



(11) **EP 0 789 070 B2**

(12) **NEW EUROPEAN PATENT SPECIFICATION**
After opposition procedure

(45) Date of publication and mention of the opposition decision:
21.01.2009 Bulletin 2009/04

(51) Int Cl.:
C11D 3/00 (2006.01) C11D 1/62 (2006.01)

(45) Mention of the grant of the patent:
12.06.2002 Bulletin 2002/24

(21) Application number: **97300495.5**

(22) Date of filing: **27.01.1997**

(54) **Fabric softening composition**

Textilweichmacherzusammensetzung
Composition assouplissante pour textiles

(84) Designated Contracting States:
DE ES FR GB IT

(30) Priority: **09.02.1996 GB 9602608**

(43) Date of publication of application:
13.08.1997 Bulletin 1997/33

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Description

[0001] This invention relates to the incorporation of a skin benefit agent in a fabric softening composition such that when fabrics treated with the fabric softening composition subsequently come into contact with the skin the fabrics deliver a benefit to the skin

[0002] Rinse added fabric softener compositions are well known. Typically such compositions contain a water insoluble amine salt and/or a quaternary ammonium fabric softening agent dispersed in water at a level of softening agent up to 7% by weight in which case the compositions are considered dilute, or at levels from 7% to 50% in which case the compositions are considered concentrates. Quaternary ammonium materials with long chain substituents have been used in fabric softening compositions for many years. Often they are used in conjunction with co-actives such as fatty acids or other relatively cheap materials which also provide softening benefits.

[0003] In addition to softening, fabric softening compositions desirably have other benefits.

[0004] GB 1 601 359 (Procter and Gamble) describes the use of esters as an ingredient in a fabric softening composition which also comprises a cationic surfactant selected from various specified groups. The ester is one of a number of nonionic fabric lubricants suggested.

[0005] GB 1 550 205 (Procter and Gamble) disclose formulations containing silicones, cationic compounds and glycerol monostearate for ease of ironing, and softening benefits may be obtained without the ester oil when other nonionic softeners are substituted for the glycerol monostearate.

[0006] Fabric softening compositions containing silicones are well known and are disclosed in GB 1 549 180 (Procter & Gamble) and EP 356 210 (Dow Corning).

[0007] EP 0 436 729 (Kanebo) discloses an industrial process for applying microcapsules to fabric, which when contacted with the skin are physiologically active.

[0008] US 4110498 (Benjamin et al) discloses a fabric softening composition comprising a cationic fabric softener and a lanolin alcohol based fabric softener.

[0009] Accordingly the present invention provides the use of a skin benefit agent according to claim 1.

[0010] It is preferred if the skin benefit agents are perceived to condition the skin.

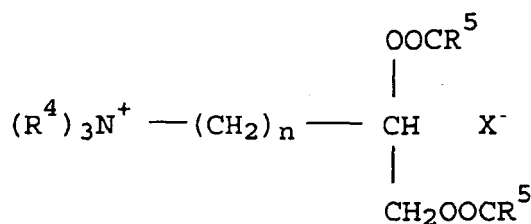
[0011] Examples of preferred silicones are given in GB 1 549 180 (Procter & Gamble).

[0012] It is advantageous if the silicone is essentially a linear di(C₁-C₅)alkylpolysiloxane or (C₁-C₅)alkylarylpolysiloxane) Examples of such silicones include the polydimethylsiloxanes.

[0013] It is preferred if the level of skin benefit agent is from 1 to 25 wt% of the total composition, more preferably from 1 to 10 wt%.

[0014] The fabric conditioning composition for use with this invention comprises a fabric softening material. Preferably the fabric conditioning material is a quaternary ammonium softening material. Advantageously the fabric softening composition comprises a water insoluble cationic softening material which is a compound having two C₁₂₋₂₈ alkyl or alkenyl groups connected to the N atom via one or more ester links.

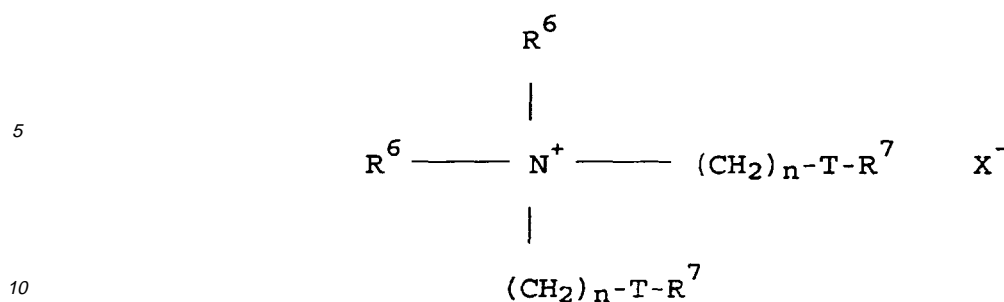
[0015] A preferred type of ester-linked quaternary ammonium fabric softening material for use in the compositions according to the invention can be represented by the formula:



in which each R⁴ group is independently selected from C₁₋₄ alkyl, hydroxyalkyl groups or C₂₋₄ alkenyl groups; and wherein each R⁵ group is independently selected from C₈₋₂₈ alkyl or alkenyl groups; X⁻ is any suitable anion and n is 0 or an integer from 1 to 5.

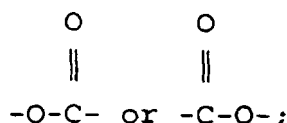
[0016] Materials of this class and their method of preparation are described in US 4 137 180 (Lever Brothers). Analysis of such materials shows that they also comprise small amounts of the corresponding dimethylamine salt, one such salt being N,N-dimethyl-2,3-bis[hardened tallowoyloxy]-propylamine hydrochloride. Advantageously these materials comprise small amounts of the corresponding monoester as described in US 4 137 180, for example, 1-hardened tallowoyloxy-2-hydroxy-3-trimethylammonium propane chloride.

[0017] A further preferred cationic softener is represented by the formula:



wherein each R⁶ group is independently selected from C₁₋₄ alkyl, hydroxyalkyl or C₂₋₄ alkenyl groups; and wherein each R⁷ group is independently selected from C₈₋₂₈ alkyl or alkenyl groups; T is

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and

n is 0 or an integer from 1 to 5 and X⁻ is any suitable anion.

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[0018] A further advantage of using ester linked quaternary ammonium materials with the above formula is that included within a composition according to the invention the compositions have excellent viscosities and are stable on storage.

[0019] Preferably the level of ester linked quaternary ammonium compounds is at least 1% by weight of the composition, more preferably at least 3% by weight of the composition; especially interesting are concentrated compositions which comprise at least 7% of ester-linked quaternary ammonium compound. The level of ester-linked quaternary ammonium compounds preferably is from 1% to 80% by weight, more preferably from 4% to 32%, most preferably from 6% to 22%.

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[0020] It is preferable if the ratio of fabric softening compound to skin benefit agent is from 5:1 to 1:5, more preferably from 4:1 to 2:3.

[0021] The softening composition may also comprise a nonionic stabilising agent selected from:

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- i. linear C₈ to C₂₂ alcohols alkoxyated with 10 to 20 moles of alkylene oxide; and
- ii. a C₁₀ to C₂₀ alcohol or mixtures thereof.

[0022] Advantageously the nonionic stabilising agent is a linear C₈ to C₂₂ alcohol alkoxyated with 10 to 20 moles of alkylene oxide. Preferably the nonionic stabiliser has an HLB value of from 10 to 20, more preferably from 12 to 20.

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[0023] Preferably, the level of nonionic stabiliser is within the range from 0 to 10% by weight, more preferably from 0 to 5% by weight, most preferably from 0 to 4% by weight. When nonionic stabilising agent is present the mole ratio of the quaternary ammonium compound to the nonionic stabilising agent is within the range from 40:1 to about 1:1, preferably within the range from 18:1 to about 3:1.

[0024] Preferably the compositions of the invention are liquids comprising an aqueous base.

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[0025] The composition can also contain a co-active, for example, a C₈ - C₂₄ alkyl or alkenyl monocarboxylic acid or polymer thereof. Preferably saturated fatty acid are used, in particular, hardened tallow (C₁₆-C₁₈) fatty acids. Preferably the fatty acid is non-saponified, for example free oleic acid, lauric acid or tallow fatty acid. Lanolin or other nonionic fabric softening agents may also be used as co-actives.

[0026] The level of co-active material is preferably more than 0.1% by weight, more preferably more than 0.2% by weight.

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[0027] Especially preferred are concentrates comprising from 0.5 to 20% by weight of co-active, more preferably 1% to 10% by weight. The weight ratio of quaternary ammonium/amine material to co-active material is preferably from 10:1 to 1:10.

[0028] The composition can also contain one or more optional ingredients, selected from non-aqueous solvents, pH buffering agents, perfumes, perfume carriers, fluorescers, colourants, hydrotropes, antifoaming agents, soil release agents, enzymes, optical brightening agents, opacifiers, anti-shrinking agents, anti-spotting agents, germicides, fungicides, anti-oxidants, anti-corrosion agents, and antistatic agents.

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[0029] The invention will now be illustrated by the following nonlimiting examples. In the examples all percentages

are expressed by weight.

Examples

5 **[0030]** Rinse conditioner formulations according to table 1, were prepared by melting the cationic compound in the silicone fluid with rapid stirring, demineralised water at 70°C. Stirring was continued for 10-15 minutes prior to subjecting the mixture to high shear agitation using a Silverson homogeniser for 10-15 minutes.

Table 1

Example	A	1	2
HEQ ¹	5	4	4
PDMS 5Pa.S (5000 cSt) ²		1	
PDMS 30Pa.S (30,000 cSt) ²			1
Water and minors	to 100		
1. 1,2-bis[hardened tallowoyloxy]-3-trimethylammonium propane chloride/hardened tallow fatty acid - 6:1 quat:fatty acid, ex Hoechst. 2. Polydimethylsiloxane silicone fluid, various viscosities, ex Dow Corning. 3. C ₁₂ nonionic ethoxylated with 12 moles of ethylene oxide per molecule (Genapol C200, ex Hoechst).			

Silicone Transfer

30 **[0031]** The formulations of the Examples were used to treat terry towelling at a dosage of 2ml/L in 1L Tergotometer (TM) pots (liquor:cloth = 40:1, ambient temperature, 5 minutes, 65 rev/min). The terry towelling was spun to remove excess liquor and then line dried.

[0032] The treated terry towelling pieces were rubbed onto the front forearms of the assessor for one minute. Three tape strip samples of the skin surface were taken and analysed for silicon by XRF spectrometry. Silicone levels were recorded in counts per second (CPS) from S XRF spectrometry of the tape strips. Each figure represents the mean of three independent tape strip values.

35 **[0033]** Softening scores were obtained by comparison with previously prepared standards; on this scale standard 8 corresponds to untreated (harsh) terry and standard 2 corresponds to very soft terry.

Table 2

Treatment	Softening Score	S (CPS)
Example 1	3.75	80
Example 2	2.5	68
Example A	3	16

45 **[0034]** All of the formulations gave excellent softening of the terry towelling. In addition, the formulations of examples 1 and 2 were found to transfer a significant level of silicone onto the skin.

Claims

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1. Use of a fabric softening composition comprising a skin benefit agent to deliver the skin benefit agent to the skin and to impart sensory and/or cosmetic benefits thereto when fabrics treated with the composition come into contact with the skin, **characterised in that** the skin benefit agent is a silicone.
 - 55 2. Use of a fabric softening composition according to claim 1 in which the silicone is an essentially linear di(C₁₋₅)alkyl polysiloxane or (C₁₋₅) alkylarylpolsiloxane.

3. Use of a fabric softening composition according to any one of the preceding claims in which the level of skin benefit agent is from 1 to 25 wt% of the total composition.
- 5 4. Use of a fabric softening composition according to claim 1 in which the composition further comprises a quaternary ammonium fabric softening material.

Patentansprüche

- 10 1. Verwendung einer textilweichmachenden, ein der Haut einen Vorteil verleihendes Mittel umfassenden Zusammensetzung zur Abgabe des der Haut einen Vorteil verleihenden Mittels an die Haut und um sensorische und/oder kosmetische Vorteile dafür zu verleihen, wenn mit der Zusammensetzung behandelte Textilien mit der Haut in Kontakt kommen, **dadurch gekennzeichnet, dass** das der Haut einen Vorteil verleihende Mittel ein Silikon ist.
- 15 2. Verwendung einer textilweichmachenden Zusammensetzung nach Anspruch 1, wobei das Silikon ein im Wesentlichen lineares Di-(C₁₋₅)alkylpolysiloxan oder (C₁₋₅)Alkylarylpolysiloxan ist.
- 20 3. Verwendung einer textilweichmachenden Zusammensetzung nach einem der vorhergehenden Ansprüche, wobei der Anteil des der Haut einen Vorteil verleihenden Mittels 1 bis 25 Gewichtsprozent der gesamten Zusammensetzung ist.
4. Verwendung einer textilweichmachenden Zusammensetzung nach Anspruch 1, wobei die Zusammensetzung weiterhin ein textilweichmachendes quaternäres Ammoniummaterial umfasst.

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Revendications

- 30 1. Utilisation d'une composition assouplissante pour tissus comprenant un agent bénéfique pour la peau afin de délivrer l'agent bénéfique pour la peau sur la peau et de conférer à celle-ci des avantages sensoriels et/ou cosmétiques lorsque le tissu traité avec la composition vient en contact avec la peau, **caractérisée en ce que** l'agent bénéfique pour la peau est une silicone.
- 35 2. Utilisation d'une composition assouplissante pour tissus selon la revendication 1, dans laquelle la silicone est un di alkyle polysiloxane en (C₁- C₅) essentiellement linéaire ou un alkylarylpolysiloxane en (C₁ - C₅).
- 40 3. Utilisation d'une composition assouplissante pour tissus selon l'une quelconque des revendications précédentes dans laquelle la teneur d'agent bénéfique pour la peau est de 1 à 25 % en poids du total de la composition.
4. Utilisation d'une composition assouplissante pour tissus selon la revendication 1, dans laquelle la composition comprend en outre un matériau assouplissant pour tissus ammonium quaternaire.

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REFERENCES CITED IN THE DESCRIPTION

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