

Palsgaard®

INDIAN ICE CREAM EXPO 2024: WORKSHOP

Palsgaard emulsifiers & stabilizers for ice cream applications & functionality

BY:

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Over 100 years of emulsifiers + stabilizers



WE INVENTED THE EMULSIFIER

- Palsgaard developed the first commercially available food emulsifier in 1917



INNOVATION EXCELLENCE

- We stay at the forefront of emulsifier/stabiliser innovation, also beyond food



CREATING CUSTOMER VALUE

- We share our expertise with customers, helping you to solve technical challenges and implement our products in their recipes



ESG A STRATEGIC PRIORITY

We report on CO2-emissions in our entire value chain (including scope 3 for DK, starting 2023), and we are continuously working to reduce emissions.

Palsgaard in numbers



300 MILLION
EUR turnover in 2023
(2.3 billion DKK)



690+ EMPLOYEES
in 17 countries, 376
work at our global
headquarters in
Denmark



300+ EMPLOYEES
have received a medal
for 25 years of service



7 APPLICATION CENTRES
in 7 countries:

- Denmark
- Mexico
- Singapore
- Brazil
- China
- Turkey
- **India- Navi Mumbai**



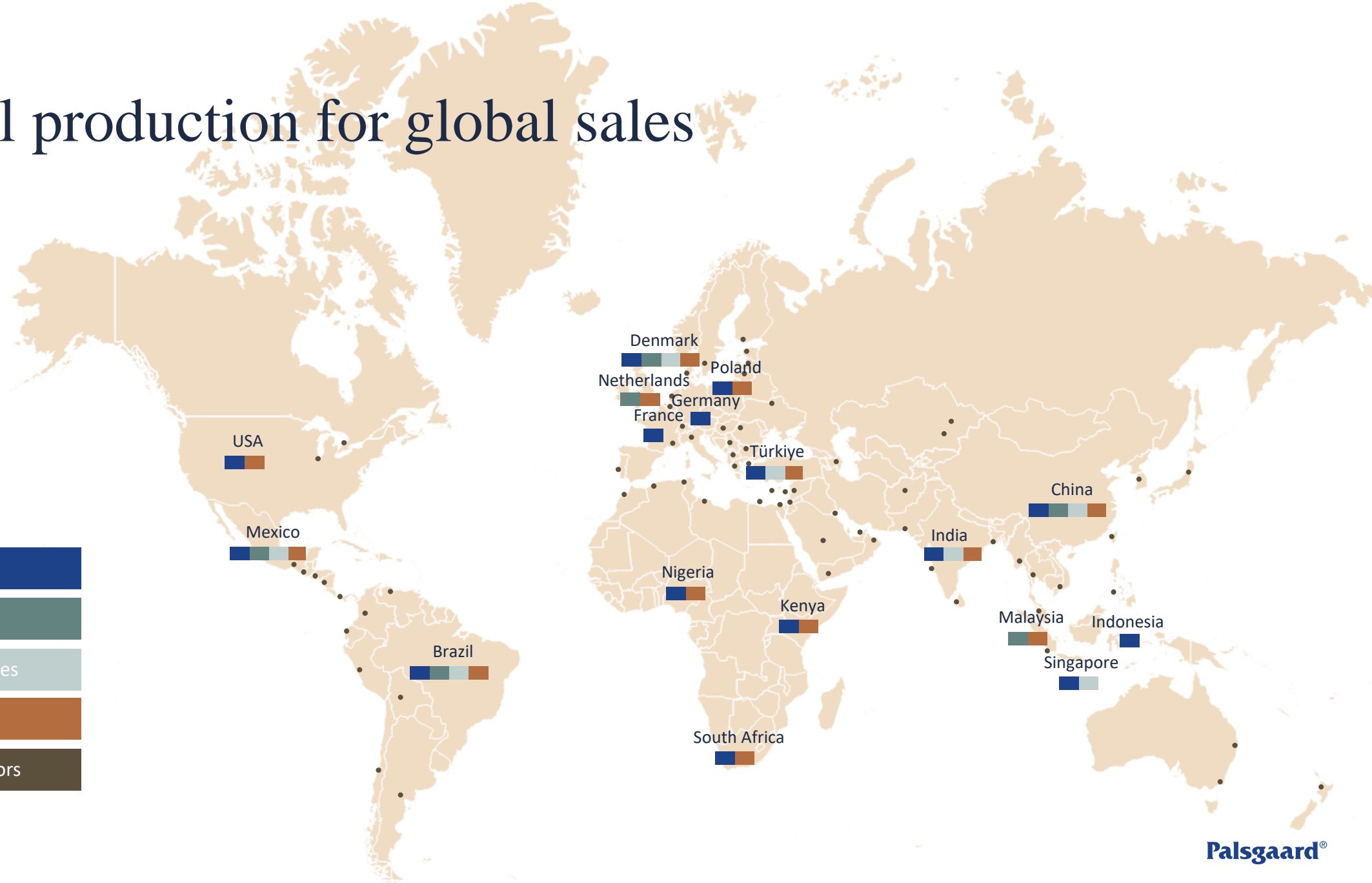
6 FACTORIES
in 4 continents



120 + COUNTRIES
sold to

OUR LOCATIONS

Global production for global sales

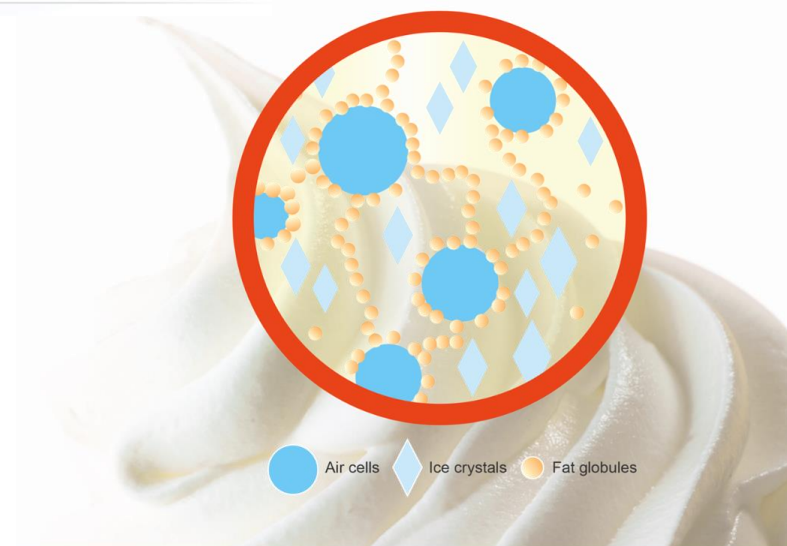
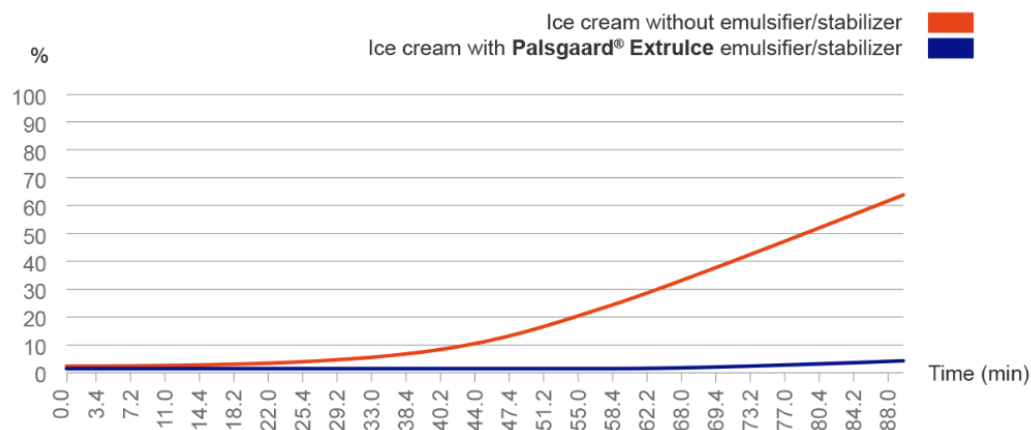
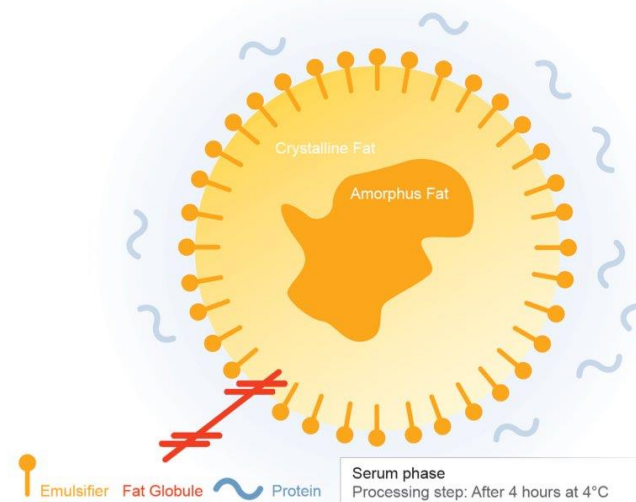


Emulsifier & Stabilizers Effect in Ice Cream



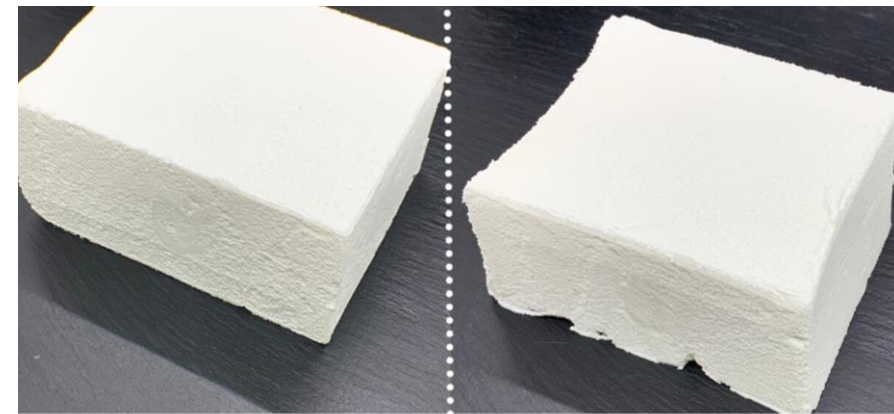
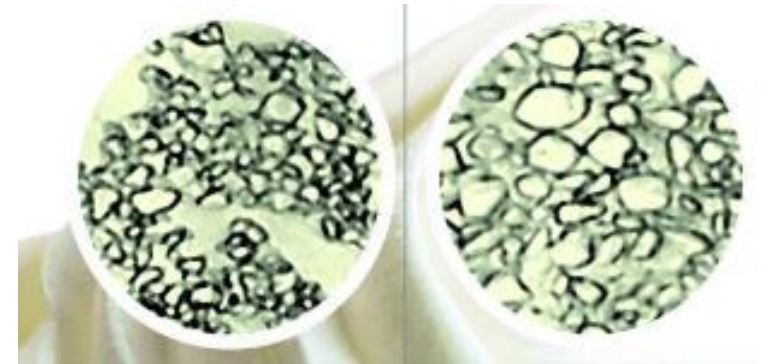
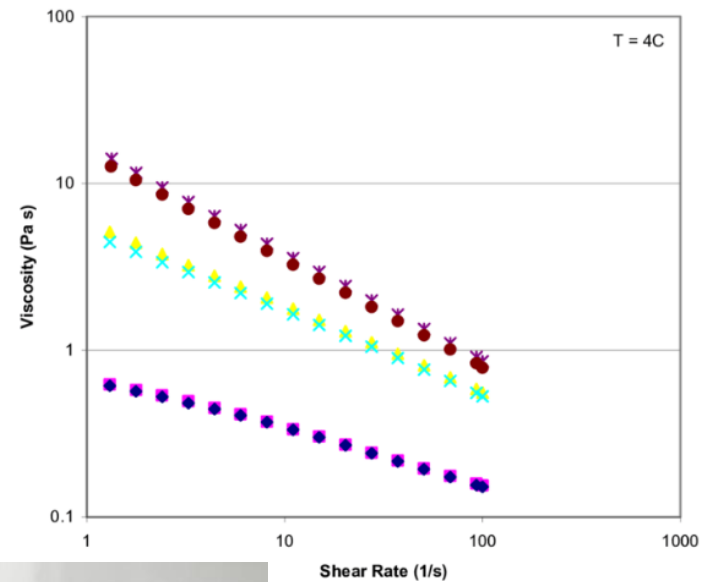
Effect of Emulsifier in Ice Cream and Frozen Dessert

- Controlling fat globular membrane composition
- Improve partial-coalescence of fat during freezing
- Increasing firmness of ice cream during production
- Controlling form stability during production
- Influencing meltdown properties
- Impacting sensory properties
- Increasing heat shock stability



Effect of stabilizers in Ice Cream and Frozen Dessert

- Influencing the mix viscosity
- Controlling ice crystal growth
- Affecting texture
- Impacting sensory properties
- Increasing heat shock stability
- Influencing meltdown properties



Analysis of melting resistance



For instance, we've studied ice cream under fluctuating temperatures -

Palsgaard® ExtrulIce



What to make ?

Extruded products:

- Sticks – Magnum type
- Cones
- Funny face
- Sandwich

Bulk products:

- Family pack
- 1 to 4 Liter pack
- Cups – portion size



Why adding Palsgaard® ExtrulIce ? – Functionality

What happen during the extrusion of the ice cream ?

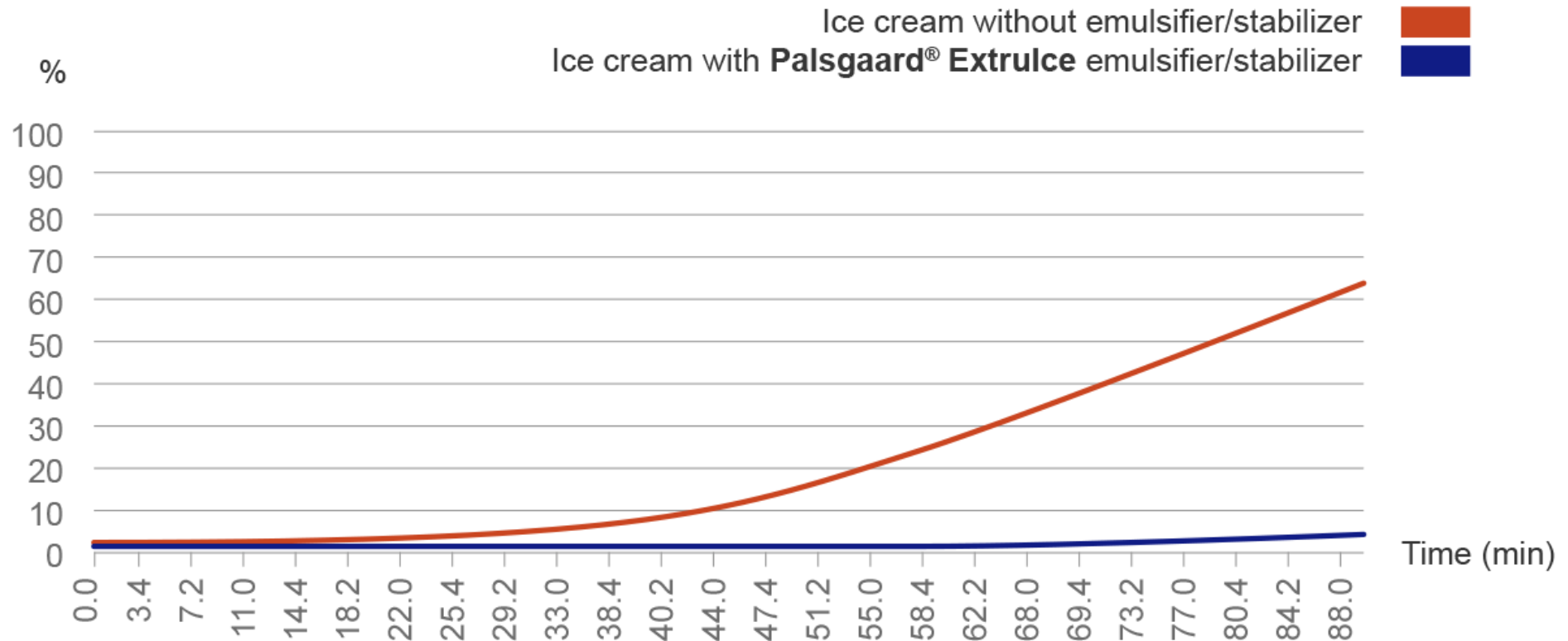
- As cold as possible
- To obtain premium structure
- To maintain shape during hardening
- Dry surface
- To allow cutting and shaping

What happen in the final product ?

- Improved melting resistance
- Excellent Heat Shock stability
- No shrinkage
- No ice crystallization



Why adding Palsgaard® Extrulce ? – Melting resistance



Examples of extruded products



Palsgaard® IceTriple



What to make ?

- **Extruded products:**
 - Sticks
 - Cones
 - Sandwich
- **Bulk products:**
 - Tubs / family packs
 - Cups – Portion size
- **Premium Products:**
 - Preserving high quality
- **Economic products:**
 - Reduction in fat
 - Reduction in cost of MSNF



Why adding Palsgaard® IceTriple ? – Functionality

What happens during the production of the ice cream ?

- **Obtaining premium structure**
- **Creating small ice crystals**
- **Maintaining shape during hardening**
- **Dry surface**
- **Allowing shaping and cutting**



Why adding Palsgaard® IceTriple ? – Functionality

- **What happens in the final product ?**

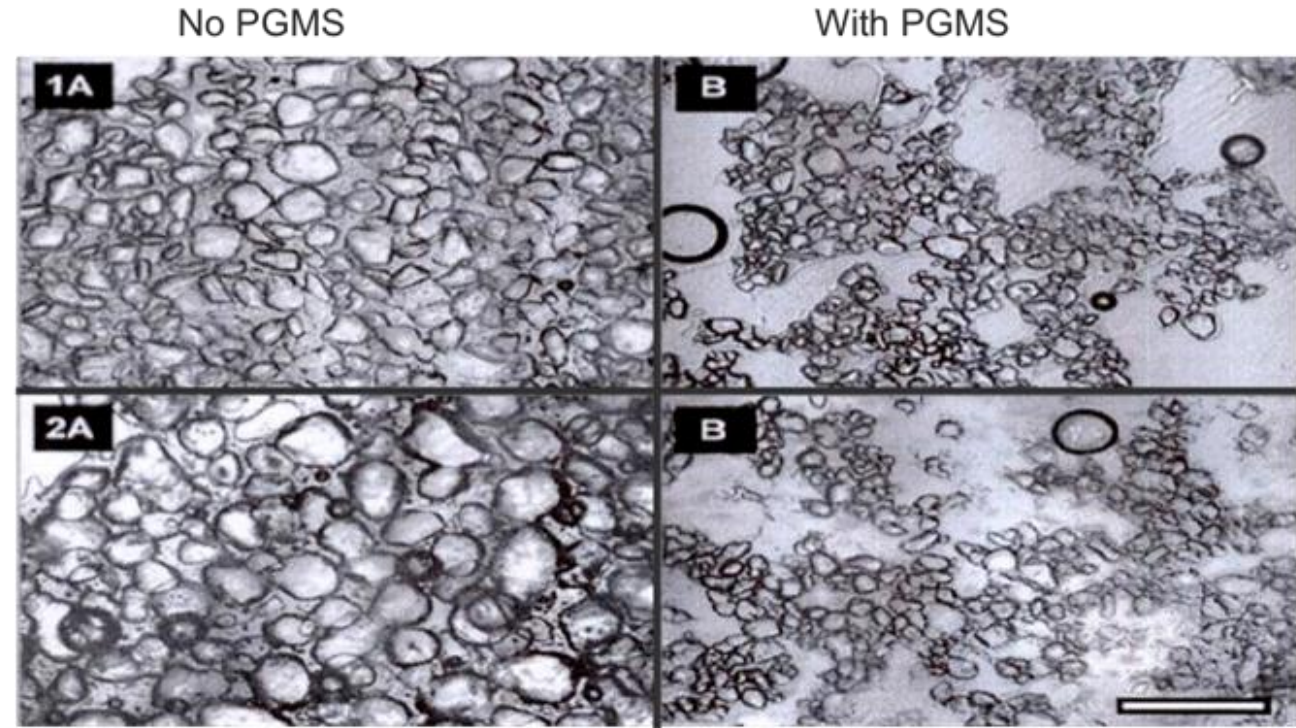
- Improved melting resistance
- Excellent Heat Shock stability
- No shrinkage
- No ice crystallization

Before heat shock

- **Especially suited for economical recipes**

- Higher water content
- Lower total solids
- Lower fat content

After heat shock



Ice Recrystallization Inhibition in Ice Cream by Propylene Glycol Monostearate; Aleong, J. M, Frochot, S., and Goff, H. D.. JFS 73,9, 2008.

Palsgaard® FruitIce



Why adding Palsgaard® FruitIce ? – Functionality

- **Sorbet**
 - Facilitates incorporation of air.
 - 40 – 80% overrun
 - Improving the melting properties.
 - Protects against heat shock damages
 - Provide smooth texture
- **Sherbet**
 - Facilitates incorporation of air.
 - 60 – 80% overrun
 - Improving the melting properties.
 - Protects against heat shock damages
 - Provide smooth and creamy texture
- **Fruit ices**
 - Facilitates incorporation of air.
 - 40 – 80% overrun
 - Improving the melting properties.
 - Protects against heat shock damages
 - Provide smooth texture
- **Extruded water icerrun**
 - Improving the melting properties.
 - Controlling the size of ice crystals
 - Provide smooth texture

Examples of Fruit based products



Palsgaard® WaterIce



What to make ?

- **Extruded water ice**
 - Aerated and extruded
- **Water Ice or Ice Lolly**
 - Moulded and frozen
 - Coating / outer shell
- **Peelable water ice**
 - Moulded and frozen



Why adding Palsgaard® WaterIce ? – Functionality

Extruded water ice

- Facilitates incorporation of air
- 20 – 40% overrun
- Improving the melting properties.
- Controlling the size of ice crystals
- Provide smooth texture

Water Ice or Ice Lolly

- Preventing colour and flavour from leaking out from the water ice
- Controlling the size of the ice crystals
- Providing slower melt-down
- Giving stabilizing effect at low pH

Peelable water ice

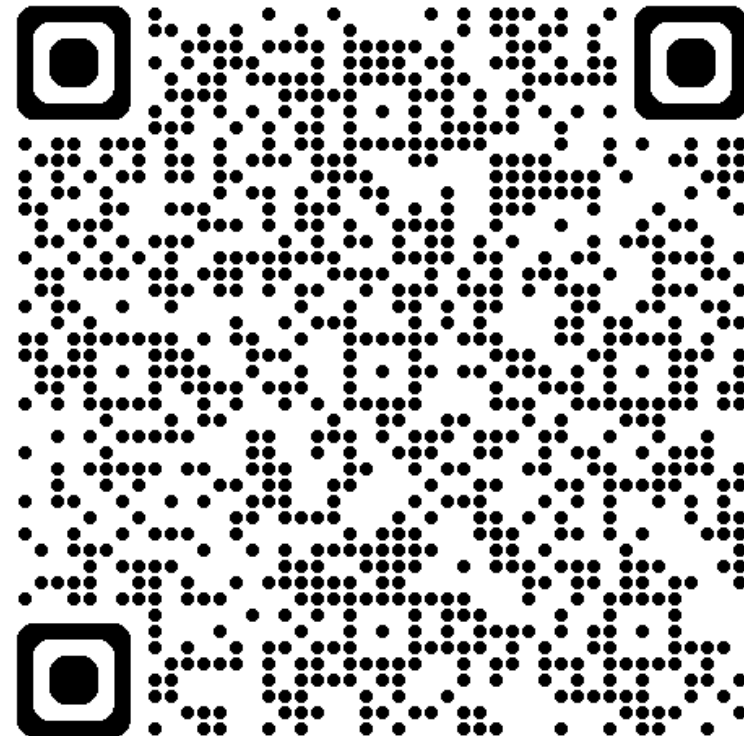
- Preventing colour and flavour from leaking out from the water ice
- Controlling the size of the ice crystals
- Providing a flexible and peelable water ice
- Giving stabilizing effect at low pH

Examples of water based products



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