE ON COLOR OF POWDERS

**SEYAL
381**



inferior
to
100µ

100µ
to
200µ

200µ
to
400µ

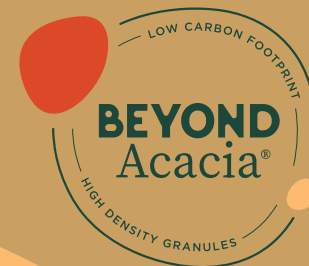
superior
to
400µ

- Same original powder with different granulometry after pulverization and sieving
- All aqueous solutions = 8°Lov

**SENEGAL
396**



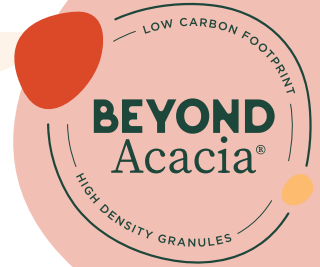
- Same original powder with different granulometry after pulverization and sieving
- All aqueous solutions = 5°Lov



Low carbon range

Beyond Acacia®

a comprehensive and genuine approach



Our commitment

The carbon footprint of Beyond Acacia® is decreased to a minimum, compared to standard acacia gum.

According to the scopes of the Green House Gaz Protocol, Beyond Acacia® provides :

-55% of direction
and indirect emissions (scopes 1+2*)

-12% of emissions
up and down our value chain (scope 3*)

**14
million €**
Invested
to **lower GHG**
emissions

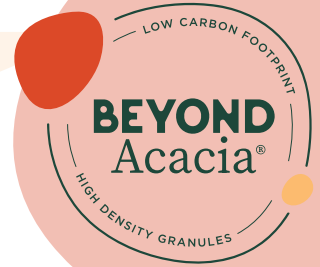


Committed to **energy
performance and freight
innovation**

** Scopes 1, 2 and 3 is a way of categorizing the different kinds of carbon emissions a company creates in its own operations, and in its wider value chain. Scope 2 includes direct and indirect emissions and scope 3 adds all emissions associated to a company up and down its value chain. Scope 3 represents a true evaluation of a product's environmental impact.*

Beyond Acacia®

A perfect process for customers as well



Successful encapsulation of vegetal oil already done on pilot scale

- With acacia senegal gum : **40% of oil load in the final powder**
- With acacia seyal gum : **35% of oil load in the final powder**



CUSTOM-DESIGNED SUPPORT FOR YOUR INNOVATION PROJECTS



From new ideas to product development, we provide wide-ranging expertise and technical proficiency in the food, dietary and cosmetics sectors.

ALLAND  *ROBERT*
• **Services**

TECHNICAL SUPPORT

ALLAND & ROBERT SERVICES: AN OUTSOURCING PROGRAMME FOR YOUR RESEARCH & DEVELOPMENT

Founded and operated by Alland & Robert, pioneers in natural plant gums and a leading international name in natural plant exudates.

We provide custom-designed support for your innovation projects, resolving issues using methods and tools specifically adapted to your needs.



INNOVATION



HUMAN



TECHNICAL



FOOD PRODUCTION AND DIETARY SECTOR

Let's work together to create the food of the future, through cooperative collaboration that will enable us to meet the expectations of your consumers.

- ✓ Conceptualisation and development to work for you
- ✓ Recipe optimisation
- ✓ Improvement of nutritional profiles or Nutri-scores
- ✓ Guidance in substituting animal products



COSMETICS SECTOR

The cosmetics sector is constantly reinventing itself with the goal of boosting sustainability and naturalness. In order to contend with these various market challenges, we put our experience and expertise in cosmetic ingredients to work for you.

- ✓ Formulation assistance
- ✓ Application of our 100 % natural plant-based hydrocolloids
- ✓ Guidance in substituting synthetic products



PUTTING OUR TECHNICAL EXPERTISE TO WORK FOR YOU

- **Establishing a design of experiments**
or analysis of primary components/formula optimisation
- **Cutting-edge equipment:**
high-pressure homogenizer, ultrasonic homogenizer, laser diffraction analyser, texture analyser, rheology software
- **Access to academic resources**
via university partnerships
(IATE – Montpellier, URCOM – Le Havre)
- **Establishing practical partnerships**
for production in technical centres based on your needs (AGIR, Praxens, GLATT, Extractis)
- **Design thinking:**
setting up workshops in your new applications laboratory – holding webinars with the innovation teams to encourage the emergence of creative ideas and deeper understanding of your needs (confectionery, beverages, dairy products, fibre supplements, etc.)



SUPPORTING YOUR COMMERCIAL AND MARKETING STRATEGY

- **Market studies and trends**
- **Targeted studies based on your client needs:**
compatibility, synergies, rheology, etc.
- **Access to R&D platforms around the world**
through our network of agents, providing tangible solutions adapted to new formulation projects
- **Marketing support**
to showcase the introduction of our gums into your products
- **Regulatory and health assistance**



UNIQUE EXPERTISE: EMULSIONS AND ENCAPSULATION

- **Formulation assistance**
regardless of the application
- **Laser diffraction analysis**
- **Production feasibility studies**
in our new drying facility: facilitating your industrial development and ensuring comprehensive, optimised integration of your formulae
- **Stability testing**

TECHNICAL SUPPORT – SUCCESS STORIES

Design of experiment / formulation support for sugar free soft drinks

Technical support / process development : expertise oil-in-water emulsions

Principal Component Analysis : texturation cosmetics

Analyses of starches by Size Exclusion Chromatography

Formulation : technical support for the reduction of Nutriscore in biscuits

Feasibility of MCT encapsulation by wet granulation (T4 technology)

A&R also needs you / pilot plants (bakery, processed meat, ice creams etc...)