

# Tools Of The Lipid Developer: Low Trans Formulation Options And How They Are Being Used



**BUNGE**

**Bob Johnson, Bunge Oils R&D  
Global Oils & Fats Forum**

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# The Developer's Toolbox

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Commodity Liquid Oils

Trait Enhanced Oils

Hydrogenation

Palm Blends

Structuring Fats

Interesterification

Hybrids or Tailored Oils



# Commodity Liquid Oils

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Soybean

Canola

Cottonseed

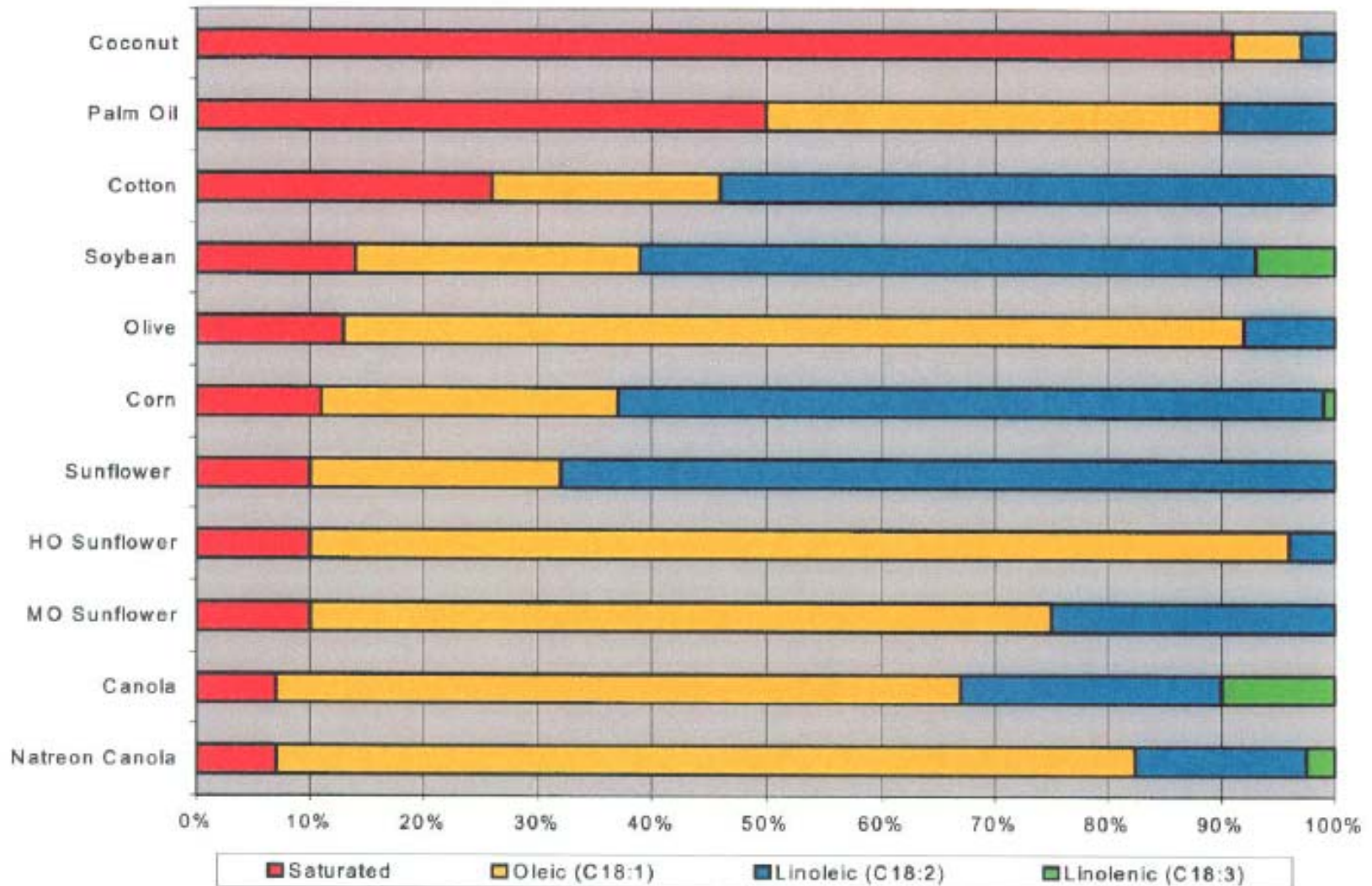
Corn

Palm Olein

Sunflower



# Typical Fatty Acid Compositions



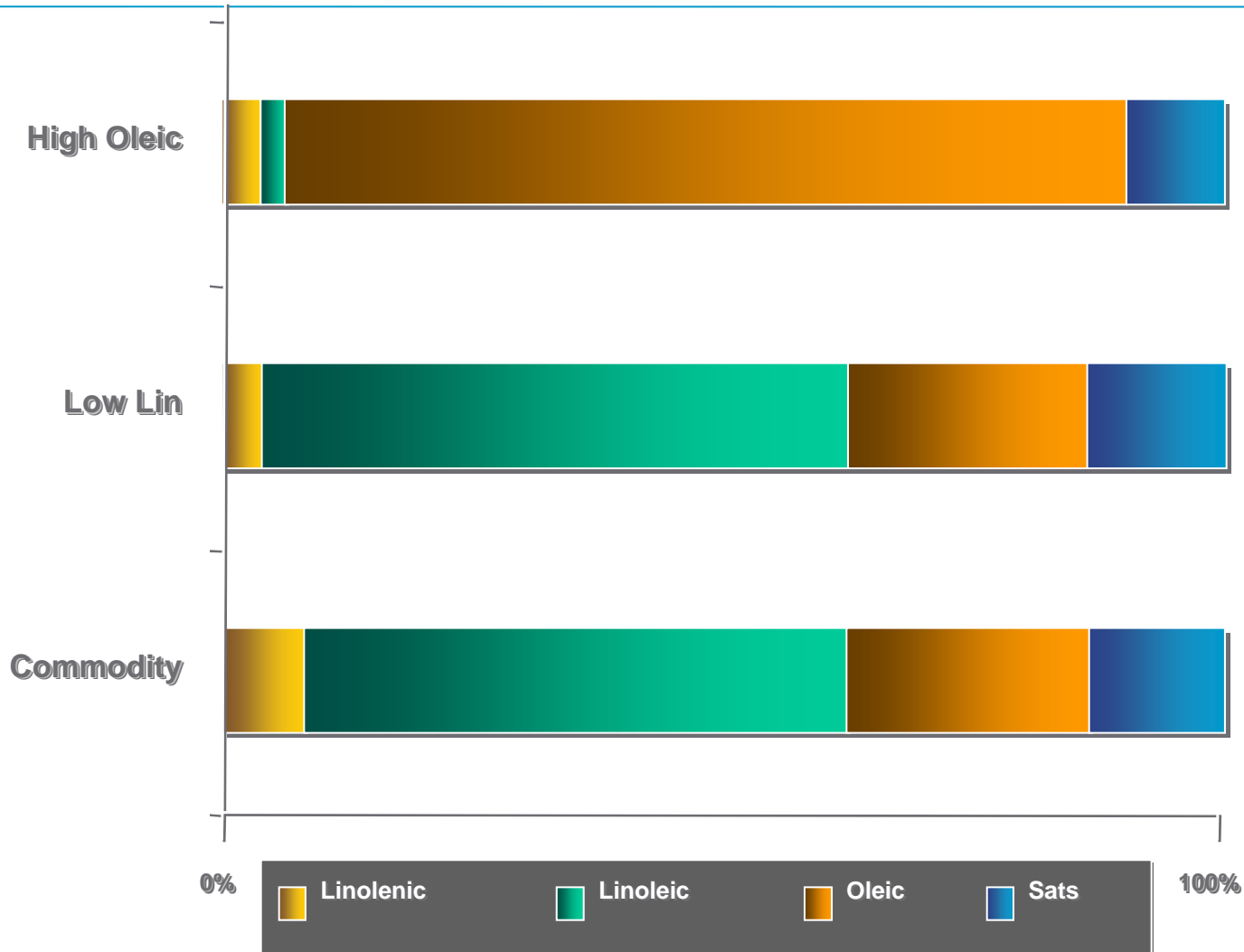
Source: Dow

# Trait Enhanced Oils

FAME-100%	Soybean Oil	Low Lin Soy	HO Soy	Canola Oil	HO Canola
C14:0	0.1	0.1	0.1	0.1	
C16:0	10.5	10.6	6.2	4.1	3.6
C18:0	3.9	4.8	3.8	1.9	1.7
C18:1	22.4	23.7	80.0	60.1	72.0
C18:2	54.5	57.0	3.1	21.2	17.0
C18:3	7.7	2.3	1.8	9.2	3.5
C20:0	0.3		0.4	0.6	0.9
C22:0	0.3	0.4	0.4	0.5	0.5
C24:0			0.2	0.1	
Saturates	15.1	15.9	10.9	7.2	6.7



# Trait Enhanced Soybean Oil



Source: Dupont / Pioneer

# Future Oils

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Mid Oleic Soybean Oil

High Stearic Soybean Oil

Lower Saturate Mid Oleic Canola Oil

High Oleic Palm Oil



Source: Malaysian Palm Oil Board



Source: Dupont/Pioneer



Source: Canola Council

# Hydrogenation

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Hydrogenation of Domestics (Hard Fat)

Special Low Trans Hydrogenation

Traditional Hydrogenation

Domestics

Palm

# Palm, Fractions and Blends

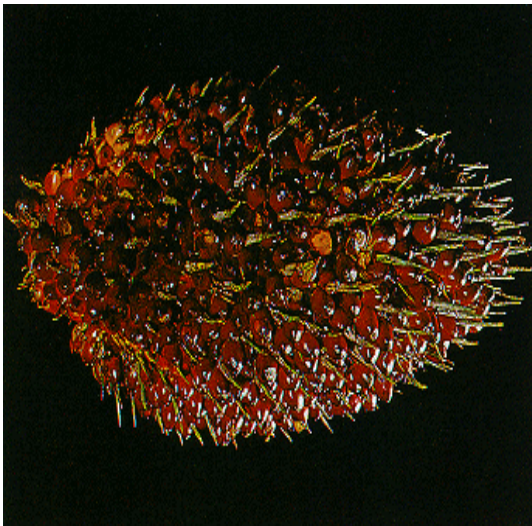
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Palm Olein – Frying

Palm Oil – Bakery Shortening

Palm Stearin – Structuring

Blends of Fractions – To Meet specific application needs

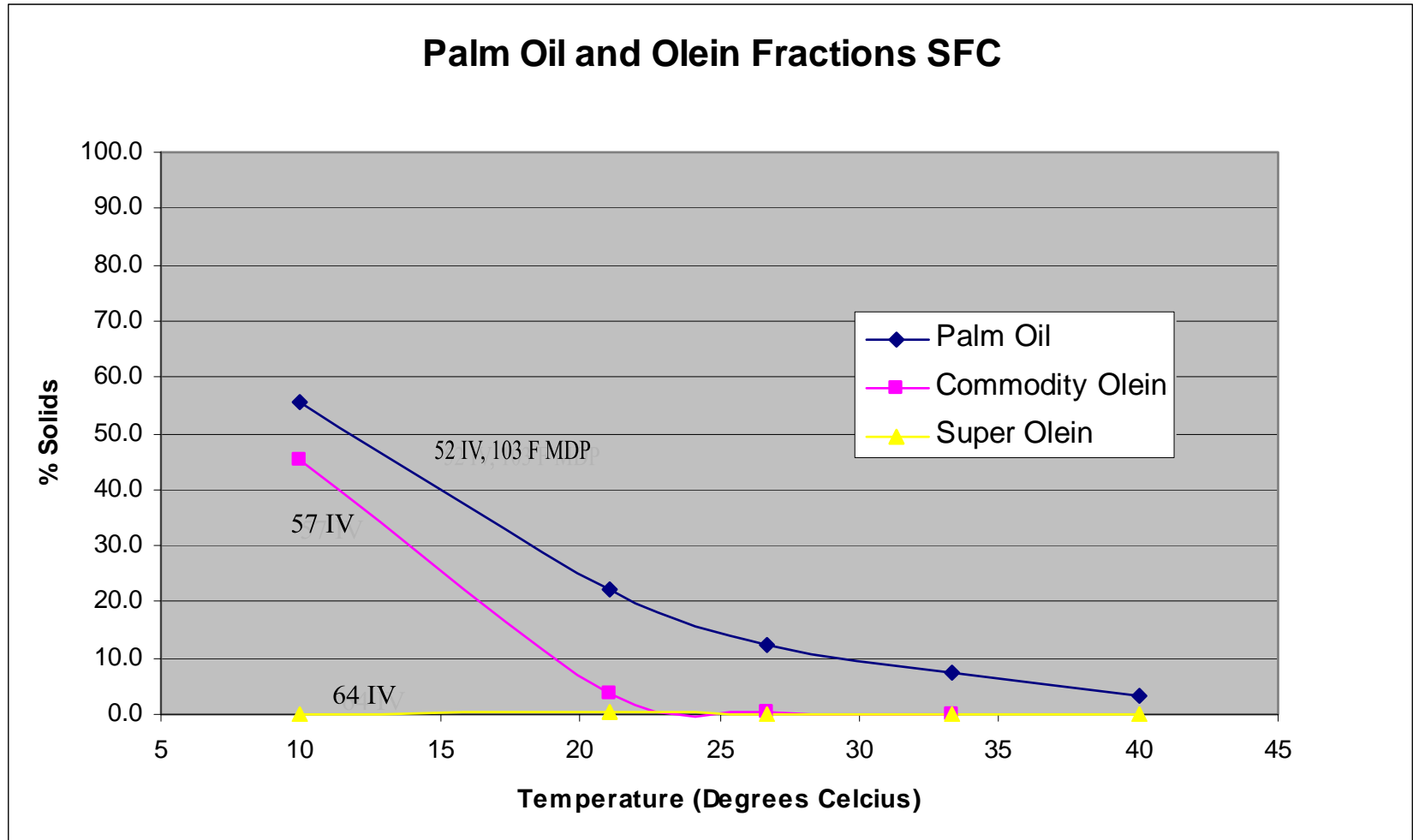


Source: Malaysian Palm Oil Board



Source: Malaysian Palm Oil Board

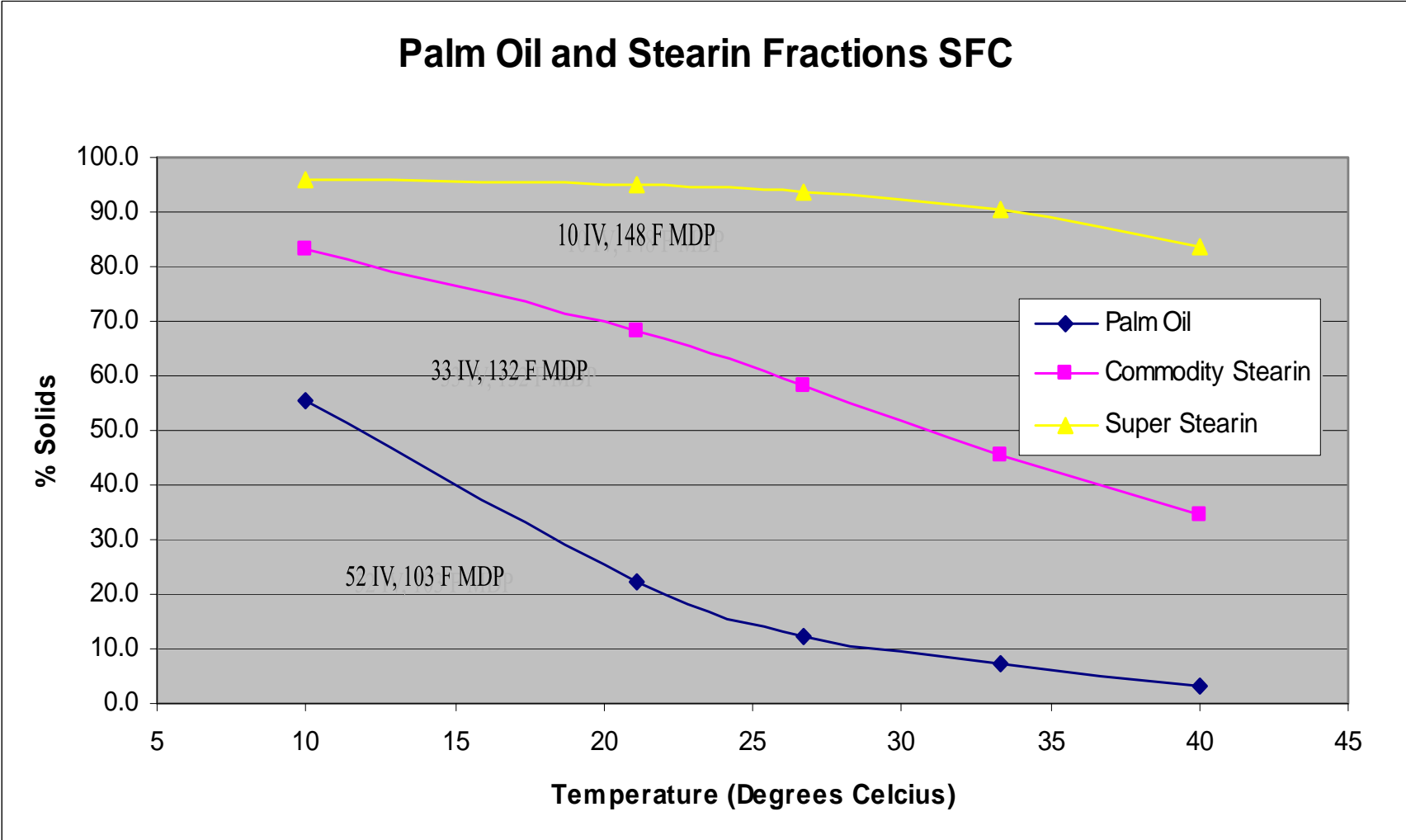
# SFC's of Palm Liquid Fractions



# FAC's of Palm Liquid Fractions

FAME-100%	Palm Oil	Com. Olein	Super Olein
C12:0	0.2	0.3	0.3
C14:0	1.3	1.1	1.2
C16:0	44.4	40.3	35.1
C18:0	4.3	4.2	3.7
C18:1	38.3	41.6	44.6
C18:2	9.9	10.9	13.1
C18:3	0.3	0.4	0.5
C20:0	0.4	0.4	0.3
FAME Sats	50.6	46.3	40.6

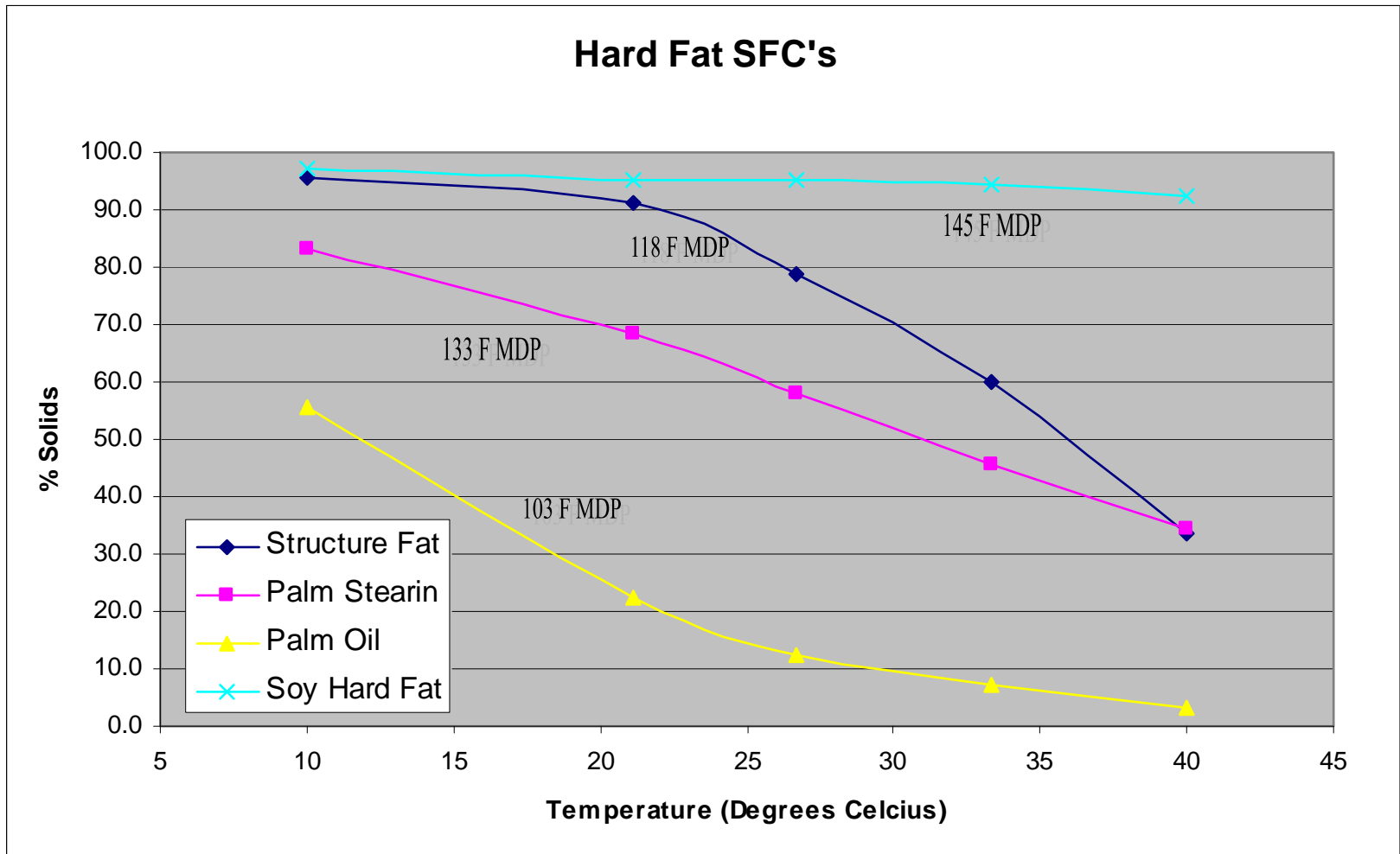
# SFC's of Palm Hard Fractions



# FAC's of Palm Hard Fractions

FAME-100%	Palm Oil	Com. Stearin	Super Stearin
C12:0	0.2	0.2	0.1
C14:0	1.3	1.3	1.3
C16:0	44.4	61.5	83.5
C18:0	4.3	5.1	4.7
C18:1	38.3	25.1	8.1
C18:2	9.9	5.6	1.6
C18:3	0.3	0.1	0.1
C20:0	0.4	0.4	0.3
FAME Sats	50.6	68.5	89.9

# Blending – Structuring Fats



# Blending - Structuring Fats

FAME-100%	Structure Fat	Palm Stearin	Palm Oil	Soy Hard Fat
C8:0	0.2			
C10:0	0.8			
C12:0	14.3	0.2	0.2	
C14:0	6.6	1.3	1.3	0.1
C16:0	60.8	61.5	44.4	10.5
C18:0	4.4	5.1	4.3	88.2
C18:1	10.4	25.1	38.3	0.2
C18:2	1.9	5.6	9.9	0.1
C18:3		0.1	0.3	
C20:0		0.4	0.4	0.6
Saturates	87.1	68.1	50.2	98.8

# Interesterification

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## Traditional uses

- Modify crystal morphology of lard

Can create structured lipids for functional & health benefits

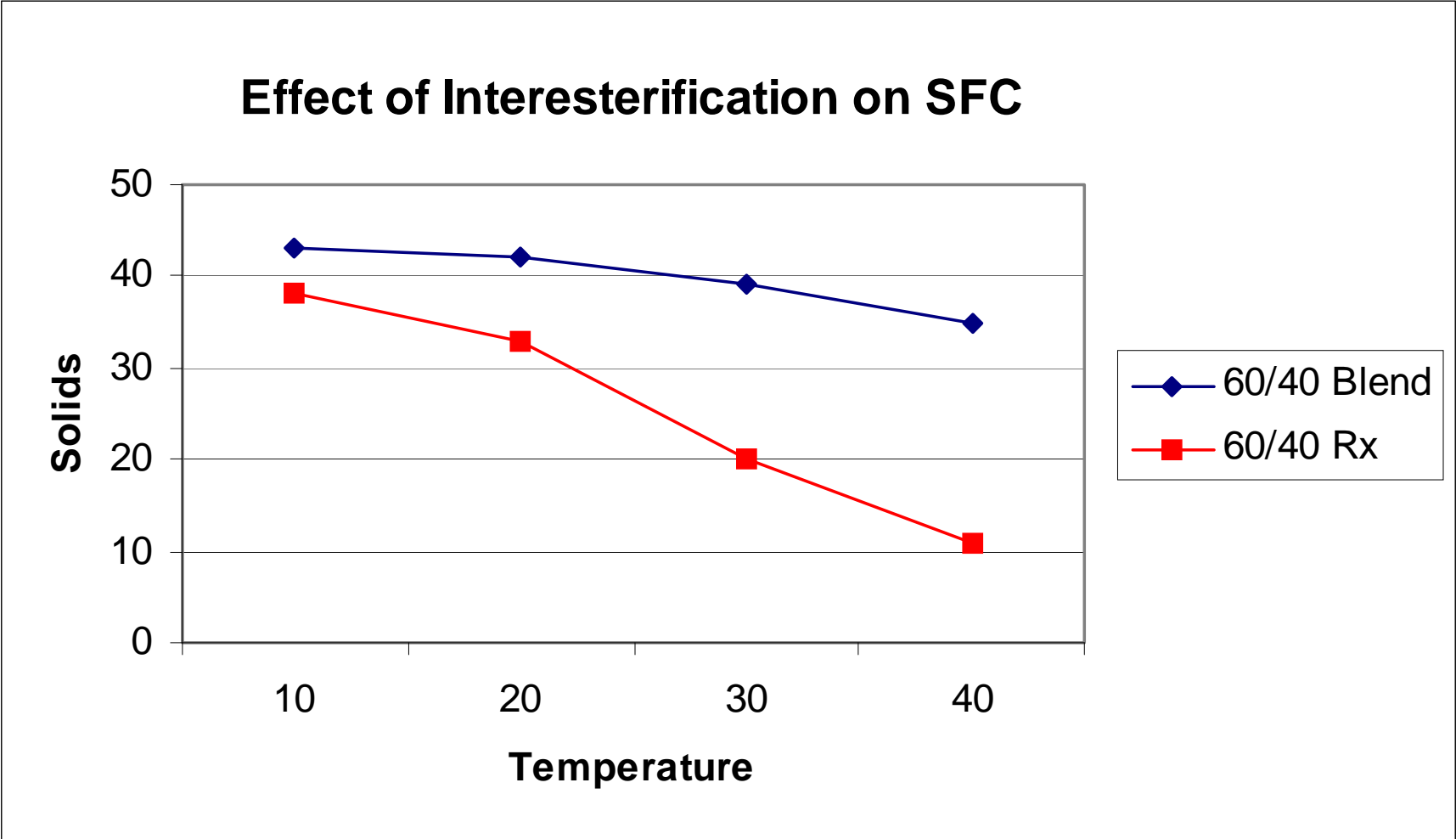
- MCT's, Omega-3's, CBE's & CBR's

Allows fatty acid chain mismatch

- Structure Fat

Can be used to create low trans AP shortenings with Domestic Oils via Liquid Oil + Hydrogenated Oil

# Interesterified Domestic Oils



# Laurics, Fractions and Modified

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Primarily for confectionery and dairy replacement applications.

Palm Kernel Stearin

Hydrogenated Palm Kernel

Interesterified Palm Kernel



# Hybrids and Tailored Blends

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Utilization of multiple tools to meet specific functional and nutritional profile requirements.

Ex: Palm fractions and hydrogenation for Icing

Trait enhanced oils and hydrogenation or palm fractions for donut frying.

Palm fractions and interesterification for enrobing fats.

## Stay tuned.... New tools are still being added

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Your Lipid Developers and commercial suppliers continue to add to their toolboxes and improve their skills.

Thank You for your interest and attention !

