

Cake gel emulsifiers

For stability and structure



Palsgaard®



Just the right blend of emulsifiers and know-how

Cake gel manufacturers strive to achieve an emulsifier gel blend that will ensure a uniform distribution of right-sized, stabilised air bubbles or 'holes' throughout the cake. That's because this is exactly the type of cake gel that will continue to work its magic at every stage of the production process, and whose well-structured softening effects will last for months.

Blend in when you want to stand out

Achieving the right gel, however, isn't so simple. The quality of water and other ingredients, as well as process parameters, is a constant challenge for many cake gel producers.

Palsgaard's emulsifiers for cake gels tackle such problems, helping to achieve the right results and secure a consistent baking result. By using our RSPO SG certifies and carbon neutrally produced emulsifiers you'll achieve:

- Fast and easy dispersion
- Long term stability of the cake gel
- High performing cake gels

Palsgaard has developed a portfolio of emulsifiers that can improve and extend the quality of both cake gels and the final cake:

- **Palsgaard® DMG** (E471)
- **Palsgaard® PGE** (E475)
- **Palsgaard® PGMS** (E477)
- **Palsgaard® Gel** (E422, E470a)

More appealing cakes start here

Cake manufacturers are keen to develop high-quality cakes with increased volume, softness and finer crumb structure. And they want these qualities to remain with the product for as long as possible until they reach consumer tables.

Choosing the right emulsifier for your recipe will result in more appealing cakes that can meet your customers' expectations and requirements – and your business priorities, too.



Emulsifiers at work

Distilled monoglycerides – **Palsgaard® DMG** – create α -gels with excellent whippability in cake batters. The emulsifier interacts with the starch in the batter during the whipping and baking process, delaying staling and extending the cake's shelf-life.

Unfortunately, α -gels are notoriously short-lived and subsequently change to the non-whipping active-formation. Luckily, this process can be delayed by adding emulsifiers such as polyglycerol esters – **Palsgaard® PGE** – or propylene glycol esters – **Palsgaard® PGMS**. These improve α -crystal stability, prolong cake gel shelf-life and influence the softness and crumb structure of the final cake.

Adding **Palsgaard® Gel** is important for the gelling point of the gel during production and the stability of the final cake gel.

Palsgaard's cake gel emulsifiers are available in liquid, powder, paste or pellet form.



Rise to the challenge and lift your cake gel performance

Stepping up to the α -challenge

The most difficult task for cake gel producers is to create a system that keeps emulsifiers in α -formed crystals as long as possible. This is the most active form to incorporate air and provide good structure to the batter throughout the cake production process.

The emulsifier advantage

Used with both continuous and batch production lines, α -stable cake gels can incorporate large volumes of water and other liquids, creating a stable batter. During cake production, this batter is aerated to form a foam, building a network of α -formed crystals around fat globules and proteins. This network acts to improve aeration of the batter and the volume of both sponge and batter cakes.

At the same time, a much finer crumb structure and smoother cake surface can be created, improving the consumer's eating experience.

Key emulsifier features

- Tailor-made emulsifiers for cake gels
- Multiple physical forms available – liquid, paste, powder or pellets
- Non-palm alternatives available
- Non-GMO
- Kosher / Halal certified
- Available as RSPO SG certified
- Produced in CO₂-neutral factories

Key application benefits

- Improved alpha-structure and stability
- Fast and easy solubility
- High performing cake gels
- Improved aeration of the cake batter
- Higher cake volume
- Uniform, fine crumb structure and smooth cake surface
- Soft and moist cakes

How to get it right

Your challenges – our solutions

Having worked with cake gel manufacturers and the bakery industry for decades, Palsgaard has built up vast experience with the interaction between ingredients and process.

Thanks to our application centres around the world, we have deep insights into regional market conditions and product needs and have what it takes to help you deliver safe and market-relevant innovations, shorten market response times and attain higher project success rates.

Treading a narrow path

The recipe and production method needs to be balanced in order to produce the desired and whipping-active α -gel from monoglycerides and water. If not in control, a non-whipping-active and undesirable β -crystal formation takes place. Alternatively, an equally undesirable and unstable dispersion of emulsifier in water is created.

Getting the hardness right

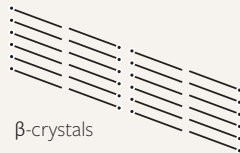
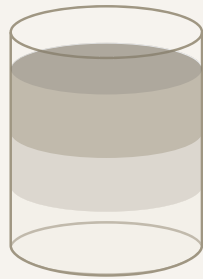
The hardness of water greatly influences the gelling point of cake gels, as soft water will result in a higher gelling point than hard water. A lower temperature allows the cake gel to be cooled down before filling, thereby minimising condensation and ensuring faster setting.

Gelling temperature dependence on water hardness

Added g CaCl L/water demineralised	Hardness of water (calculated)	Gel point in °C
0.60	30	66
0.56	28	66
0.52	26	66
0.44	22	72
0.40	20	> 80
0.30	15	> 80
0.20	10	> 80
0	0	> 80



Unstable suspension



β -crystals

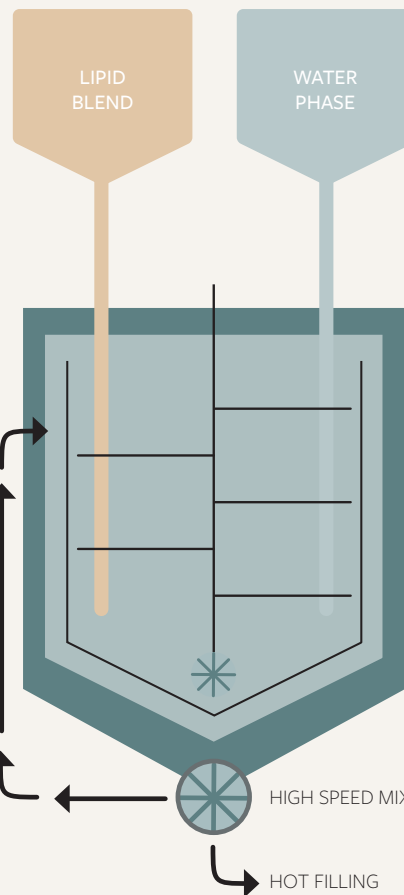
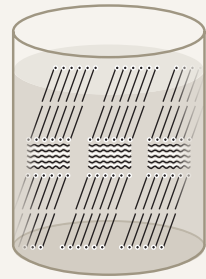


Gel formation after water added



α -crystals

Stable gel



Temperature:

– above the gelling point to create the suspension and ensure α -crystal formation

Agitation:

– to provide a proper interaction and a close network between the ingredients


Water phase:

– Palsgaard® Gel

Ensuring perfect cake gel production

The critical point in creating a cake gel is the moment when the water phase (which includes the potassium stearate) and the lipid phase (which includes the emulsifiers) meet in the mix in order to create the gel itself.

- The water phase is heated to 95°C and is then ready to be mixed into the lipid phase that has entered the mixing tank. The water phase is added below the surface of the lipid phase to avoid incorporation of air.
- As water is added, stirring speed is increased, still without incorporation of air. The water and fat phase is mixed by means of high-speed mixers.
- When the dispersion is well mixed, the high-speed mixers are switched off and the stirring set to low speed to allow entrapped air to escape to the surface and clear up the gel.
- The gel temperature can be reduced in order to minimise condensation in packaging. The temperature will, however, still have to be above the gelling point to ensure stability.
- Once the gel is clear, the product is ready for packing.



Bringing good things together for over a century

The modern food emulsifier was invented by the founder of Palsgaard, Einar Viggo Schou, in 1917. Since then, we have never stopped developing and improving our products, and it is part of our DNA to keep developing yours. Bringing together your unique challenges and our drive for perfection is the recipe for a successful collaboration, and for great products that consumers love.

We also bring together the know-how of a century with a deep sense of responsibility for future generations. That's why all our production sites are CO₂-neutral and why we go to great lengths to live up to the relevant UN Sustainable Development Goals.

Learn more about our heritage and values at

palsgaard.com

