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# Fats for chocolate fillings

## Focus on content of saturated fatty acids

# Agenda

- ◆ Health trend
- ◆ Challenges – Opportunities
  - Processing conditions
  - Handling
- ◆ Products and properties
  - ◆ CHOCOFILL™ LS
  - ◆ CHOCOFILL™ NH



# Trends within the food industry



Rise of global middle class



- Strong population growth
- Rising income levels in developing economies

Convenience and accessibility



- Urbanization
- Consumers pressed for time
- Increasing need for on-the-go meals and prepared foods

Health and Wellness



- Global obesity epidemic
- Rapidly ageing populations
- Rising healthcare costs

Increasing retailer power



- Food retailers consolidating
- Launching own brands to capture more of the food profit pool

Food safety and security

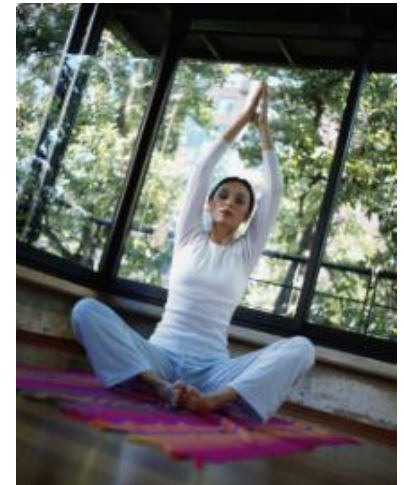


- Global health scares
- Increasing brand risks
- Increasing regulatory scrutiny

# Health trend

## Risk factors related to fats and oils

- ◆ Obesity
- ◆ Diabetes
- ◆ Serum cholesterol level
- ◆ Lipoprotein balance
- ◆ Triglyceride level
- ◆ Oxidation of LDL-cholesterol
- ◆ Platelet formation
- ◆ Blood viscosity
- ◆ Tendency to clot
- ◆ Immunologic activity



# Fat intake and Coronary Heart Disease

A high ratio of LDL/HDL-cholesterol increase the risk for CHD!

Effects of fatty acids on blood cholesterol (compared to carbohydrates)

Type of fatty acid	HDL-cholesterol	LDL-cholesterol	LDL/HDL-cholesterol
Saturated fat (C12-C16)	+	+	0
Saturated fat (<C12, C18)	0	0	0
Trans 18:1	-	+	++
Monounsaturated C18-1cis	+	-	--
Polyunsaturated	+	-	--

HDL-c (High Density Lipoprotein) - Good cholesterol

LDL-c (Low Density Lipoprotein) - Bad cholesterol

# Fat consumption and cardiovascular disease – clinical trials



- Replacing saturated fat with carbohydrates has no effect<sup>1,2</sup>
- Replacing saturated fat with unsaturated – 15-20% decreased risk of cardiovascular disease<sup>1,3</sup>

- 1. Hooper et al Cochrane Database Syst Rev. 2011 Jul 6;(7):CD002137.
  - 2. Jakobsen et al. Am J Clin Nutr 2009;89:1425–32.
  - 3. Mozaffarian et al. PLoS Med 2010;7:e1000252.
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# Health Key Recommendations

**Reduce consumption of SAFA by replacing with MUFA and PUFA**



## For decades


Reduce/eliminate trans fatty acids (TFA)

## More recently

Non-hydrogenated (NH) solutions

## Today

Substitute saturated fatty acids (SAFA) with mono and poly unsaturated fatty acids (MUFA and PUFA)

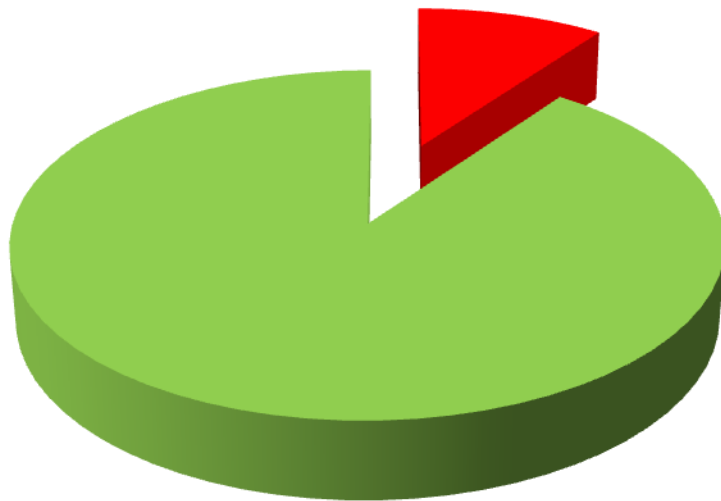
- Intake of total fat 30 – 35 E% (The European Food Safety Authority (EFSA))
- Intake of total fat 20 – 35 E%  United States Department of Agriculture
- Intake of saturates <10 E%
  - 1/3 of the energy coming from fat, is saturated
- Keep trans level low



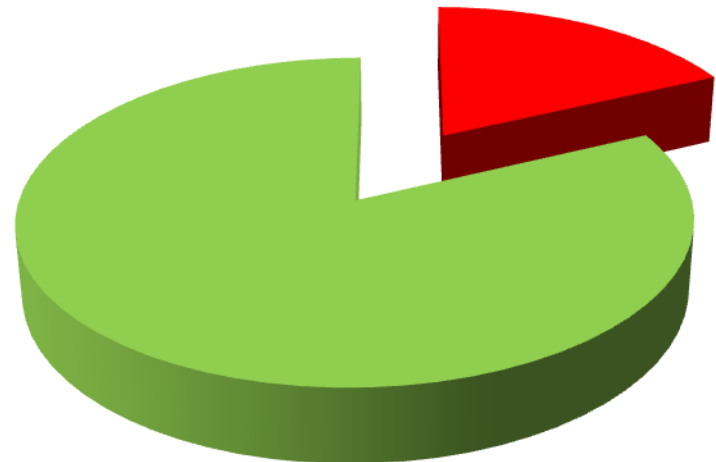
# Consumption of saturates exceeds recommended level!



**Recommended,  
10% SAFA, energy**



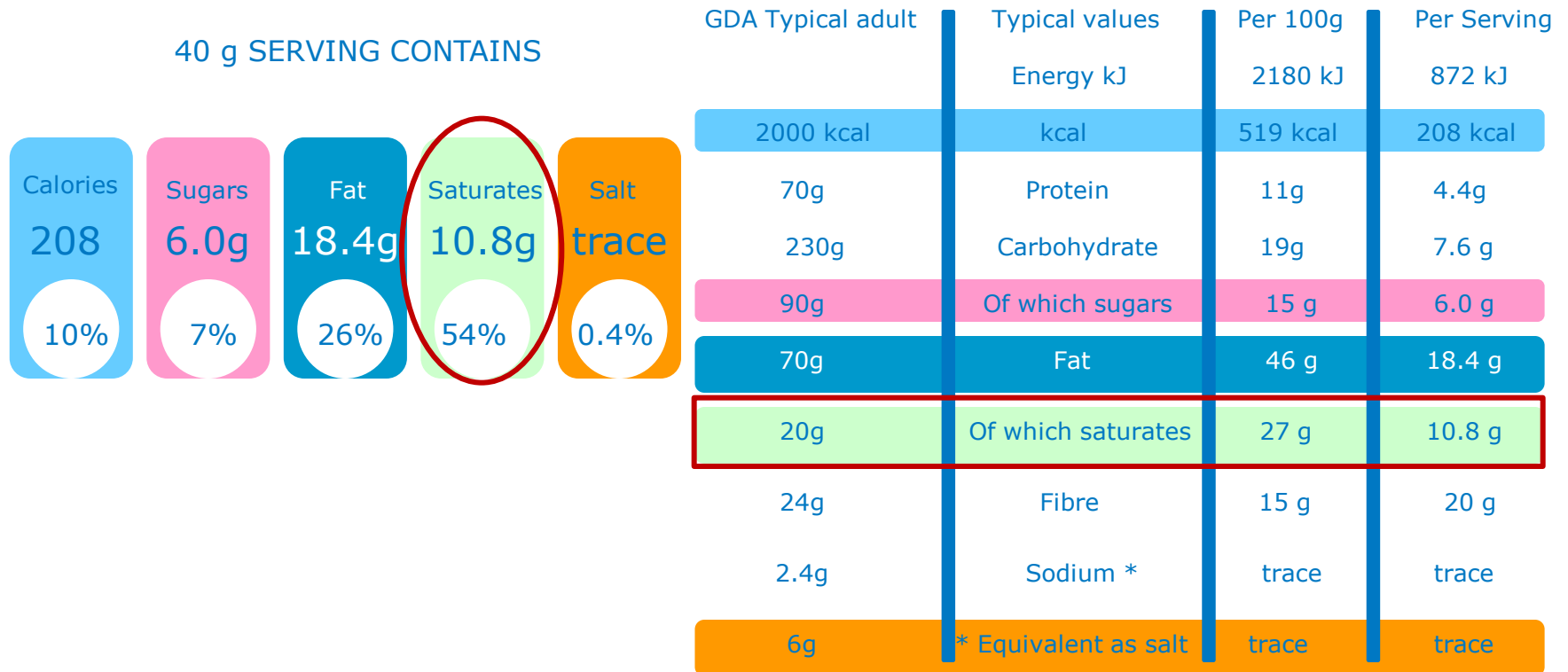
**Actual, 18% of SAFA,  
energy**





# Labelling – Nutrition

## GDAs - chocolate - 85% cocoa



Eksempel og UK way of labelling  
GDA, Guideline Daily Amount

# Risk factors **not** making healthier choice

Consumer



Public media



Competitor



Other issues: Legislation, labelling

May result in !! Decreased market share

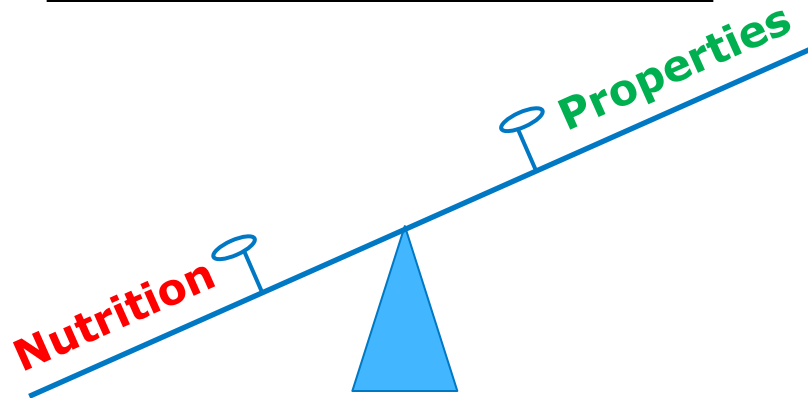


# Challenges - Opportunities

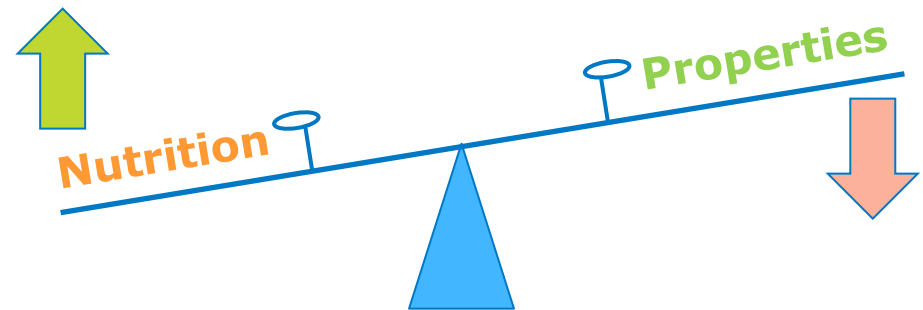
Nutrition - properties

AAK

**High SAFA or Trans  
Filling Fats**



**Low SAFA/Trans  
Filling Fats**

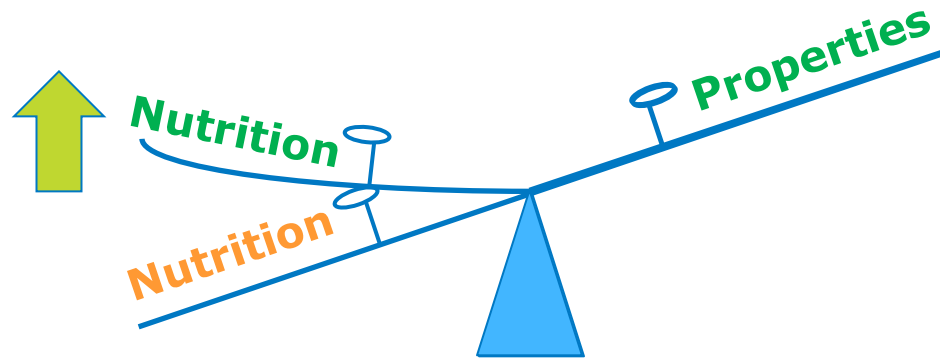


# Challenges - Opportunities

Nutrition - properties



## The objective



Nutritional awareness



Process functionality



Product functionality



# Reduce saturates in final product

## Opportunities



- ◆ Reduce fat content
- ◆ Change ratio of filling, wafer, coating
- ◆ Make a softer product
- ◆ Change composition in vegetable fat

*Wonder Wafer*



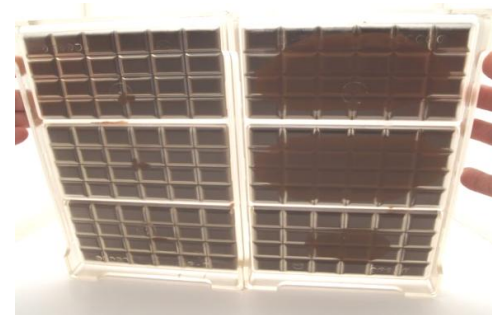
# Change in raw materials to low sat

## Influence processing and final product



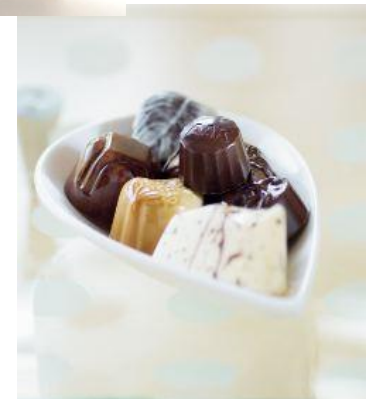
### ♦ Processing capacity/flexibility

- Change in optimal handling
- Crystallisation speed
- Re-work friendly
- Eutectic with other fats
- Flexibility, processing parameters



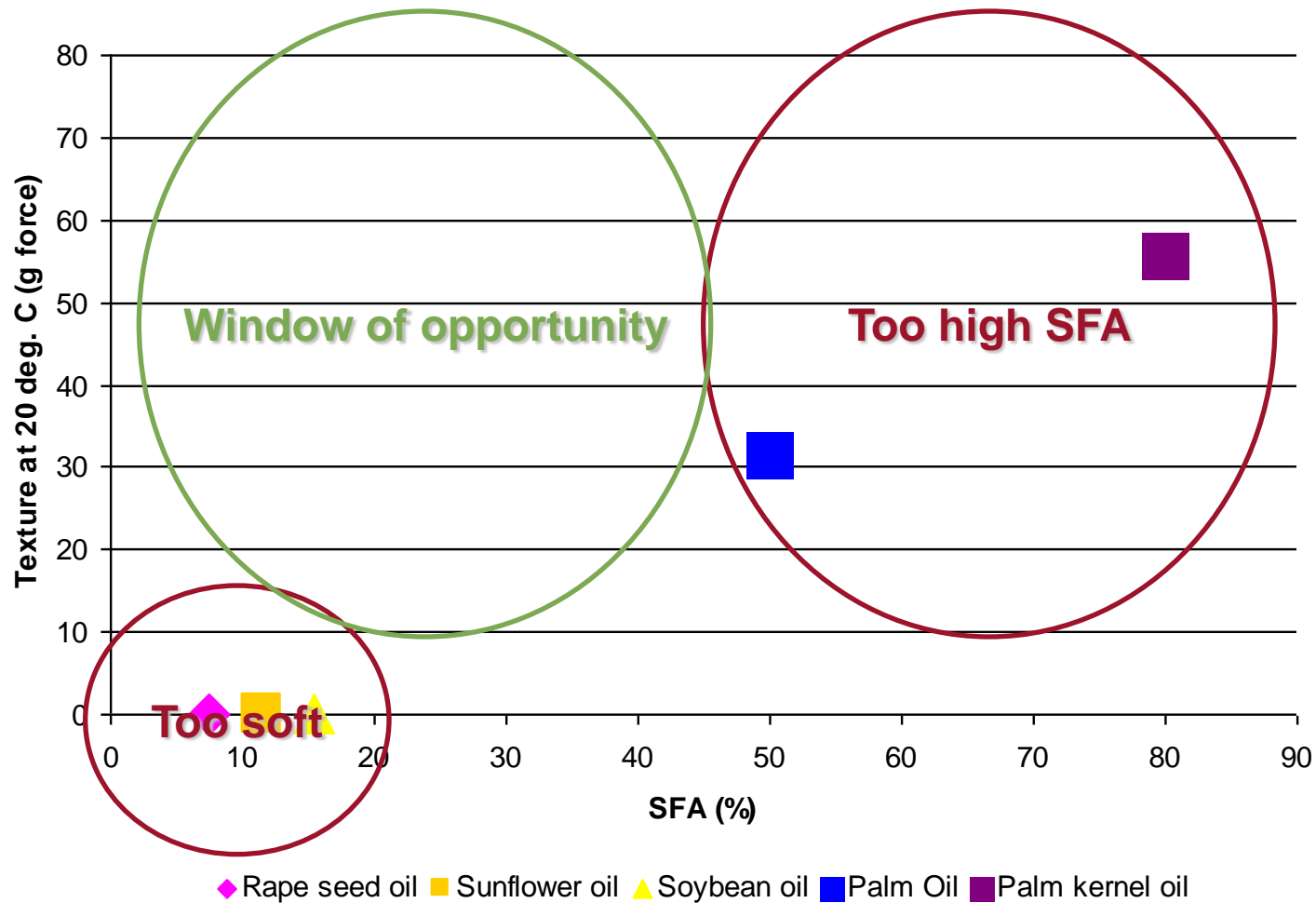
### ♦ Finished product

- Melting properties
- Flavour release
- Hardness
- Appearance, glossy
- Stability, shelf life
- Cost



# What's the challenge?

- The raw material perspective



# Limitations for solving all needs



## **Raw materials**

Approximately 10 commercial available oils  
Seven main fatty acids from C:12 to C:22

## **Process**

Fractionation , - solvent or dry  
Interesterification, - enzymatic or chemical  
Hydrogenation, - partly or full

## **Legislation**

Hydrogenation  
Degree of saturated  
Trans  
Raw materials  
Etc.

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# AAK range of Low Saturated Confectionery filling fats

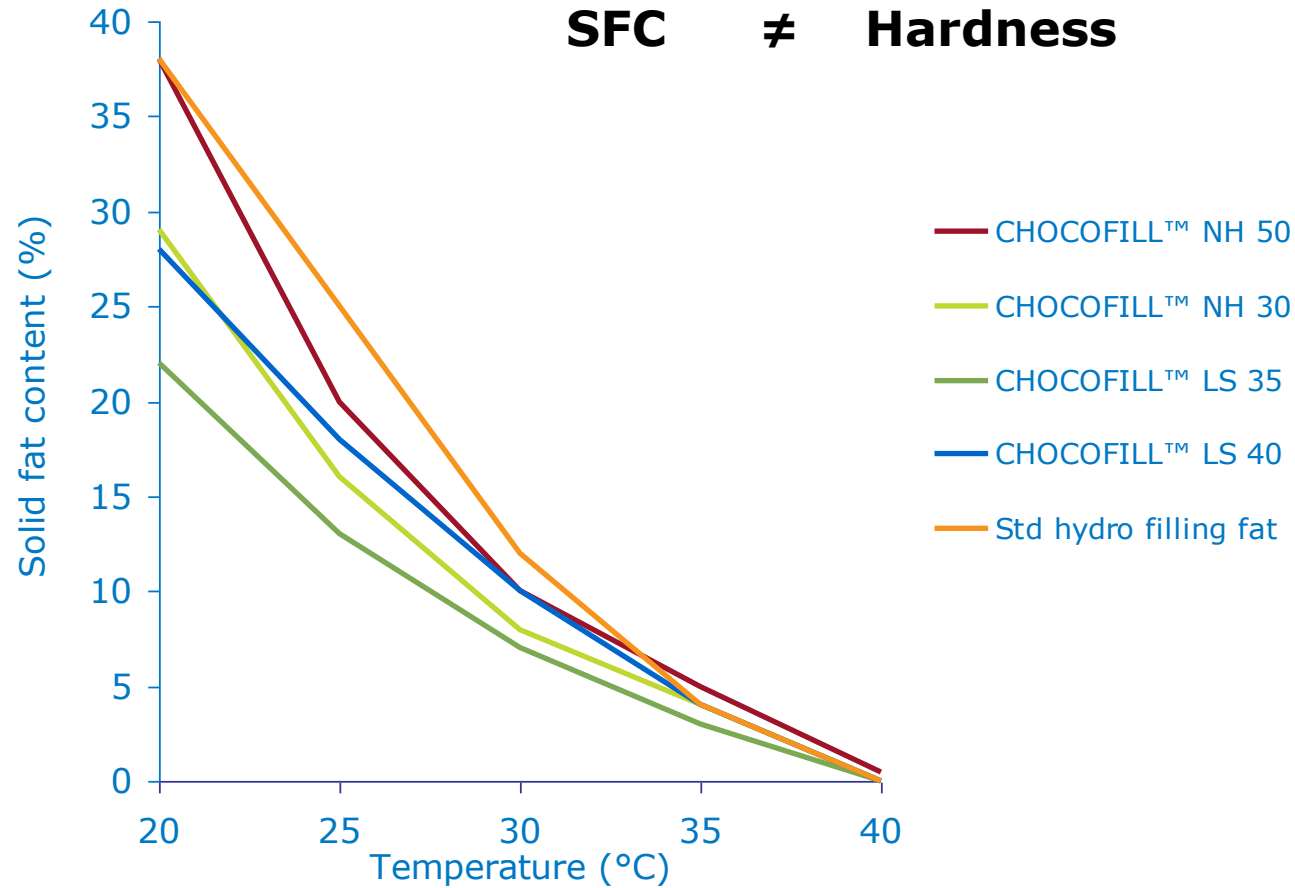


Reference	SAFA g/100g
PKO/PKS lauric based	72/86
CHOCOFILL™ GP 58	22/ 47 TFA
CHOCOFILL™ NH 50	50
AAK products	SAFA g/100g
AKOSPREAD™ NH 28	31
CHOCOFILL™ LS 35	35
CHOCOFILL™ LS 40	40
CHOCOFILL™ NH 18	43
CHOCOFILL™ NH 30	47
CHOCOFILL™ LS 50	50

All contain max 1% trans

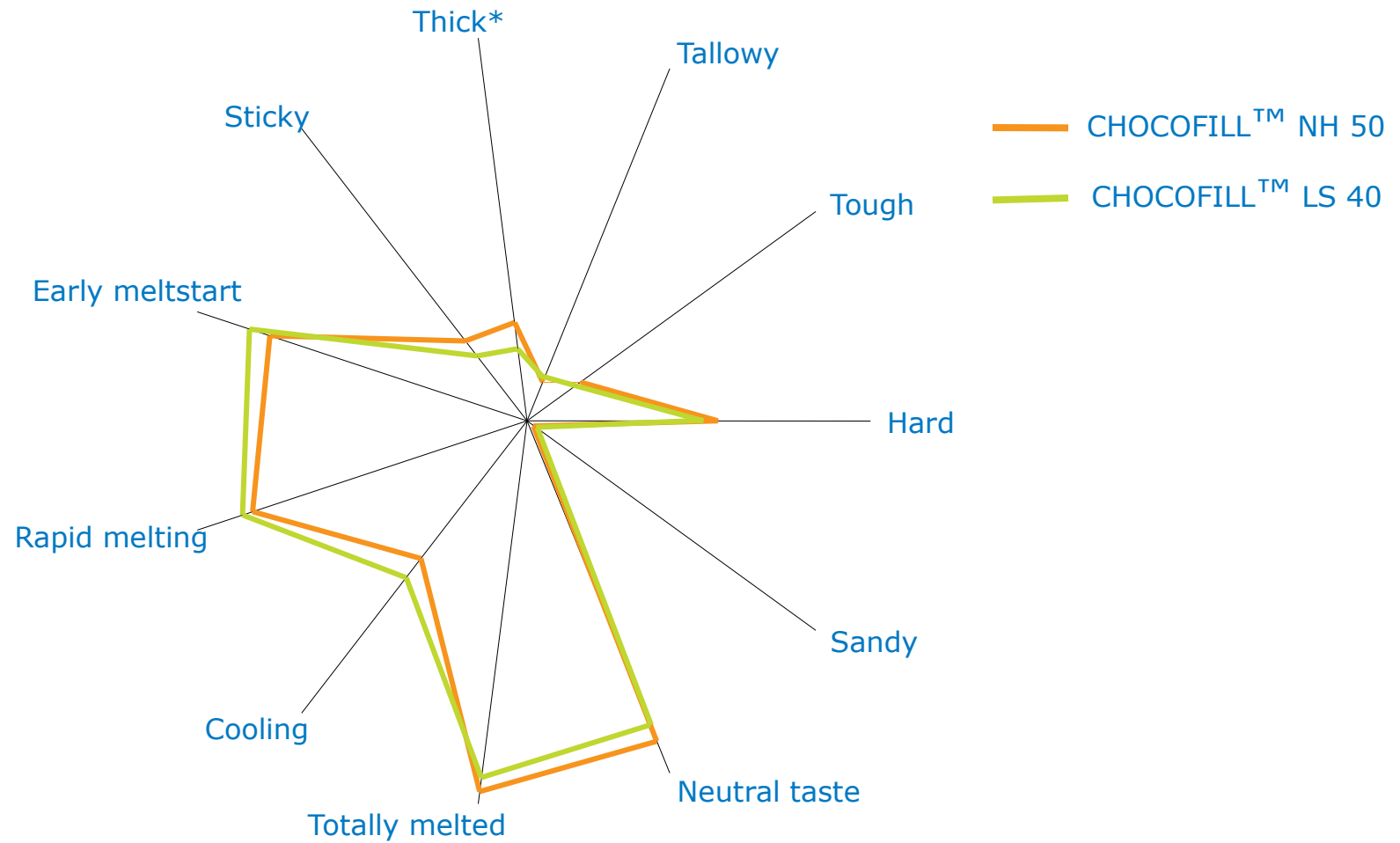
# CHOCOFILL™ LS and NH

Solid Fat Content



# CHOCOFILL™ LS and NH

Sensory



# CHOCOFILL™ LS/NH

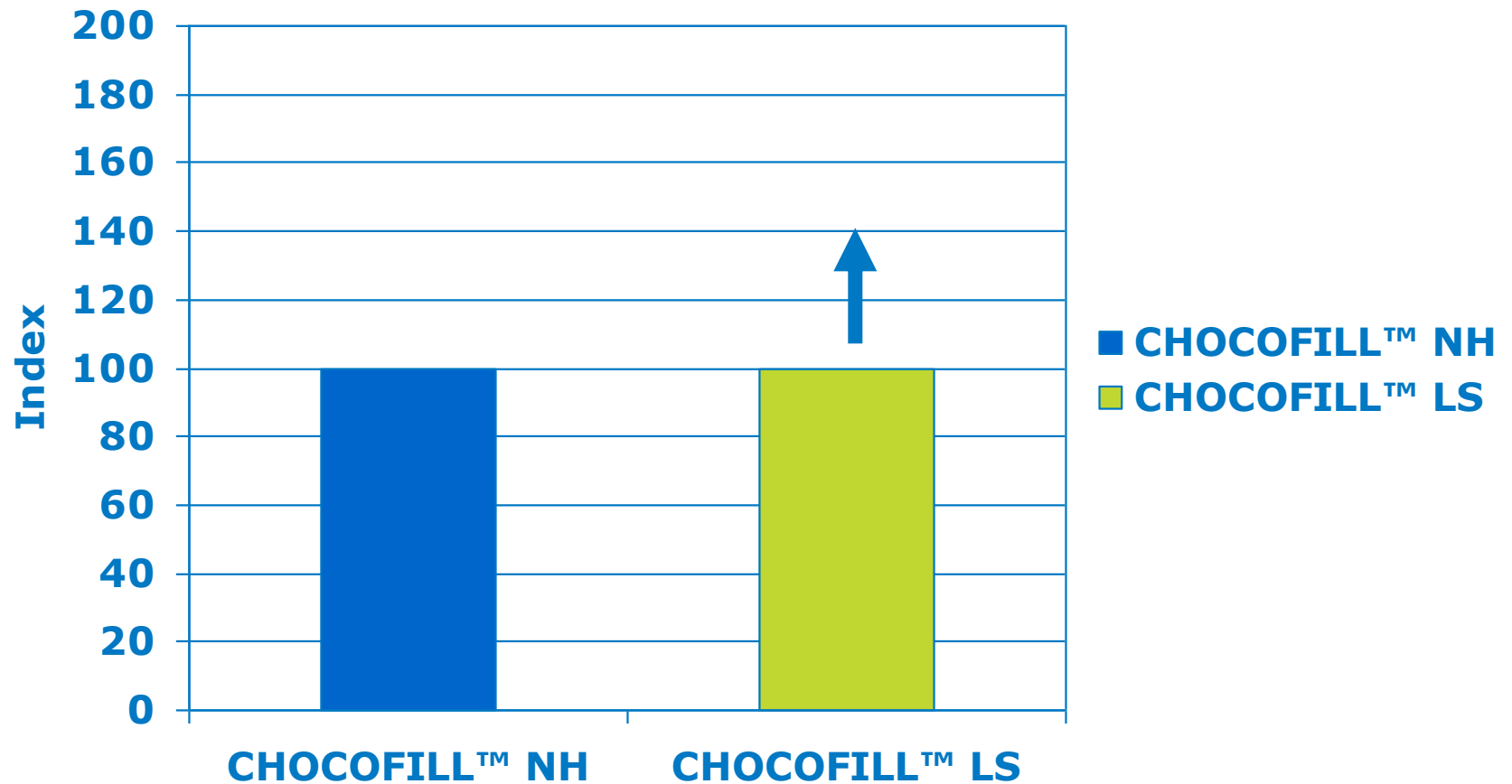
## Compatibility



	Cocoa butter	Hazelnut oil
CHOCOFILL™ LS 35	low	medium
CHOCOFILL™ LS 40	low	medium
CHOCOFILL™ NH 30	low	medium
CHOCOFILL™ NH 50	low	medium

# CHOCOFILL™ LS/NH

Bloom stability



# CHOCOFILL™ LS and NH

Heat stability, 28°C



# CHOCOFILL™ LS and NH

## Handling



- Cooling temp. 10-14 °C
- Longer cooling time than a comparable, high saturated or hydrogenated filling fat
- Suited for shell moulding, one-shot and cold-press applications, wafer fillings and filled bars



**Using correct processing conditions makes you able to produce confectionery products with good stability and sensory properties.**

# AAK Healthier alternatives



## • **CHOCOFILL™ LS**

- **Low amount of SAFA**
- Friendly labelling
- Easy to process – non temper
- Soft - Medium hard texture
- Excellent melt down
- Long shelf life , heat and bloom stability

## • **CHOCOFILL™ NH**

- **Medium amount of SAFA**
- Friendly labelling
- Easy to process - non-temper
- Wide range of texture
- Low cost





**CHOCOFILL™ LS and CHOCOFILL™ NH**  
makes you able to produce healthy  
profile confectionery products with  
excellent sensorial properties and high  
consumer appeal



**Thank you for your attention!**

**Questions?**

