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(54) **GRAISSES DE REMPLISSAGE NON-DELAYABLE A
STEREOCHIMIE SPECIFIQUE**

(54) **NON-TRANS, NON-TEMPER FILLING FATS**

(57) Un nouveau mélange de graisses pour le remplissage de composés de graisses trans ou pour enveloppe de margarine qui, à l'utilisation, ne présentera pas de durcissement. Ce mélange comprend : des SUS-, SSU et SU₂-triglycérides où : i) le remplissage < 5 %; ii) le rapport SUS-SSU-wt < 2; iii) SUS < 34 % wt; iv) SU₂ < 55 % wt. S = acides gras saturés de 16-18 C-atomes, U = acides gras mono/non saturés de 18 C-atomes.

(57) A novel fat-blend for low trans filling fat compositions or for wrapper margarine that upon use do not display posthardening comprise: SUS, SSU and SU₂-triglyceriden, wherein: i) the transcontent < 5% ii) SUS/SSU-wt ratio < 2 iii) SUS < 34 wt% iv) SU₂ < 55 wt % S= saturated fatty acid 16-18 C-atoms U= mono/diunsaturated fatty acid with 18 C-atoms.

ABSTRACT

A novel fat-blend for low trans filling fat compositions or for wrapper margarine that upon use do not display posthardening comprise: SUS, SSU and SU₂-triglyceriden, wherein:

- i) the transcontent < 5%
- ii) SUS/SSU-wt ratio <2
- iii) SUS < 34 wt%
- iv) SU₂ < 55 wt %

S= saturated fatty acid 16-18 C-atoms

U= mono/diunsaturated fatty acid with 18 C-atoms.

NON-TRANS, NON-TEMPER FILLING FATS

5 Cool-melting, non-trans, non-temper filling fats are known
from our EP 555,917, published August 18, 1993. According to this European
patent these compositions are obtained if blends are used,
comprising 51-80 wt% of SUS-triglycerides; <5 wt% of
S3-triglycerides; 7-60 wt% of (U3+U2S)-triglycerides; <40
10 wt% of SSU-triglycerides, while the weight ratio SUS:SSU
triglycerides is <6. Although above fat compositions are
excellent non-temper fat compositions we found that above
compositions still displayed one disadvantageous effect,
i.e. the fats posthardened to much when applied in creams
15 on storage at about ambient temperatures. This
posthardening makes the fats less appreciated by the
consumer and thus also the products wherein creams made
from the fats are present were less appreciated.
It is further known from the prior art that this
20 posthardening problem can be overcome by using medium
hardened fat compositions, such as a medium hardened
mixture of arachidic and soybean oil. However this means
that less healthy fats have to be applied, because medium
hardening results in the occurrence of substantial amounts
25 of the less healthy trans fats in the hardened fats.

We studied whether we could find a solution for above
problem, however under maintaining the advantageous
properties of the known fats mentioned in our earlier
30 European Patent 555,917.

This study resulted in novel fat compositions with which
the above aims could be fulfilled.

These novel fats comprise fat blends for low trans filling
35 fat compositions or for wrapper margarine comprising
triglycerides of the types SUS, SSU and SU2, wherein the
fat blend has a trans fatty
acid content <5 wt%, preferably <2 wt% and comprises the

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triglycerides SUS and SSU in a weight ratio SUS:SSU<2, preferably 0.5-1.5, while SUS is present in an amount <34 weight %, preferably 15-25 wt% and SU2 is present in an amount <55 wt%, preferably 30-50 wt%, which fat blend preferably displays an solid fat index, measured by NMR-pulse on unstabilised fat at 20 °C of 10-35, more preferably 15-30, most preferably 20-25, wherein S=saturated fatty acid residue with 16-18 C-atoms and U=mono and/or diunsaturated fatty acid residue with 18 C-atoms.

In above definition the NMR measurement is performed on unstabilised fats, this means that the fats were subjected to the following temperature regime prior to the actual measurement: melt at 60 °C; 5 min at 60 °C; 1 hr at 0 °C; 1/2 hr at measurement temperature.

Above blends suitably comprise:

- (i) an interesterified palm olein component with an iodine value of 50-70 and
- (ii) a palm oil fraction with an SUS-content of 60-80 wt%, an SSU-content of 5-30 wt %, preferably 10-25 wt% and an SU2-content of 5-15 wt%.

Alternatively the blends comprise:

- (i) an interesterified Shea-olein fraction and
- (ii) a palm oil fraction with an SUS-content of 60-80 wt%, an SSU-content of 5-30 wt %, preferably 10-25 wt% and an SU2-content of 5-15 wt%.

The weight ratio wherein the fats (i) and (ii) defined above can be applied ranges from 60-90:40-10, preferably from 70-80:30-20.

Part of the invention are also filled chocolate bars, wherein the filling consists at least partly of the blends according to the invention. We found that our new blends do have very good aerating properties, it was found that it
5 was easy to incorporate 25-45 vol% of air or of another gas in the fat blends. This can be achieved by whipping of the blends with a conventional whipper. Therefore our new fillings can suitably be applied for the preparation of aerated filled chocolate bars.
10 Wrapper margarine, containing our novel fat composition are also part of our invention.

According to another embodiment of our invention our new fat blends can be used beneficially as part of the filling
15 of filled chocolate products, optionally after whipping, to avoid posthardening of the fats upon storage of the chocolate products.

EXAMPLES

1. A whipped cream was made using the following recipe:

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Icing sugar	50 wt%
Fat	40 ,,
Skimm.milk powder	10 ,,

10 Fats that were applied were:

(A) a medium hardened blend of arachidic and soybean oil (ratio 65:35), having a trans content of about 35%.

15 (B) a mixture of wet-fractionated palm oil olein / palm oil and a palm oil fraction having 3 wt% S3; 70 wt% SUS; 14 wt% SSU and 10 wt% SU2 in a weight ratio of 20:50:30.

20 (C) a blend of an intersterified palm oil olein with an iodine value of 65 and a palm oil fraction having 6 wt% S3; 68 wt% SUS; 14 WT5 SSU and 10 wt% SU2 in a weight ratio of 80:20

The triglyceride composition of the different components
25 and compositions is given below:

		Palm oil	Interest.Palm oil olein	wet fract. palm oil olein	(B)	(C)
30	SSS	9.7	5.5	0	4.8	5.6
	SUS	41.5	8.3	32.6	45.9	20.2
	SSU	9.2	18.9	5.7	8.8	17.9
	SU2	33.2	43.7	50.5	33.2	37.0

35 the solid fat indexes of the different fat blends (A), (B) and (C) were as follows:

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	Blend A	Blend B	Blend C
N20	23.2	14.3	22.2
N25	13	3.7	12
N30	5.6	0.9	7.1
5 N35	1.2	0	4.3

The ingredients were mixed in a Hobart mixer, the creams obtained were cooled to a temperature at which the mixtures could be whipped. The whip temperature and the amount of
10 air incorporated are mentioned below:

	Fat applied	temp of whipping	% air incorp.
	A	16.4 oC	36 vol%
	B	16.5	36
15	C	13.6	35

The creams were stored at 20 oC and the hardness of the creams were measured after different time intervalls. The results are given below:

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Fat applied	1 day	4 days	14 days
A	16		29
B	68		83
C		52	54

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The hardness was measured using a Stevens texture analyser, having a cone of 60 o, using a speed of 0.5 mm/sec. The hardness is mentioned in grams.

30 From above results it can be concluded, that the posthardening was the least for the trans fat composition (A), that the posthardening was unacceptably high for composition (B) which is a composition according to EP 555,917, while for composition (C) according to the
35 invention it was found that the posthardening was acceptable and close enough to the value found for the trans fat.

2. A whipped cream was made using the following recipe:

Icing sugar	50 wt%
Fat	40 wt%
5 Skimmed milk powder	10 wt%

Fats that were applied were:

1. a medium hardened blend of arachidic and soybean oil
10 (ratio 65:35), having a trans content of about 50%
2. a blend of an interesterified palm olein / shea olein,
and a palm oil fraction in a weight ratio of 75/25

15 The tryglyceride composition of fat 2 is as given below:

SUS	23.2
SSU	19.6
SU2	34.4

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The solid fat indexes of the fat blends were as follows:

	1	2
25 N20	24.4	19.4
N25	13.0	10.8
N30	4.8	5.5
N35	1.0	2.7

30 The ingredients were mixed in a Hobart mixer, the creams obtained were cooled to a temperature at which the mixtures could be whipped. The whip temperature and the amount of air incorporated are mentioned below:

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Fat applied	Temp. of whipping	%air incorp.
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1.	20.9	23 vol%
2.	19.6	19 vol%

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The creams were stored at 20°C and at 25°C the hardness was measured after different time intervals. The results are given below:

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Fat applied	1 day	1 week	2 weeks	1 month
at 20°C				
15 1.	34	49	56	
2.	23	51	74	
at 25°C				
1.	21	23	26	23
20 2.	13	16	18	16

The hardness was measured using a Stevens texture analyser, having a cone of 60°, using a speed of 0.5 mm/sec and a penetration depth of 2 mm. The hardness is measured in grams.

From above results it can be concluded that a similar amount of air was incorporated in both creams and that the posthardening was the least for the trans fat composition 1., and for blend 2. according to the invention it was found that the posthardening was acceptable and close enough to the value found for the trans fat.

CLAIMS:

1. Fat blend for low trans filling fat compositions or for wrapper margarine comprising triglycerides of the types SUS, SSU and SU2, wherein the fat blend has a trans fatty acid content <5 wt% and comprises the triglycerides SUS and SSU in a weight ratio SUS:SSU<2, while SUS is present in an amount <34 wt% and SU2 is present in an amount <55 wt%, which fat blend displays a solid fat index, measured by NMR-pulse on unstabilised fat at 20 °C of 10-35, wherein S=saturated fatty acid residue with 16-18 C-atoms and U=at least one of mono and diunsaturated fatty acid residue with 18 C-atoms.
2. Fat blend according to claim 1, wherein the blend comprises (i) an interesterified palm olein component with an iodine value of 50-70 and (ii) a palm oil fraction with an SUS-content of 60-80 wt%, an SSU-content of 5-30 wt%, and an SU2-content of 5-15 wt%.
3. Fat blend according to claim 1, wherein the blend comprises (i) an interesterified Shea-olein fraction and (ii) a palm oil fraction with an SUS-content of 60-80 wt%, an SSU-content of 5-30 wt%, and an SU2-content of 5-15 wt%.
4. Fat blend according to claims 2 or 3, wherein the components (i) and (ii) are present in a weight ratio of 60-90:40-10.

5. Fat blend according to claim 1 wherein in the trans fatty acid content is <2 wt%, the SUS:SSU weight ratio is 0.5 to 1.5, the SUS content is 15-25 wt%, the SU2 content is 30-50 wt%, the SSU content is 10-25 wt% and the solid fat index is 20-25.
6. Filled chocolate bar, wherein the filling consists at least partly of the blend according to any one of claims 1-4.
7. Filled chocolate bar according to claim 6, wherein the filling is whipped to contain 25-45 vol% of air or another gas.
8. Use of a fat blend in fillings for chocolate bars, wherein the fat blend according to any one of claims 1-4 is used as part of the filling to avoid post-hardening of the fats of the filling.