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GRASAS SATURADAS:

SUPERANDO LA BARRERA DE LOS ACEITES PARCIALMENTE HIDROGENADOS

trisan food&tech

8/25/2016

Speaker

Rafael Urquizas Contador

Food Engineering graduated by the University of Campinas in Brazil with a specialization in business administration. More than 8 years of experience in the B2B ingredient market for Latin America working in many positions of key account management, project management and business development. With technical background in bakery, dairy, confectionary and other foods categories, Rafael is currently the Business Development Manager of Corbion for Food & Beverage segment in Latin America, responsible to develop the market strategy for this region. Member of the global core team for Foods and Bakery market.

Agenda

1. Setting the Stage
2. Understanding Your Non-PHO Alternatives
3. ENSEMBLE™ Non-PHO Emulsifiers
4. Questions

Setting the Stage

The Race to Non is ON

7/11/2003
FDA rules to require trans-fat labeling on the nutritional facts panel

1/1/2006
Trans-fat labeling law goes into effect

11/07/2013
FDA announces tentative determination to revoke GRAS status on PHO

11/07/2014
International Life Sciences Institute presents toxicology data to the FDA demonstrating trans fat is detrimental to cardiovascular health at any level

6/17/2015
FDA revokes GRAS status on PHO for food use

6/18/2018
FDA requirement for full compliance with new regulation

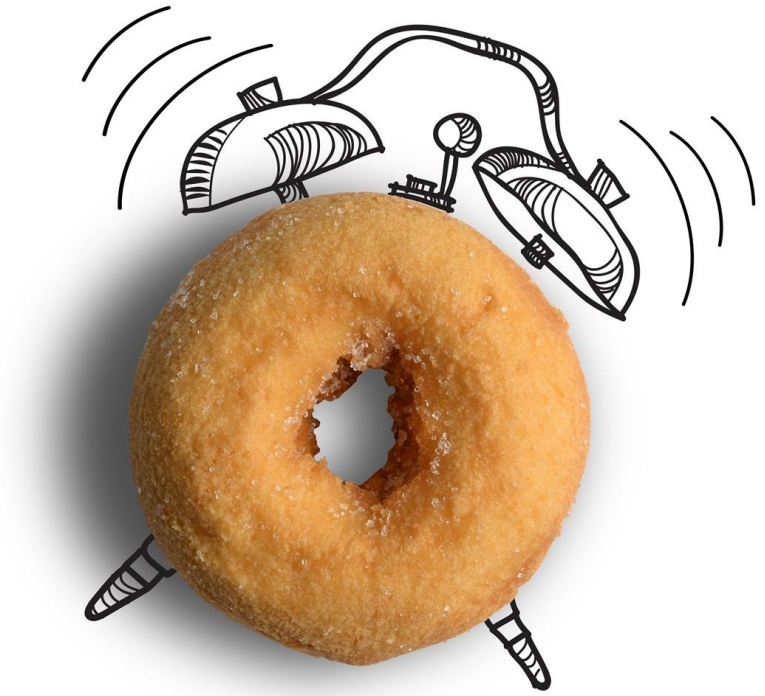
Five Key Factors

- FDA Mandate 
- PHO Supply 
- Testing & Evaluation Times 
- International Ripple Effect 
- Consumer Demands 

FDA Mandate

There's no snooze button on this clock

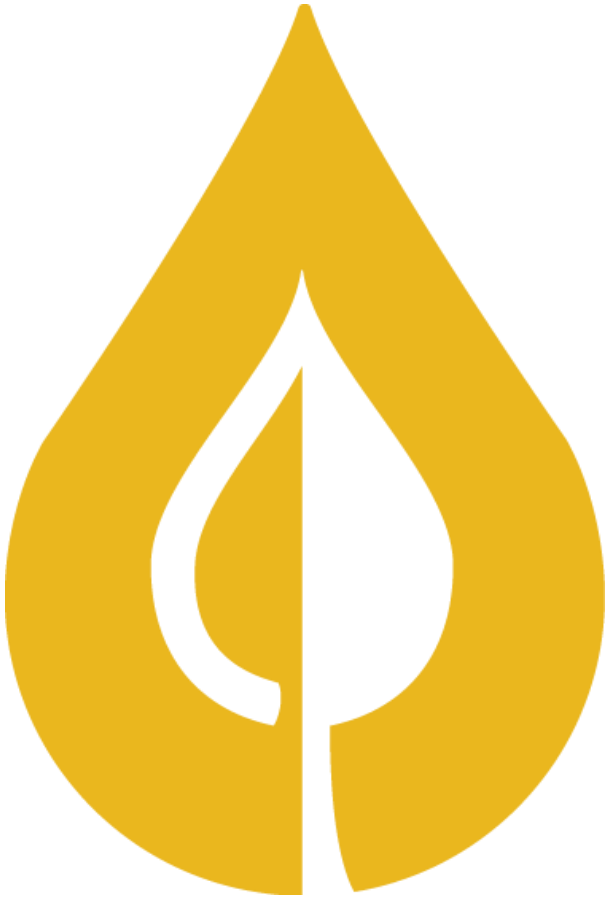
- **Compliance required by June 18, 2018**
  - Not complying means exposure to legal actions
  - FDA not providing litigation protection



439 business days from today PHOs will no longer be allowed in the food supply!

PHO Supply

- **Demand for PHOs going down**
  - Oil suppliers drastically limiting supply
  - Some suppliers exiting the PHO market completely
- **With less supply available, costs will rise**



Testing and Evaluation Time

- **Reformulation efforts can take as long as 18 months**
  - Need time to research non-PHO options
  - Requires time to consider the functions that alternate ingredients must accomplish

International Ripple Effect

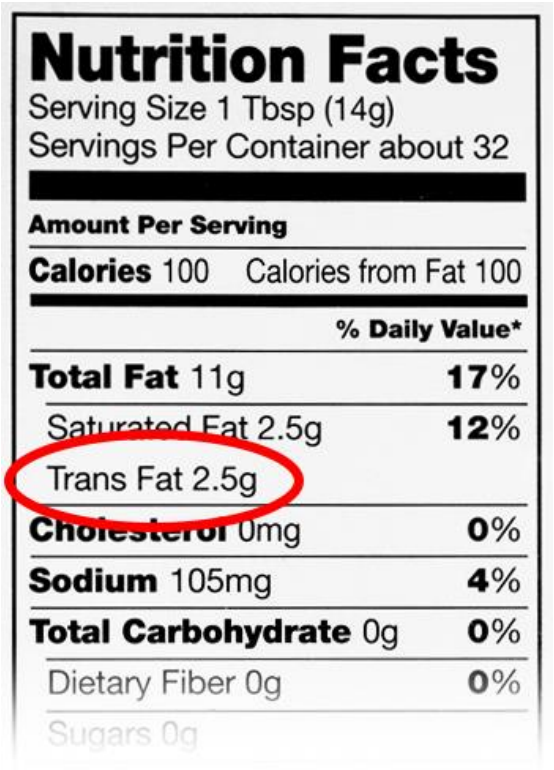
- **Other countries considering their own legislation for trans fat**
  - Europe evaluating a potential ban on trans fat
  - Affects formulations of products intended for export

Consumer Demands

88% of Americans **have given some thought to the ingredients in their foods** and beverages in the past year with **two out of five giving a lot of thought to the ingredients.**

58% of consumers **consider trans fat** when making decisions about buying packaged foods or beverages.

49% of the survey respondents stated they are **trying to limit or avoid trans fat** altogether.



Source: 2016 Food and Health survey conducted by the International Food Information Council Foundation (IFIC)

Consumers Want to Know What "to Eat," Not What "Not to Eat"

YESTERDAY	TODAY
• Low calorie • Low fat • Low sodium • Denial • Diet	• Less processed • Preservative free • Moderation • Trans fat free • Whole grains • Protein • Fiber
"What you shouldn't have"	*"What food should be"*

Source: Technomic

Consumers' Health Concerns are Similar With Retail and Food Service Sweet Baked Goods

Source: Corbion Proprietary Research, October 2014

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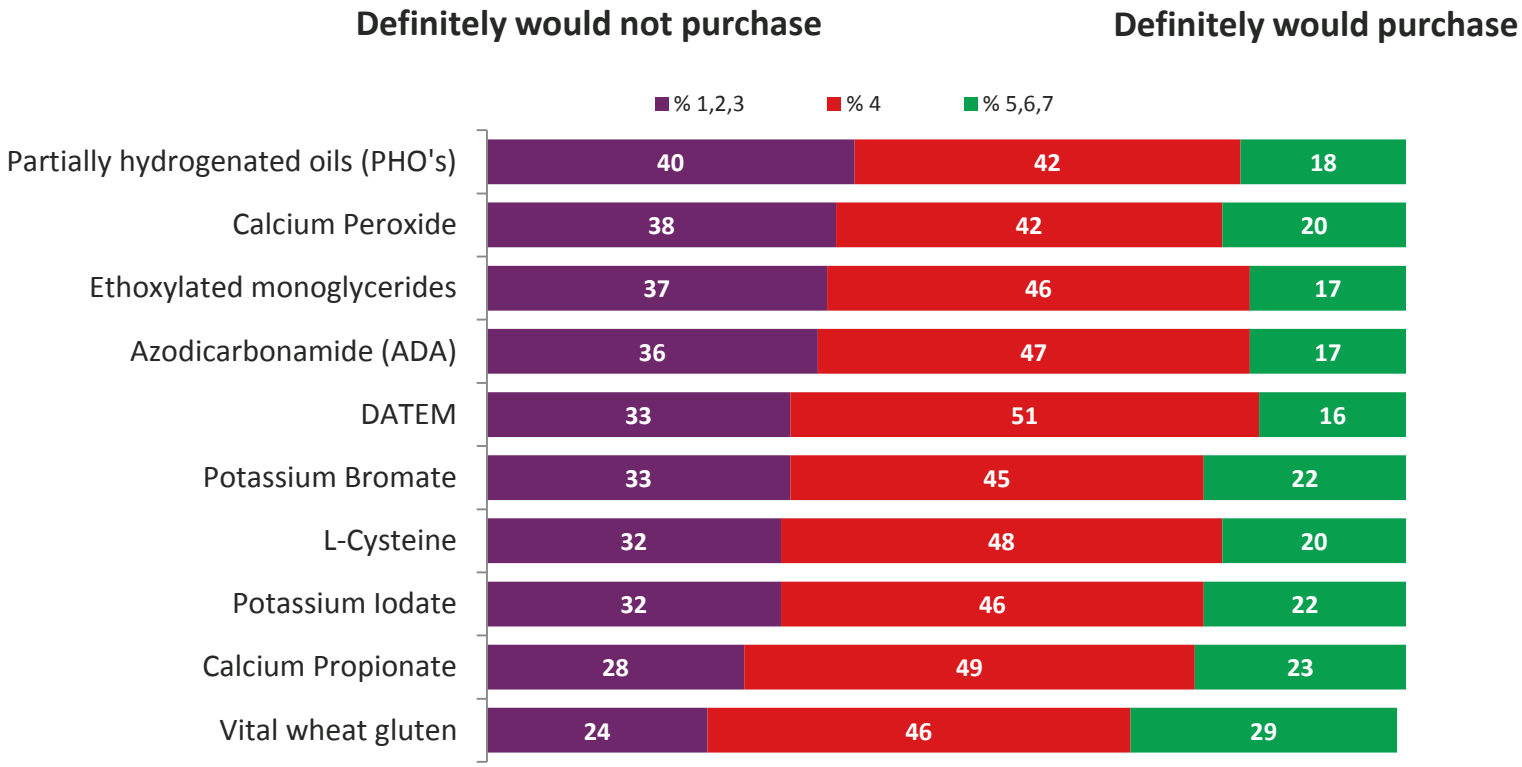
Among Noted Ingredients, PHOs are Least Accepted by Consumers of Bread Products

Likelihood to Purchase Product Containing Ingredient



BASE: TOTAL BREAD RESPONDENTS (N=507)

Q: [BREAD PRODUCTS]. IMAGINE THAT YOU WERE INFORMED THAT ONE OF THE [BREAD PRODUCTS] THAT YOU PURCHASE FREQUENTLY CONTAINED ONE OF THE INGREDIENTS BELOW. FOR EACH INGREDIENT, HOW LIKELY WOULD YOU BE TO PURCHASE THIS PRODUCT?

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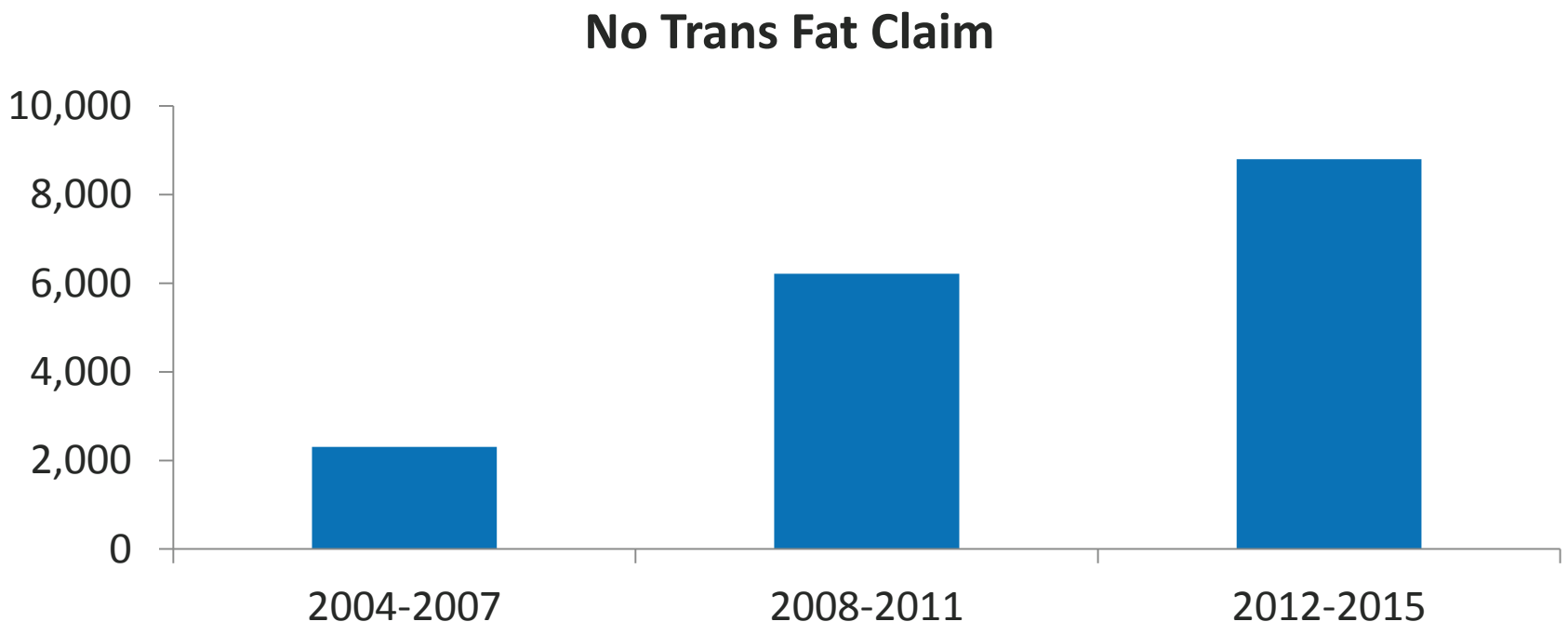
Manufacturers Use of the “No Trans Fat” Claim



Source: Innova Database

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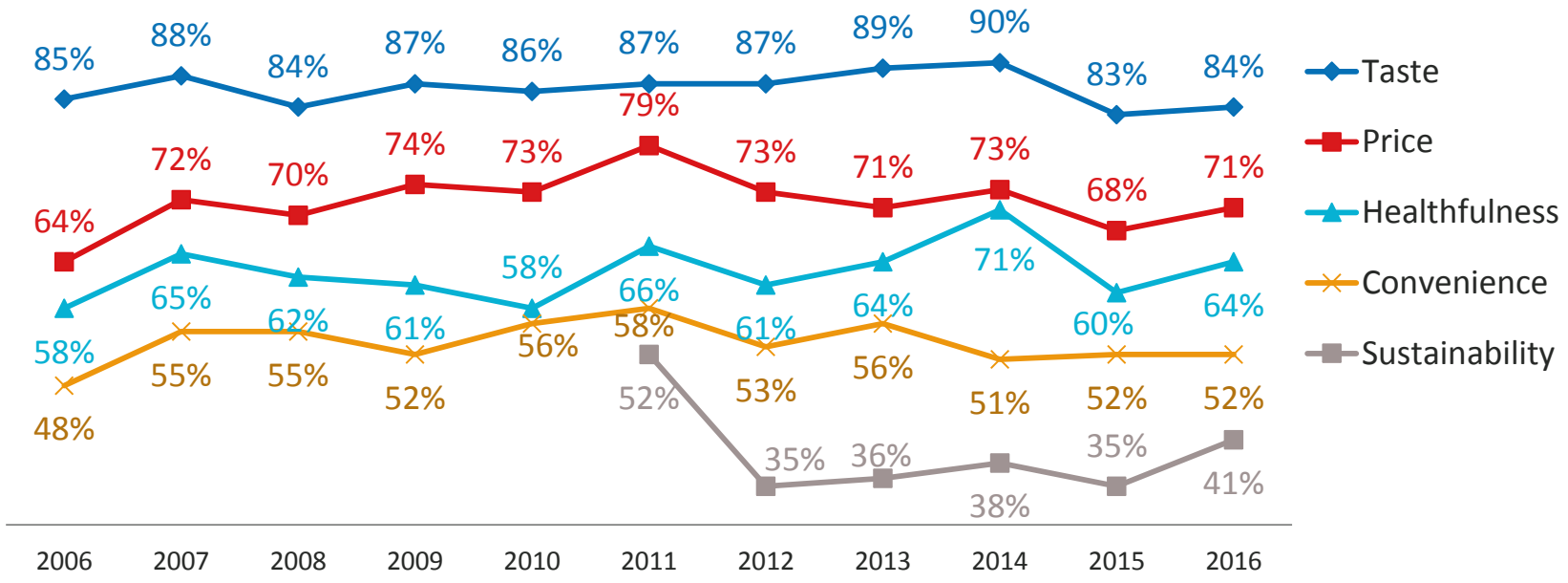
Taste and Price Have Always Trumped Health and Other Product Attributes

How Much of an Impact do the Following Have on Your Decision to Buy Foods and Beverages?
(% Rating 4 to 5 on 5-point scale, from No Impact to A Great Impact)



Source: 2016 International Food Information Council Food and Health Survey

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What do These Factors Mean to You?

Food and beverage manufacturers face a critical challenge:

To find and implement non-PHO ingredients that are effective, easy-to-use AND won't affect the quality of the finished products.

Understanding Your Non-PHO Alternatives

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The Role of Bakery Emulsifiers

- **Promote greater tolerance to process and ingredient variation**
- **Extend shelf life**
- **Improve eating quality**

Commercial Emulsifiers Utilized in Bakery (Denoting Source-fat Designations)

EMULSIFIER DESCRIPTION	FULL HYDRO	PARTIAL HYDRO	NON HYDRO
Mono & diglycerides	✓	✓	✓
Distilled Monoglycerides	✓	✓	✓
Sodium Stearoyl Lactylate	✓	↑ Predominately associated with powdered softeners, hydrates, and plastic mono & diglycerides	
Calcium Stearoyl Lactylate	✓		
Propylene Glycol Esters of Fatty Acids	✓		
Lactic Acid Esters of Monoglycerides	✓		
DATEM	✓		✓
Sorbitan Esters of Fatty Acids	✓		✓
Polysorbates	✓		✓
Polyglycerol Esters of Fatty Acids	✓		✓

Key Considerations for Bakery Monoglycerides

- Shelf life
- Handling properties
- Functionality

Partial Hydrogenation Process

- **Very flexible and cost effective platform for dialing in the desired chemical and physical attributes of commodity oils (soybean, canola) such as:**
  - Oxidative and color stability
  - Crystallization behavior
  - Hydration and melt onset

A Variety of Options are Available to Manufacture Non-PHO Emulsifiers

Not every solution is equal in terms of performance and ease of handling:

Non-PHO Option	Pros	Cons
Palm & Palm Fractions	• Readily available worldwide	• Experience flavor and color reversion • Compromise processing (crystallization)

Polyunsaturated Oils (Rapeseed, Sunflower & Soybean Oil)	• Perceived to be healthier than saturated fats	• Compromises in physical and chemical attributes
		  • Oxidative stability
		  • Color
		  • Flavor

Fully Saturated Soy & Palm Oil	• Alone can provide the required crystallization properties to allow excellent powder production and stability	• Without the incorporation of unsaturated components, they lack the functional properties such as hydration of the particles required to make them cold-water dispersible.

Avoid a Complete Overhaul of Your Processes

- **To keep business booming, a drop-in solution is your best bet**

ENSEMBLE™ Non-PHO Emulsifiers

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ENSEMBLE™ Makes Going Non-PHO Simple

- ENSEMBLE non-PHO emulsifiers **deliver drop-in functionality**
- **Proprietary blend of oils**
- **Maintain flavor and texture**
- **No sacrifice in quality, handling or shelf stability**

What Can Drop-in Functionality do for You?

- Maintain Functionality
- Preserve Product Handling
- Sustain Quality Attributes
- Minimize Reformulation Hurdles
- Decrease Reformulation Costs
- Avoid Production Disruptions
- Simplify Formulation Efforts

ENSEMBLE™ Mimics PHO Performance in Applications

Sweet Baked Goods Sensory Analysis

% of Panelists Unable to Detect a Difference Between Products		
	Added in Concentrate	**Added at Bowl**
Honeybun	Nearly 60%	Over 80%
Muffin	100%	Nearly 70%

No significant difference in performance between PHO emulsifiers and ENSEMBLE

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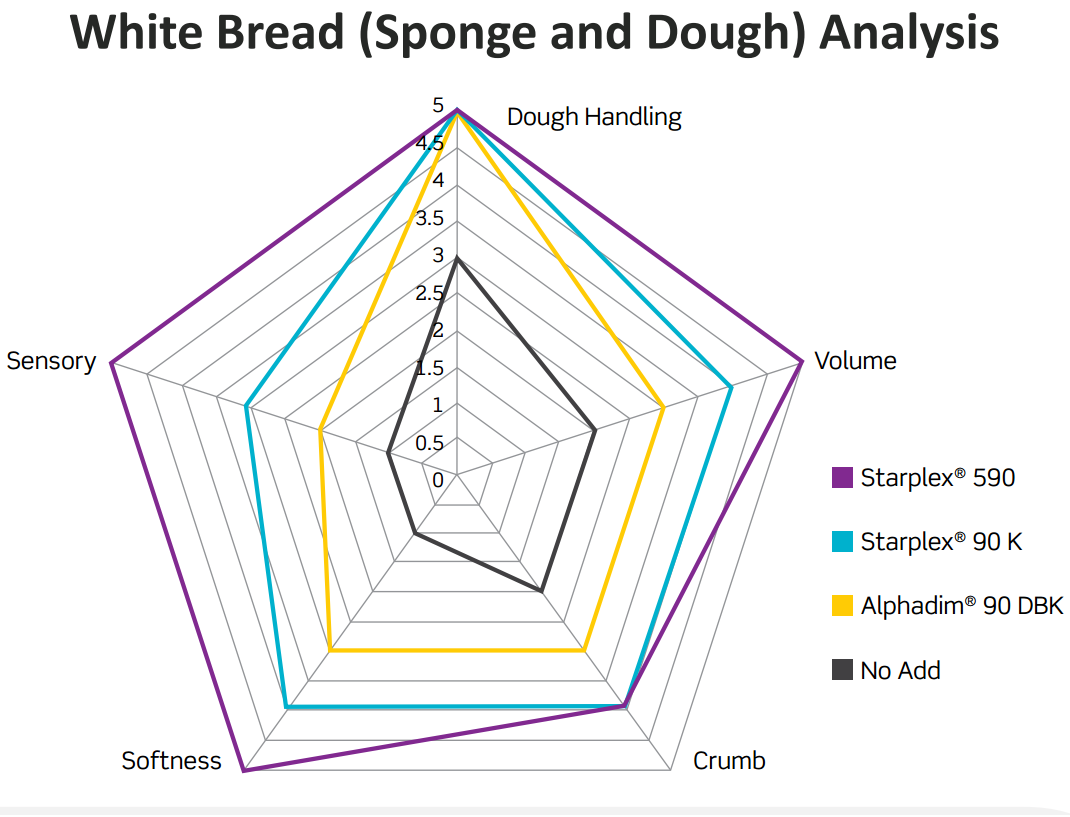
ENSEMBLE™ Mimics PHO Performance in Applications



No significant difference in performance between PHO emulsifiers and ENSEMBLE

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ENSEMBLE™ Meets High Standards for Performance

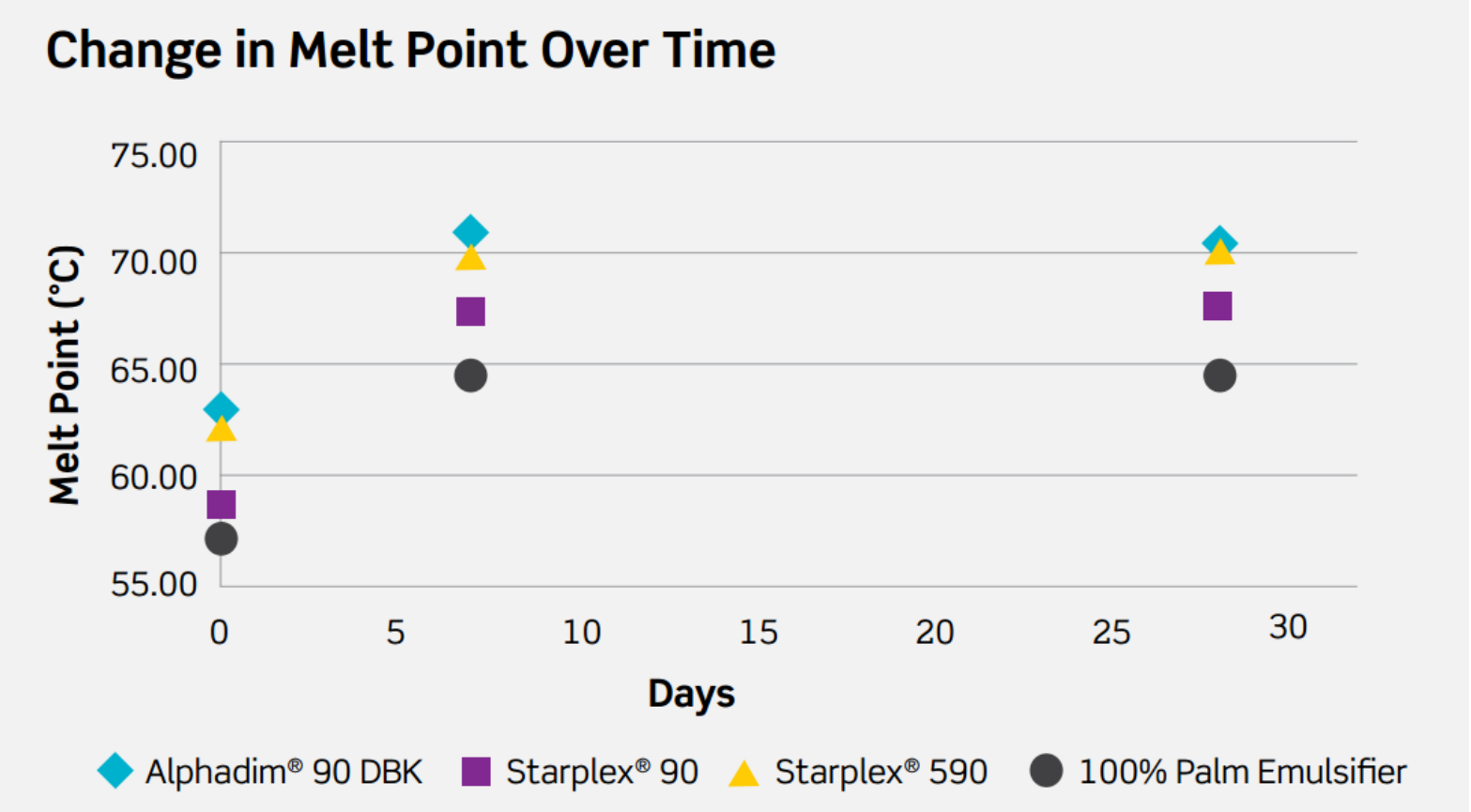
When compared to ENSEMBLE, palm-based powdered emulsifiers:

- Demonstrate inferior thermal stability
- Exhibit poor powder quality
- Result in handling challenges

When compared to ENSEMBLE, palm-based plastic mono-diglycerides:

- Result in a much firmer texture
- Provide creaming challenges when added directly to application

ENSEMBLE™ Outperforms Palm-based Emulsifier Options



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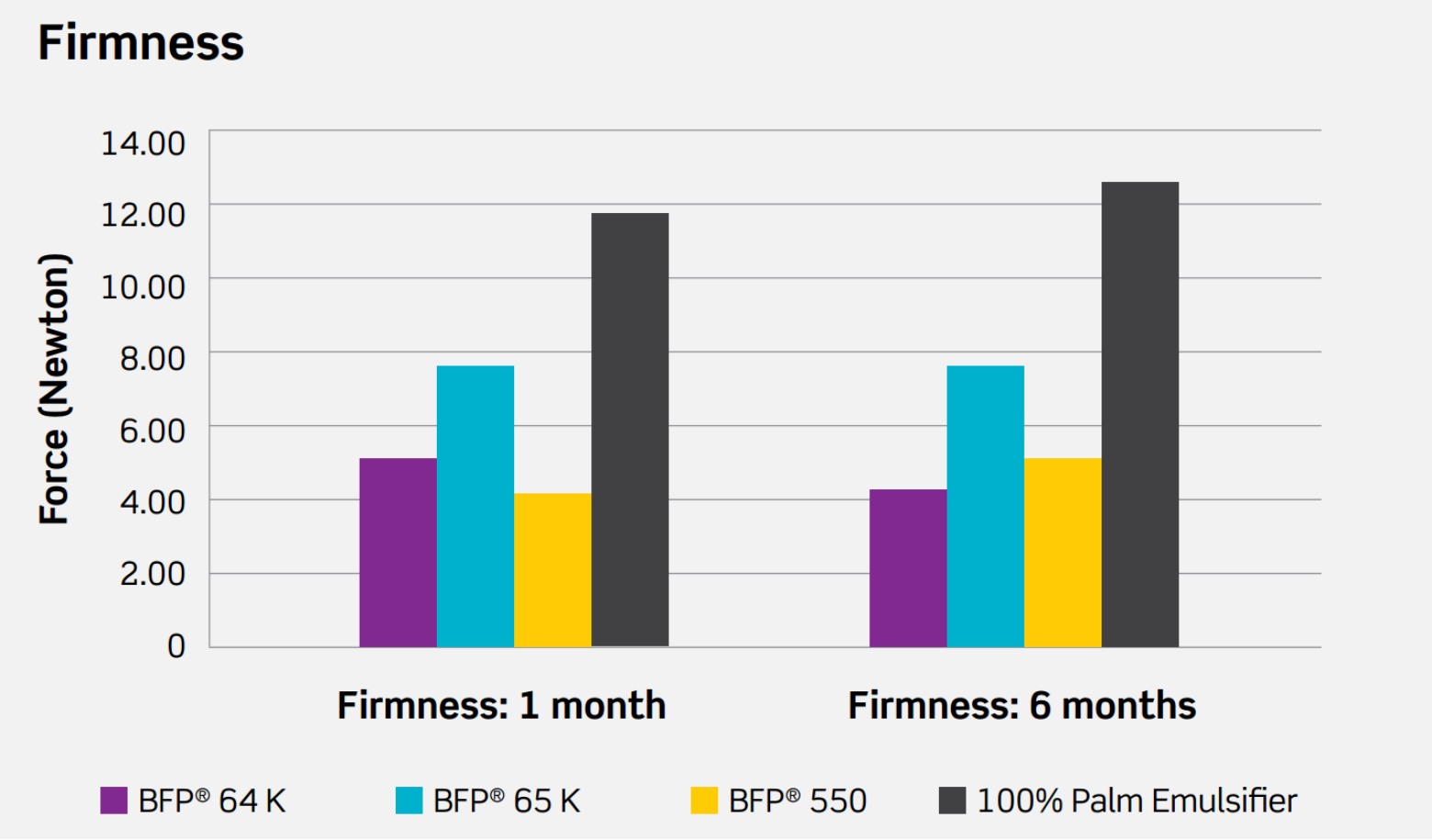
ENSEMBLE™ Outperforms Palm-based Emulsifier Options



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Tune-up Your Products

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ENSEMBLE™ Portfolio

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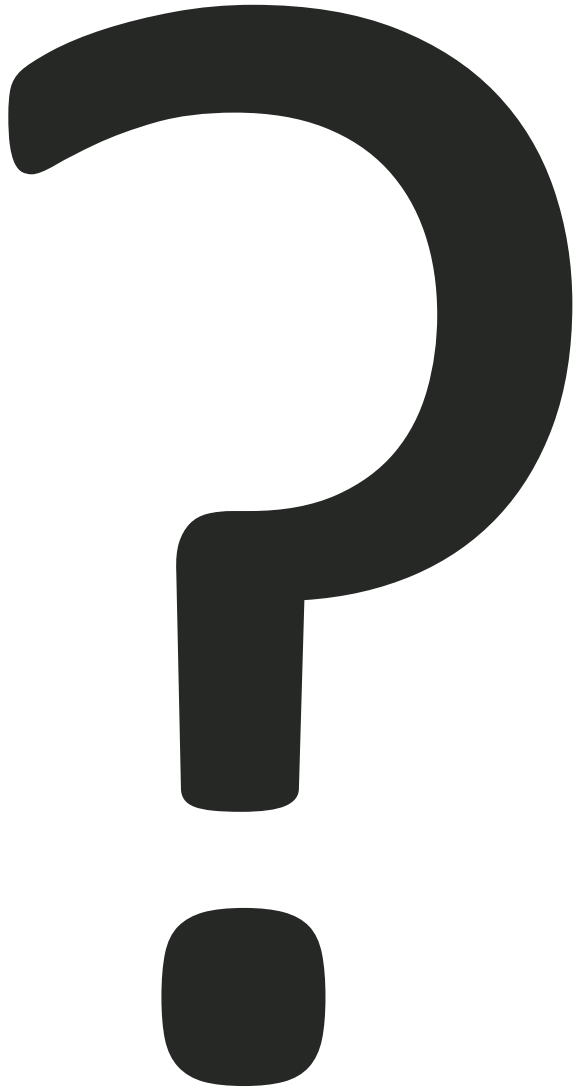
- BFP®
- Alphadim®
- GMS 90®
- Starplex®
- Release Cote®
- Atmos®
- Bake-Well®
- SpraFilm®

Questions

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