

GUM ACACIA EMULSE MAX

High viscosity gum acacia for better emulsion stability



ALLAND & ROBERT

INTRODUCTION

Alland & Robert's Emulse Max is an innovative solution of gum acacia that strongly improves emulsion performance.

The emulsifier market in food and beverage formulation has evolved rapidly over the last few years, with an increasing demand for cleaner products and a market expectation for superior performance that matches synthetic emulsifying additives. **Gum acacia is already widely used in the food & beverage industry as an emulsifier**, and it has the advantages of being **100 % plant-based, sustainable and clean label**.

Alland & Robert's Emulse Max is the result of our R&D research and expertise, and an answer to formulators looking for exceptional performance. Thanks to raw material selection, Emulse Max delivers exceptional emulsion stability and improved oil-load capacity. It provides an expert solution for emulsions, and helps with the elimination of weighting agents.

EMULSE®, ALLAND & ROBERT'S RANGE OF GUM ACACIA FOR SUPERIOR EMULSION PERFORMANCE

At Alland & Robert, our expertise is rooted in the flavor and beverage industry, where our research and innovation support our customers. Our range EMULSE is dedicated to helping them improve their emulsion performance.

In emulsions, gum acacia reduces the surface tension between the dispersed and continuous phases. **It helps stabilise dispersed droplets** with an electrostatic or steric effect. In addition to its emulsifying properties, gum acacia combines multiple benefits in food & beverages formulations, from improved **gut health to better textures, to enhanced product quality and shelf life**.

EMULSE MAX - NEW!

This high performance grade of high-viscosity gum acacia improves emulsion stability and increases oil-loading capacity.

Emulse Max is 100 % gum acacia, available in various qualities: spray-dried and instant soluble grades.

EMULSE MAX

- ✔ Available organic
- ✔ GMO-free, allergen-free, FODMAP-friendly
- ✔ Halal and Kosher certified
- ✔ Suitable for vegetarian, vegan, keto, gluten-free formulations
- ✔ Shelf stable with a shelf life of 3 years

Our products are available in 25 kg paper bags.
Other packaging available on request.

LABELLING*:
- ✔ Acacia Gum / Gum Acacia
- ✔ Gum Arabic
- ✔ E414



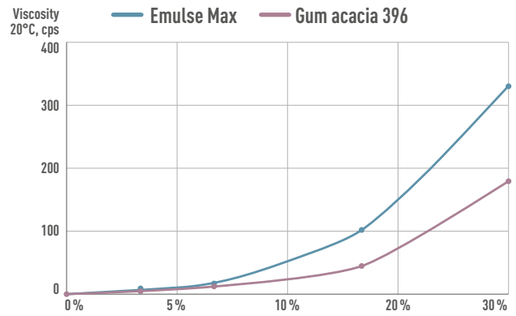
Alland & Robert products do not contain or come from genetically modified organisms, as defined in EU regulations N°1829/2003 and N°1830/2003 on labelling and traceability of GMO's (genetically modified organisms) and products/ingredients derived thereof.

*Please check local legislation for labelling options.

The higher the viscosity, the better stability for an emulsion

- ✔ Raw material selection and technical expertise are Alland & Robert's specialty, allowing the creation of Emulse Max, designed for superior emulsion performance. It offers higher viscosity, enhanced stability at 8 weeks, increased oil encapsulation capacity, as well as minimized or eliminated reliance on weighting agents. A higher viscosity was achieved thanks to the introduction of a raw material with a high AGP content which according to Stokes' Law, increases emulsion stability compared to usual acacia standards.
- ✔ The results of our research presented in this document were compared to to our standard senegal grade: Gum Acacia 396.

Comparative Viscosity Analysis



HIGHLY STABLE EMULSIONS DIRECTLY IMPROVE CUSTOMER SATISFACTION AND REDUCE PRODUCT LOSS

In beverages, emulsions are used in juices, sodas and flavored waters. They rely on gum acacia to keep the flavor oil droplets suspended in a low-viscosity aqueous phase. That is why emulsion stability is critical. **Ringing** is a classic defect in beverages: unstable emulsions cause oil droplets to migrate to the surface or bottleneck of the bottle, forming a visible ring. It is one of the most visible, consumer-facing signs of instability, and a source of customer dissatisfaction. In supermarkets, **retail loss can be caused by** visibly separated or «ringed» products, that get pulled or returned.

Beverage appearance matters to customers because it shapes expectations even before the first sip, and it signals quality, freshness and flavor. Consistency builds brand trust: customers expect the same look every time they buy a product. A visible change from one batch to the next can lead to complaints or lost repeat purchases.

Additionnaly, **shelf life** in beverages can often be limited by phase separation, long before microbial or chemical spoilage becomes the issue. Emulsion stability is one of the primary levers for shelf life extension.

A highly stable emulsion with Emulse Max directly eliminates these risks, reduces loss and drives higher customer satisfaction!

Emulse Max, closing the performance gap

In the food & beverage industry, synthetic emulsifiers are often chosen because they're highly efficient at very low use levels, work across a wide pH/temperature range, and are cheap. The market isn't just asking for natural, it also requires that **natural ingredients** match synthetic performance on **emulsion and stability, at a similar or lower cost-in-use.**

As a natural alternative, Emulse Max can now provide that performance as a clean-label functional ingredient. Technically optimized natural gum acacia is the value proposition ingredient formulators need to win reformulation projects.



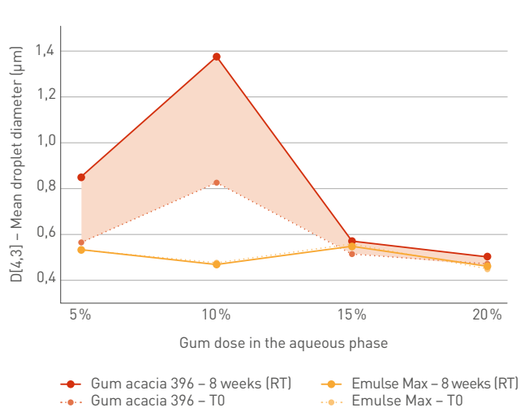
2 to 3 less acacia gum
is necessary **to stabilize** an 15 % oil emulsion

25 % oil loading without destabilization
over an **8 weeks period** according to our research

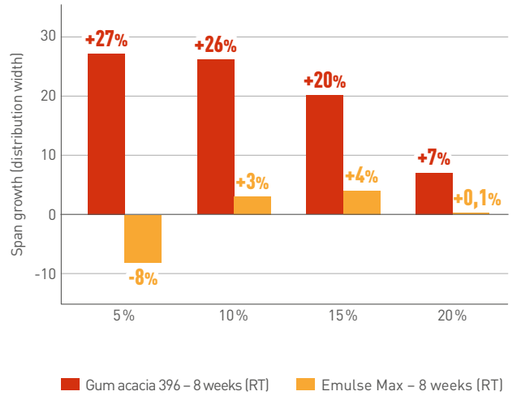
50 % to 130 % higher viscosity
at the same gum acacia dosage, indicating a **superior film-forming barrier** around the oil droplet

Stabilization with reduced gum dosage

PROTOCOL
15 % oil emulsions (Estergum/orange oil 50/50), gum dosage varying from 5 % to 20 %, storage at 4°C / RT / 40°C, laser particle size monitoring over 8 weeks.



D[4,3] – Mean droplet diameter. At 5–10% gum concentration, Gum acacia 396 exhibits an almost twofold increase in droplet size over 8 weeks, whereas Gum Acacia Emulse Max remains stable.



Span growth (distribution width) over 8 weeks. Gum Acacia Emulse Max shows little or no broadening of the distribution, regardless of dose.

Direct customer benefit

Emulse Max stabilizes emulsions at low gum acacia dosage such as 5 to 10 %, compared to a standard 20 %, while maintaining 8-week stability.

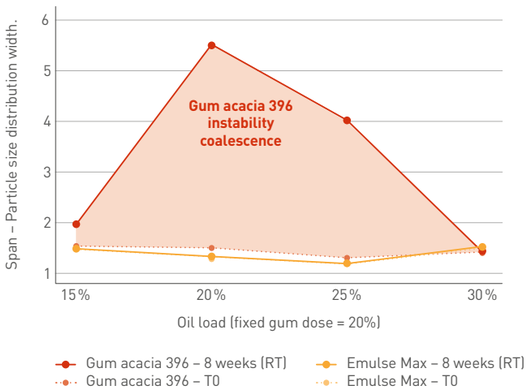
Comparison with Alland & Robert's standard senegal grade: gum acacia 396

Emulse Max is not a direct, across-the-board replacement for Alland & Robert gum acacia 396. At a standard dosage of 20 % gum acacia, both 396 and Emulse Max qualities perform almost identically. But **at levels below 15 %,** especially at 5 to 10 %, the difference becomes critical: the droplet size of the 396 nearly doubles over 8 weeks at room temperature, manifesting as creaming, phase separation, or unstable turbidity. In contrast, **Emulse Max remains unchanged throughout the period, maintaining emulsion stability.**

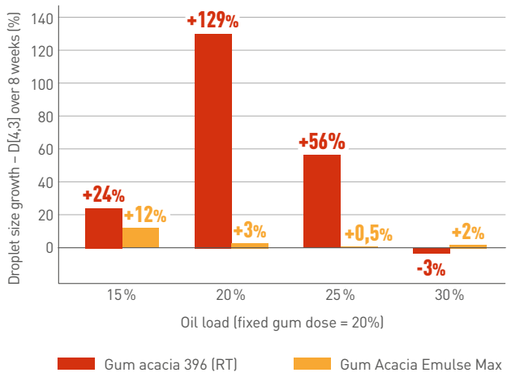


Increased oil loading without destabilization

PROTOCOL
Emulsions with a fixed gum dosage (20 %) and variable oil loading (15–30 %), with identical storage and monitoring conditions over 8 weeks.



Span – The span of Gum acacia 396 quadruples between 20 % and 25 % oil, whereas Emulse Max remains within a narrow band across the entire range studied.



D[4,3] growth over 8 weeks at a fixed gum concentration (20 %). Peak instability of Gum acacia 396 at 20 % oil (+129 %).

Formulators can increase the oil load to concentrate their product further without compromising long-term stability. That is where Emulse Max brings value and raises the bar to help the industry achieve reformulation goals.



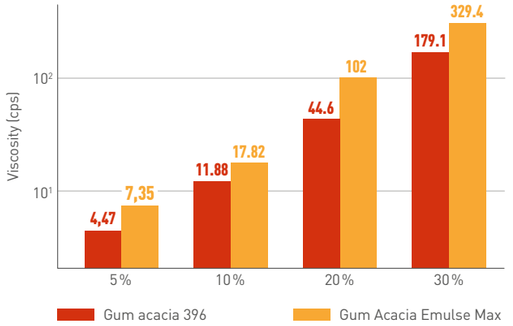
Direct customer benefit

At oil loads of 20 % and 25 %, Emulse Max remains stable, showing variations of only a few percent. It enables an oil loading range of 20–25%, allowing for more concentrated emulsions.
The result in a finished product? It is more cost-effective to transport and store, or requires a lower dosage. This also means a reduced reliance on weighting agents such as ester gum or sucrose acetate isobutyrate to balance density at high oil loads.

Comparison with Alland & Robert's standard senegal grade: gum acacia 396

Conditions of oil loads of 20 to 25 % represent a territory where standard senegal gum is unstable: gum acacia 396 experiences a massive spike in particle size distribution (span increasing up to fivefold) under these conditions.

A superior viscometric signature



Conc.	Gum acacia 396	Emulse Max	Gain
5%	4,47 cP	7,35 cP	**+64 %**
10 %	11,88 cP	17,82 cP	**+50 %**
20 %	44,6 cP	102 cP	**+129 %**
30 %	179,1 cP	329,4 cP	**+84 %**

Brookfield DV2T, SC4-18, 20°C measurements in pure aqueous solution. At equal concentration, Emulse Max is 1.5 to 2.3 times more viscous than gum acacia 396.

In an emulsion (a mixture of two immiscible liquids, like oil and water), the dispersed phase (e.g., oil droplets) tends to separate due to gravity or buoyancy. The stability of the emulsion depends on how slowly these droplets move and coalesce. When a droplet moves through the continuous phase, it eventually reaches a **terminal velocity** where the drag force balances the gravitational force. According to Stokes' Law, **higher viscosity is inversely proportional to lower terminal velocity. Slow movement** of droplets reduces the chance of collisions and coalescence, which are the main causes of emulsion breakdown. Increasing the viscosity of the continuous phase **reduces the terminal velocity** of the dispersed droplets. This slows down the processes of creaming and sedimentation, leading to **greater emulsion stability.** This is why many emulsions use gum acacia to increase the viscosity of the continuous phase and improve stability.Therefore, the higher the viscosity, the higher the emulsion stability!

Direct customer benefit

This higher viscosity is the mechanistic reason for the stability at low dosage and the performance at high oil loads. Emulse Max provides the better ingredient value to formulators looking to enhance their emulsion stability and increase active loads such as more oil/flavor per unit of product.

Comparison with Alland & Robert's standard senegal grade: gum acacia 396

At the same concentration, Emulse Max is consistently 1.5 to 2.3 times more viscous than standard senegal gum acacia. This is the direct signature of the enrichment with the AGP fraction: larger macromolecules that are more active at the water/oil interface, forming an interfacial film that is thicker and more resistant to coalescence.



CONCLUSION

Stabilization at lower gum concentration

Alland & Robert's Emulse Max enables the production of stable emulsions at low gum concentrations (for an oil content of 15%). It outperforms a standard 396 at low gum concentrations.

Increase in oil load

Emulse Max stabilizes emulsions with high oil content (up to 25%). The stability over 8 weeks is more effective compared to a standard emulsifier.



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Ask us anything at: info@allandetrobert.fr
Discover more about us: **WWW.ALLANDETROBERT.COM**

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