

Palm Oil

Versatile Ingredient Solution to Challenging Bakery Applications

*5th Global Oils and Fats Business
Forum*

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Oil Use in Bakery Products

➤ Attributes:

- Structure
- Ability to “cream” or aerate with other ingredients
- Long shelf life – flavor
- Versatility - many different textures and eating qualities required

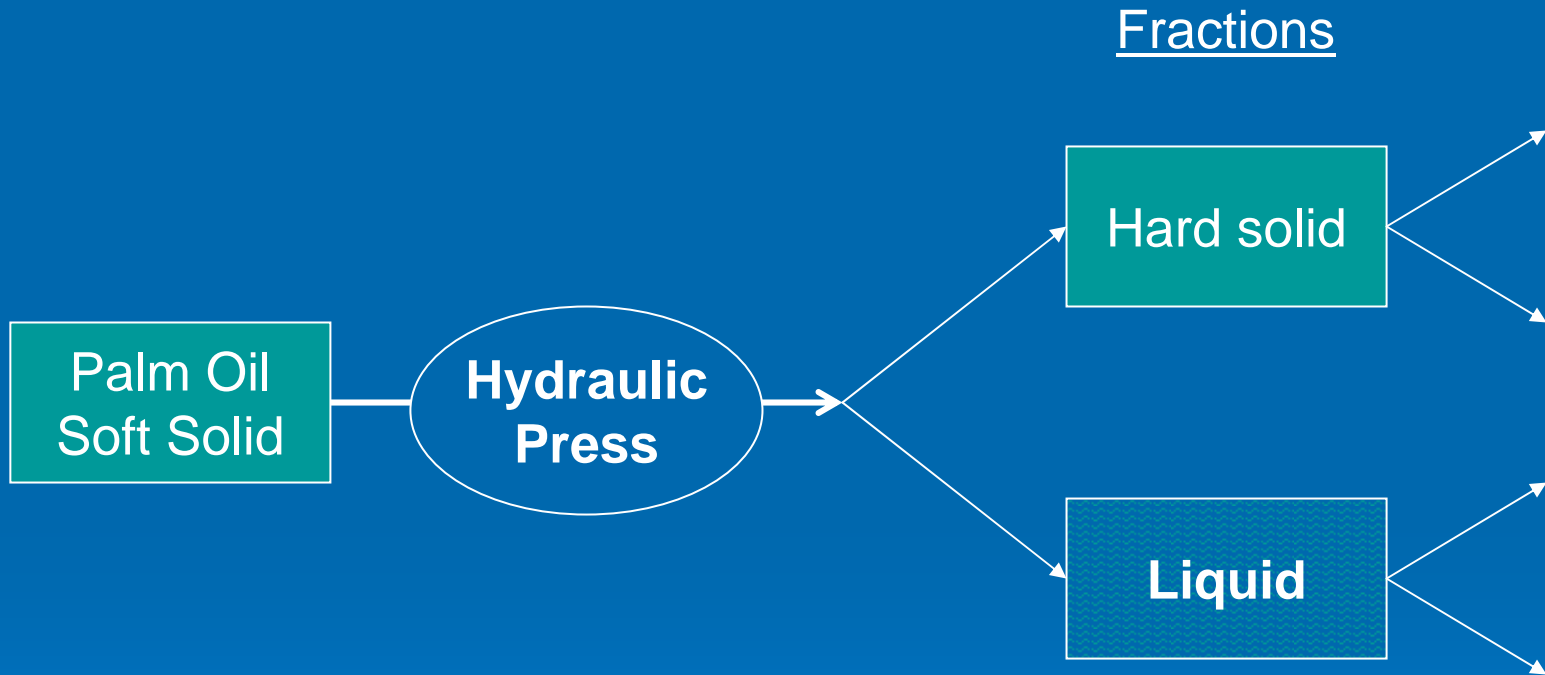
➤ Solutions:

- A solid fat is essential for most applications
 - *Only saturated and trans fats provide solid texture*

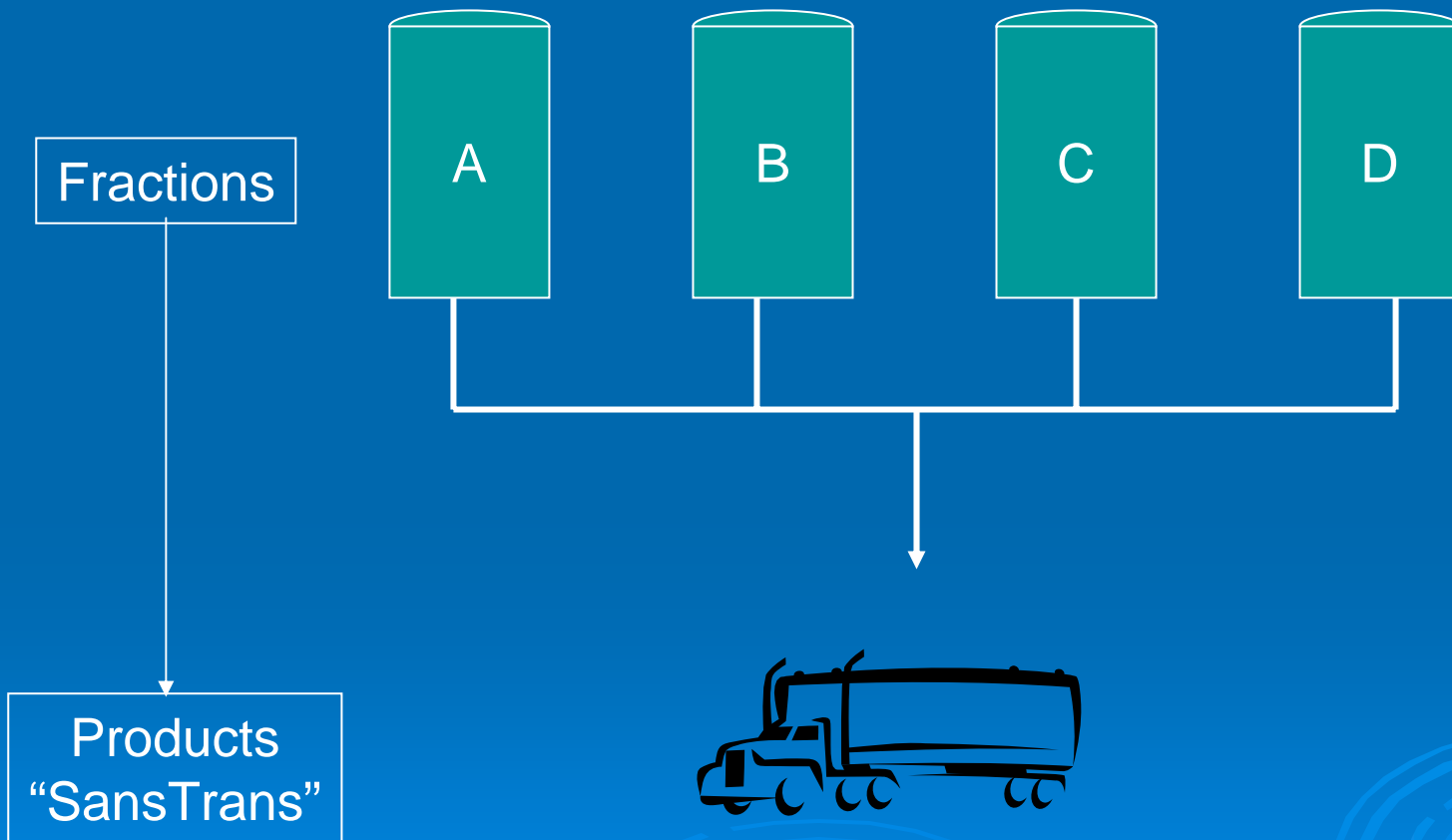
Palm Oil Shortenings

- Why Palm Oil is a good Bakery Shortening Candidate
 - Naturally occurring functional saturated triglycerides
 - Composition – Beta Prime (small crystals – good oil entrapment)
 - Increased creaming performance
 - Smooth consistency
 - Fine crystal structure
 - Oxidative stability
 - Absence of Linolenic Acid
 - No flavor reversion
- Key Point
 - Functional shortenings are attainable without Hydrogenation
 - Versatile - almost unlimited variety of textures

Palm oil versatility: Fractionation



Palm oil versatility: Blending



Bakery Applications for Palm Shortenings

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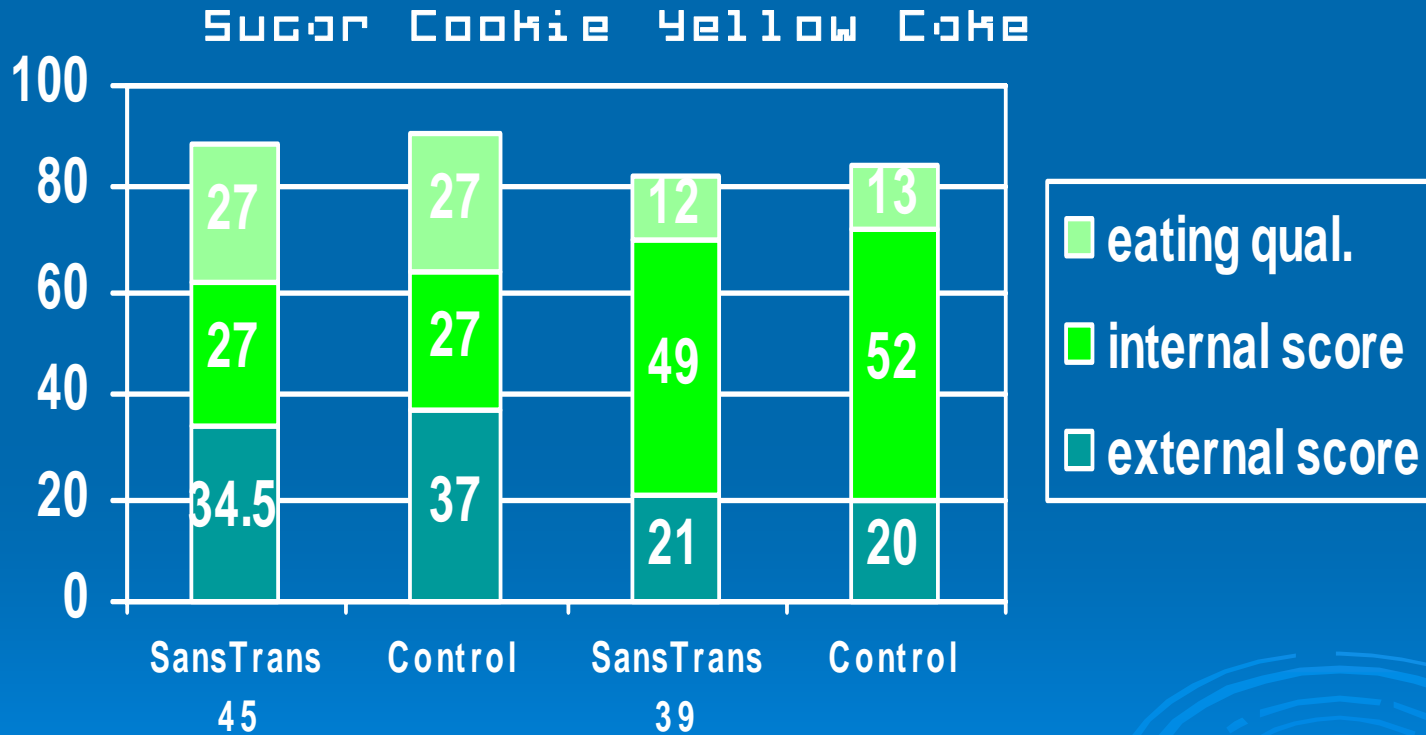


Performance of Palm Oil Blends as Trans Fat Alternatives

- American Institute of Baking (AIB) compared partially Hydrogenated Shortening with Blended “SansTrans” Shortenings
- Shortenings were evaluated in Yellow Layer Cakes and in Sugar Snap Cookies

AIB Comparison

no optimization



Hydrogenated Shortening vs. Palm Shortening

Hydrogenated
Shortening

Palm Oil
Shortening

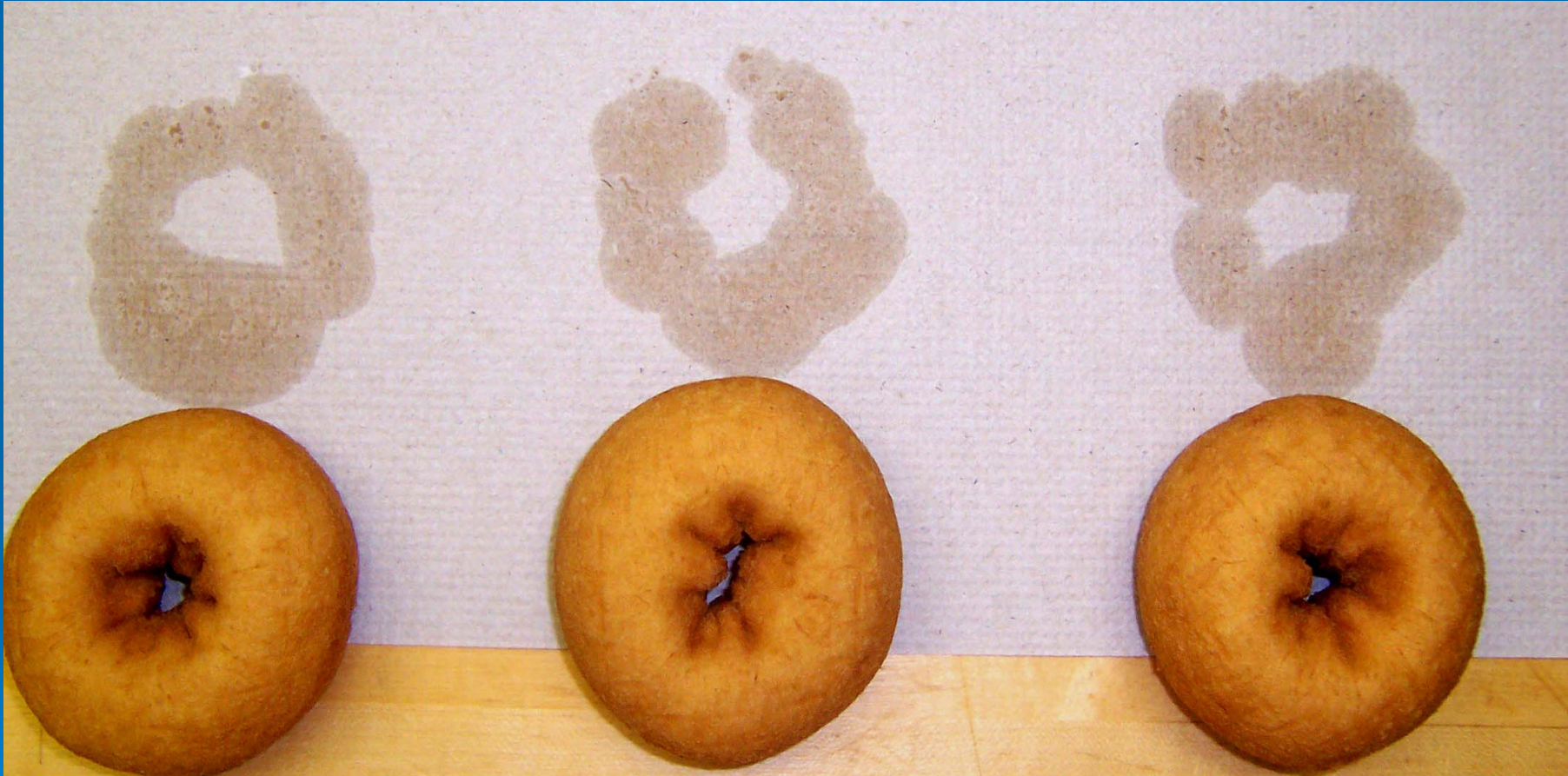


Donuts

➤ Key Issues

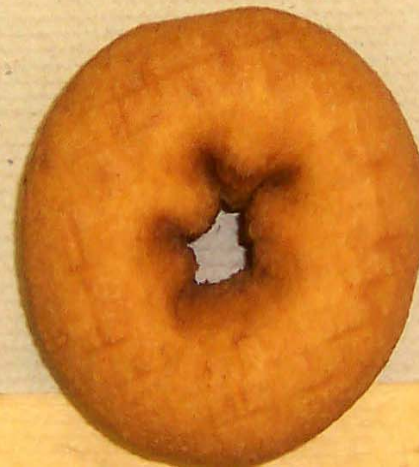
- Controls eating quality of donuts
 - Donut fat uptake ~ 20%
- Fat must have proper texture to adhere sugar
 - Small amounts of liquid oil necessary
 - Frying fat must set ~25 min before coating
- Minimal oil migration after packaging
 - Softening coating
 - Oil stained packaging

Donut Fry Shortening Trans Control



Donut Fry Shortening No Trans Palm Blend

Oiling out same as control doughnut



Laminated Dough's and Flaky Pastry

➤ Key Issues

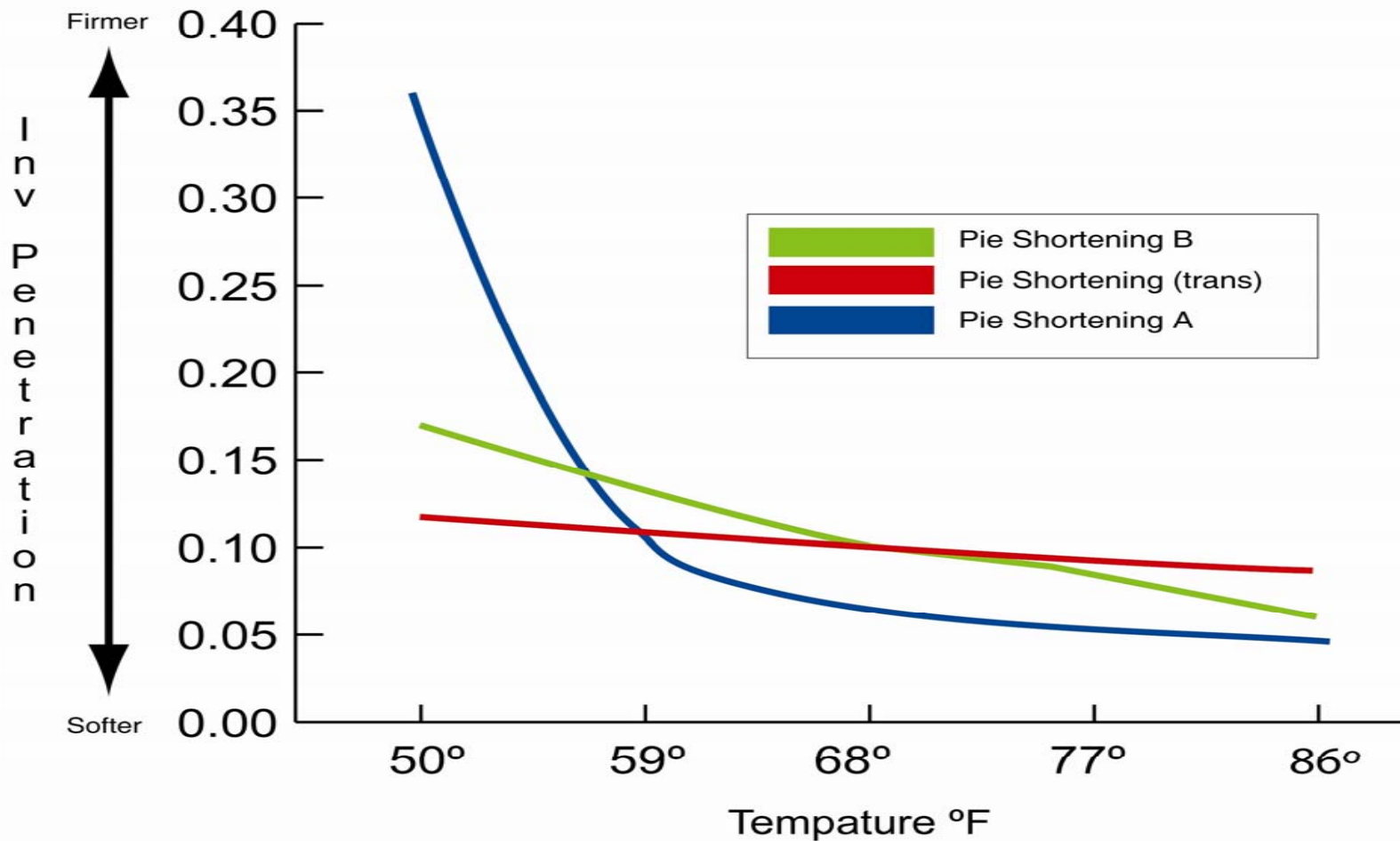
- Finished product texture that is light, flaky and crisp.
- Fat is responsible for providing product lift, texture and taste.
- Demanding requirements for laminating fat.

Laminated Dough's and Flaky Pastry

➤ Shortening Requirements

- Maintain texture during processing
- Exhibit temperature tolerance – minimal textural and plasticity changes over a wide temperature range.
- Numerous textures necessary to match dough characteristics of specific applications.

Temperature Tolerant Pie Shortenings



Less Saturates

*More Performance,
Reduced Saturate
Shortenings*



Composition of 'Saturated' Fats

Oil	Saturates	Monounsaturates	Polyunsaturates
Palm	50	40	10
Butterfat	66	31	3
Coconut	91	8	1

Reduced Saturated Fat Products

Palm Fractions



Polyunsaturated
Oils



High Stability
Solid Texture

Poor Texture & Stability
Low saturates

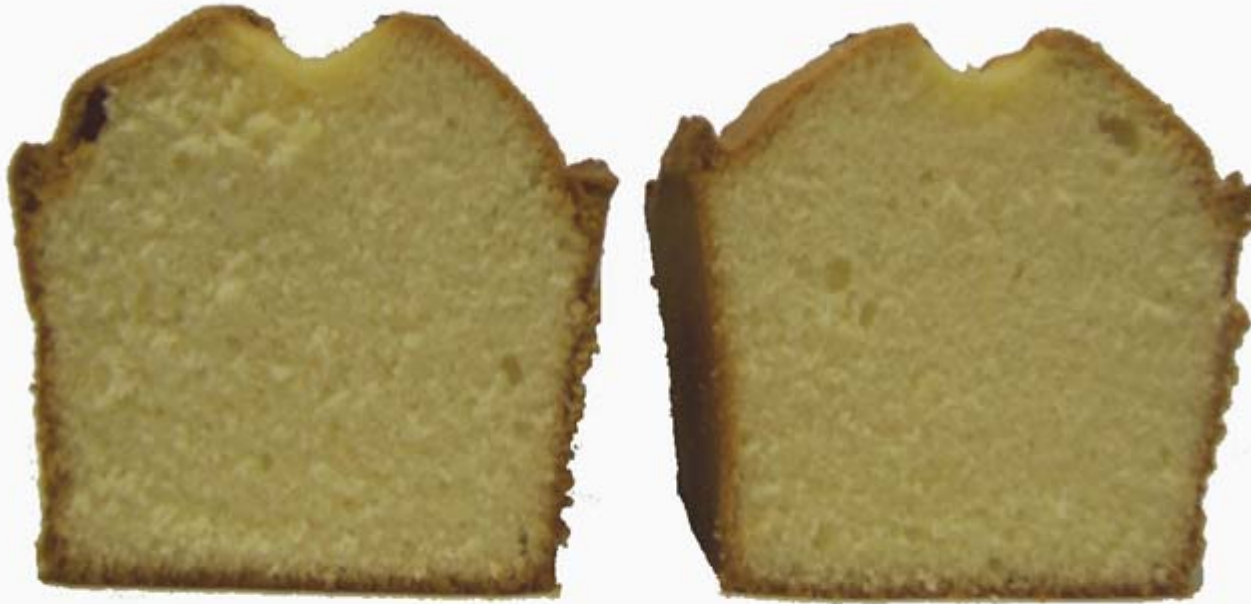


Reduced Saturates
Good Stability & Texture

Reduced Saturated Fat Shortening

- Blend of palm oil fractions and canola oil
 - *Fractions capable of entrapping large quantities of liquid oils*
- 30% reduction in saturated fat
- Same performance and stability as palm oil

Pound Cake – Structure



Control

Reduced SAFA

Deep Fat Frying Options

- Blends of liquid palm oil and sunflower oil widely used in Europe
 - High stability from palm oil
 - Low saturated fat content from sunflower oil
- US option – blend liquid palm oil with soybean oil
 - Improved fry stability
 - Reduced saturated fat content

Conclusions

- Palm oil is an ideal alternative to partially hydrogenated bakery shortenings
- Versatile – products available for every baking application
- Plentiful supply
- Reduced saturated fat options available for baking and frying



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