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(54) **USE OF PERFUME TO DISPERSE A CATIONIC MIXTURE IN WATER**

(57) The present invention provides the use of a perfume having a ClogP value from 0.5 to 8 to disperse in water a mixture of cationic surfactants obtainable by a process comprising: Step I, comprising the esterification of a hydroxyl group-containing compound or a mixture of hydroxyl group-containing compounds with a mixture of

compounds containing one or more carboxylic groups, and Step II, comprising the cation formation from the reaction products of Step I.

The invention also provides aqueous dispersed compositions and uses thereof. Advantageously the dispersions of the invention are highly stable.

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**Description****FIELD OF THE INVENTION**

5 **[0001]** The present invention relates to the use of a perfume to disperse in water a mixture of cationic surfactants useful for preparing fabric softener compositions.

**STATE OF THE ART**

10 **[0002]** Quaternary ester ammonium compounds, commonly referred to as "esterquats" (EQ) have found broad use as fabric softener actives due to their high softening performance (e.g., for softening textile fibers and fabrics as well as keratinous fibers, such as hair), their biodegradability, reasonably low aquatic toxicity, and good cosmetic compatibility.

**[0003]** Softener formulations comprising esterquats need specific manufacture procedures (including stirring and temperature conditions) to ensure stability and avoid phase separation in the aqueous dispersion. There is still a demand  
15 for softener active formulations, which in combination with perfume, show a clear viscous liquid that can be directly, and easily dispersed in water, at temperatures from 5°C to 40°C, including tap water, wherein such formulations are homogeneous and stable upon storage.

**[0004]** Another requirement for the softener formulations is the reduction of their environmental footprint from manufacturing to their use as softening ingredients, thus, obtaining more sustainable products that can contribute to various advantageous effects, such as water reduction, plastic reduction, energy reduction and/or ecological acceptability  
20 of the products and their use. The possibility to disperse, with cold temperatures, from 5°C to 40°C, the softening agent in water that is not sensitive to water hardness, that is, water that does not need to be deionized, makes possible to lessen the necessity of resources to treat the water for softening agent producers, as well as it makes it possible for the final consumer to directly prepare a fabric softener at home, from concentrated softener agents, directly dispersing the softening agent in  
25 the tap water which is easily available at households.

**[0005]** WO2016096614A1 describes a fabric treatment agent comprising specific esterquats. The fabric softener formulation with high storage stability is provided only in the additional presence of cationic thickeners and non-ionic emulsifiers.

**[0006]** EP1136471A1 describes cationic surfactants obtained from alkanolamines, dicarboxylic acids and fatty alcohols. Patent describes that such cationic surfactant show efficacy in softening and conditioning natural and synthetic  
30 fibres.

**[0007]** In view of the above, the present invention aims at the problem of providing homogeneous and stable dispersions comprising esterquats and perfume, capable of being easily prepared at room temperature and not sensitive to water hardness.  
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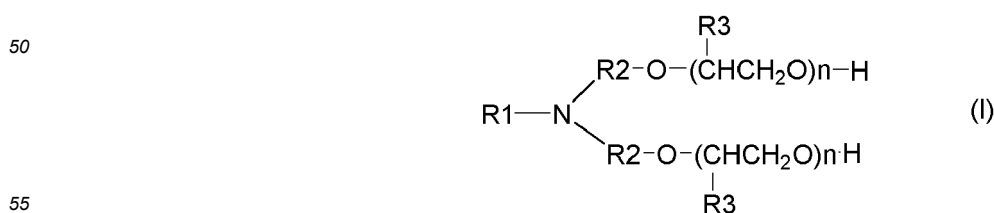
**SUMMARY OF THE INVENTION**

**[0008]** The inventors have found that a stable aqueous dispersion was achieved when a mixture of cationic surfactants with a particular chemical nature was mixed with a perfume.

40 **[0009]** Thus, the present invention provides the use of a perfume with a calculated logP (hereinafter referred as "ClogP") value from 0.5 to 8 to disperse in water a mixture of cationic surfactants, which is obtainable from a process comprising the steps: Step I: esterification of a) with b), and Step II: cation formation from the reaction products of Step I, wherein:

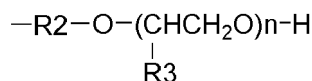
45 a) is a hydroxyl group-containing compound or a mixture of hydroxyl group-containing compounds comprising a.1 and optionally a.2, wherein:

a.1) is an alkanolamine or a mixture of alkanolamines of the general formula (I):



in which R1 is selected from hydrogen, a C1-C6 alkyl group, and the residue

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5 R2 is a C1-C6 alkylene group, R3 is hydrogen or methyl, n is 0 or an integer from 1 to 20; and

a.2) is a polyol, which can be optionally alkoxyated, and is characterized by a MW in the range from 60 to 190 g/mol;

10 b) is a mixture of compounds containing one or more carboxylic groups comprising b.1 and b.2, wherein:

b.1) is a monocarboxylic acid or a mixture of monocarboxylic acids of formula (II):



15 In which R6 is a linear or branched C6-C23 alkyl or alkenyl group; or an alkyl ester or glyceride thereof, preferably a linear or branched C6-C23 alkyl or alkenyl ester; and b.2) is a dicarboxylic acid or mixture of dicarboxylic acids of the general formula (III), or reactive derivative(s) thereof:



20 Wherein L is a saturated or unsaturated, linear or branched group having 1 to 10 carbon atoms, or a cyclic group having 3 to 10 carbon atoms, each of which atoms is optionally substituted by a C1-C6 saturated or unsaturated group; and is preferably represented by (CH(R11))<sub>m</sub> or by (C6-C10arylene) optionally substituted by one or more R11, in which each R11 is independently a hydrogen, OH or a C1-C6 saturated or unsaturated group, m is 0 or an integer from 1 to 10, wherein for m ≥ 2 the chain (CH)<sub>m</sub> optionally contains one or more double bonds and/or cyclic group(s);

25 Wherein a.1), a.2), b.1) and b.2) are introduced in the reaction system of Step I in amounts resulting in the following molar ratios:

- 30 - the molar ratio of monoacid(s)/diacid(s) (b.1/b.2) is 2.5 to 5.0
- the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) present in the system is from 0.4 to 0.8; and
- the molar ratio between the compound(s) within the definition a.2 and the compound(s) under definition a.1 is 0 to 0.5.

35 **[0010]** Remarkably, the dispersing effect was provided when the perfume was mixed with the mixture of cationic surfactants as defined above. As it is shown below, when other esterquats were used, no stable dispersion was achieved.

**[0011]** The present invention also provides the use of a perfume having a ClogP value from 0.5 to 8 to disperse a softening composition comprising a mixture of cationic surfactants as defined herein above.

40 **[0012]** The present invention also provides an aqueous dispersed composition comprising the perfume and mixture of cationic surfactants, as defined hereinabove, and water.

**[0013]** The present invention also provides a process to prepare an aqueous dispersion of a mixture of cationic surfactants as defined hereinabove, the process comprising the step of (a) mixing the mixture of cationic surfactants with a perfume having a ClogP value from 0.5 to 8, preferably from 2 to 7, particularly at a weight ratio from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; (b) adding water; and (c) stirring.

45 **[0014]** The invention also provides a process for preparing an aqueous dispersed softening composition comprising a mixture of cationic surfactants as defined hereinabove, the process comprising:

(i) adding water to a softening composition already including a perfume having a ClogP value from 0.5 to 8 as well as the mixture of cationic surfactants as defined hereinabove, wherein the weight ratio between the mixture and the perfume is particularly from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; and (ii) stirring;

or, alternatively, the process comprising the steps of:

55 (iii) adding a perfume with a ClogP value from 0.5 to 8 to a softening composition already comprising the mixture of cationic surfactants as defined hereinabove, wherein the weight ratio between the mixture and the perfume is particularly from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; (iv) stirring, (v) adding water, particularly tap water; and (vi) stirring.

**[0015]** The invention also provides the use of the dispersed composition as provided by the invention, for softening

fabrics and/or keratin-based-fibres. This aspect can alternatively be formulated as a method for softening fabrics and/or keratin-based fibres comprising preparing a softener dispersed composition as defined hereinabove and contacting the fibres with the dispersed composition.

## 5 DETAILED DESCRIPTION OF THE INVENTION

[0016] Terms not specifically defined herein should be given the meanings that would be given to them by one of skill in the art in light of the disclosure and the context. As used in the specification, however, unless specified to the contrary, the following terms have the meaning indicated and the following conventions are adhered to.

10 [0017] Throughout the present specification and the accompanying clauses, the words "comprise" and variations such as "comprises", "comprising" are to be interpreted inclusively. That is, these words are intended to convey the possible inclusion of other elements or integers not specifically recited, where the context allows. The word "comprise" also includes the term "consists of". For the purposes of the present invention, any ranges given include both the lower and the upper end-points of the range.

15 [0018] All percentages are weight percentages, unless otherwise indicated.

[0019] For the purposes of the present invention, any ranges given include both the lower and the upper end-points of the range.

20 [0020] The inventors have surprisingly found that a homogenous and stable aqueous dispersion of a particular esterquat was achieved when it was mixed with a perfume. Furthermore, the dispersion was not sensitive to water hardness and could be easily prepared at room temperature, just by mixing. These effects were observed in the absence of further additives.

### PERFUME:

25 [0021] Perfumes (mixture of fragrant essential oils and aroma compounds, fixatives, and solvents used to give the human body, objects, and living spaces a lasting and pleasant smell) are frequently incorporated in softening compositions to leave a pleasant odor in fabrics after washing and rinsing process, as they emit and diffuse a pleasant and fragrant odor.

[0022] As used herein, the term "perfume" includes a perfume raw material (PRM) and a perfume combination. Used in this document, the term "combination" refers to a mixture of two or more PRM.

30 [0023] Suitable perfume oils are mixtures of natural and/or synthetic ingredients. Natural ingredients include the extracts of blossoms (lily, lavender, rose, jasmine, neroli, ylang-ylang), stems and leaves (geranium, patchouli, petitgrain), fruits (anise, coriander, caraway, juniper), fruit peel (bergamot, lemon, orange), roots (nutmeg, angelica, celery, cardamon, costus, iris, calamus), woods (pinewood, sandalwood, guaiac wood, cedarwood, rosewood), herbs and grasses (tarragon, lemon grass, sage, thyme, needles and branches (spruce, fir, pine, dwarf pine), resins and balsams (galbanum, elemi, benzoin, myrrh, olibanum, opoponax).

35 [0024] Typical synthetic fragrances include, among others, alcohols, ketones, aldehydes, esters, ethers, nitrites, and alkenes such as terpenes. A list of common PRMs can be found in various reference sources, such as Perfume and Flavor Chemicals, Vols. I and II; Steffen Arctander Allured Pub. Co. (1994).

40 [0025] Fragrances are characterized by their boiling points (bp) measured at normal pressure (760 mmHg) and their octanol/water partition coefficient (ClogP). Based on these characteristics, PRMs can be classified as Quadrant I, Quadrant II, Quadrant III, or Quadrant IV perfumes, as described in more detail below.

[0026] ClogP refers to the calculated octanol/water partitioning coefficient (P) of a fragrance ingredient expressed in the form of its logarithm to the base 10. The octanol/water partitioning coefficient of a fragrance ingredient is the ratio between its equilibrium concentrations in octanol and in water.

45 [0027] The logP value of many fragrance ingredients has been reported; for example, the Pomona92 database, available from Daylight Chemical Information Systems, Inc. (Daylight CIS), Irvine, Calif., contains many, along with citations to the original literature. Clog values can be calculated using the fragment approach as described in "Partition Coefficients and Their Uses" by A Leo, C Hansch and D Elkins in Chem. Rev. vol 71 (6) pages 525-616 (1971). Alternatively, the Clog values can also be calculated by the "CLOGP" program available within the Chemoffice Ultra Software version 9 available from CambridgeSoft Corporation, 100 CambridgePark Drive, Cambridge, MA 02140 USA or CambridgeSoft Corporation, 8 Signet Court, Swanns Road, Cambridge CB5 8LA UK. Alternatively, ClogP values can also be calculated in US EPA CompTox Chemicals Dashboard ([https://comptox.epa.gov/dashboard\\_v2.2.1](https://comptox.epa.gov/dashboard_v2.2.1)).

[0028] In the context of the invention the ClogP of the perfume substance is from 0.5 to 8, preferably from 2 to 7.

50 [0029] When the boiling point is only given at a different pressure, usually a lower pressure than the normal pressure of 760 mmHg. The boiling point at normal pressure can be roughly estimated using boiling point-pressure nomograms.

55 [0030] The raw material of the fragrance, having bp below 250°C and logP below 3.0 are called Quadrant I flavors. Non-limiting examples of Quadrant I perfume raw materials include allyl caproate, amyl acetate, arnyl propionate, anisaldehyde, anisole, benzaldehyde, benzyl acetate, benzyl acetone, benzyl alcohol, benzyl formate, benzyl isovalerate, benzyl

propionate, beta-gamma-hexenol, camphor gum, levo-carveol, d-carvone, levo-carvone, cinnamic alcohol, cynarnyl formate, cis-jasmone, cis-3-hexenyl acetate, curnic, alcohol, cumaldehyde, cyclal C, dimethylbenzylcarbinol, dimethylbenzylcarbinyl acetate, ethyl acetate, ethylacetoacetate, ethylamyl ketone, ethyl benzoate, ethyl butyrate, ethylhexyl ketone, ethyl phenyl acetate, eucalyptol, eugenol, fenchyl alcohol, floracetate (tricyclodecenyl acetate), verdyl propionate (tricyclodecylpropionate), geraniol, hexenol, hexenyl acetate, hexyl acetate, hexyl formate, hydrotropic alcohol, hydroxycitronellal, isoarnyl alcohol, isomentone, isopulegylyl acetate, isoquinoline, cis-jasmone, ligustral, linalool, linalool oxide, linalyl formate, menthone, methyl acetophenone, methyl amyl ketone, methyl anthranilate, methyl benzoate, methylbenzyl acetate, nerol, phenylethyl alcohol, alpha-terpineol, propanoic acid ethyl ester, ethyl propionate, acetic acid 2-methylpropyl ester, isobutyl acetate, butanoic acid 2-methylethyl ether, ethyl 2-methylbutyrate, 2-hexenal, (E)-, 2-hexenal, benzeneacetic acid methyl ester, methylphenylacetate, 1,3-dioxolane-2-acetic acid 2-methylethyl ester, fructose, benzeneacetaldehyde-alpha-methyl-, hydrotropic aldehyde, acetic acid (2-methylbutoxy)-2-propenyl ether, allyl amyl glycolate, ethanol 2,2'-oxybis-, calone 161, 2(3H)- furanone 5-ethylidihydro-, gamma-hexalactone, 2H-pyran 3,6-dihydro-4-methyl-2-(2-methyl-1-propenyl)-, nerol oxide, 2-propenal 3-phenyl-, cinnamic aldehyde, 2-3-phenylmethyl ester of 2-propenoic acid, methyl cinnamate, 4H-pyran-4-one 2-ethyl-3-hydroxy-, ethyl maltol, 2-heptanone, methyl amyl ketone, acetic acid pentyl ester, isoamyl acetate, methyl heptenone, methylheptenone, 1-heptanol, heptyl alcohol, 5-hepten-2-one 6-methyl-, methylheptenone, ethanol 2-(2-methoxyethoxy)-, veramoss, tricyclo[2,2,1,02,6]heptane 1-ethyl-3-methoxy-, neoproxan, benzene 1,4-dimethoxy-, hydroquinone dimethyl ether, 3-hexenylmethyl carboxylic ether acids (Z)-, lifarome, oxirane 2,2-dimethyl-3-(3-methyl-2,4-pentadienyl)-, miroxide, ethanol 2-(2-ethoxyethoxy)-, diethylene glycol monoethyl ether, cyclohexaneethanol, cyclohexylethyl alcohol, 3-octen-1-ol(Z)-, octenol-dix, 3-cyclohexene-1-carboxaldehyde 3,6-dimethyl-, cyclovertal, 1,3-oxatian-2-methyl-4-propyl cis, oxane, acetic acid, 4-methylphenyl ether, paracresyl acetate, benzene(2,2-dimethoxyethyl)-, phenylacetaldehyde dimethylacetal, 7-methoxy-3,7-dimethyloctanal, methoxycitronellal Pq, octahydro 2H-1-benzopyran-2-one, octahydrocoumarin, benzenepropanal, beta-, methyl-, triphemal, octahydro- 4,7-methano-1H - indencarboxaldehyde, formyltricyclodecane, ethanone 1-(4-methoxyphenyl)-, paramethoxyacetophenone, propanenitrile 3-(3-hexenyloxy)-(Z)-, parmanyl, 1,4-methanonaphthalene-5(1H)-one 4,4a, 6,7,8,8a-hexahydro-, benzene[2-(2-propenyloxy)ethyl]-, LRA 2 20, benzenepropanol, phenylpropyl alcohol, 1H-indole, indole, 1,3-dioxolane 2-(phenylmethyl)-, ethylene glycol acetal/phenylacetaldehyde, 2H-1-benzopyran-2-one 3,4-dihydro-, dihydrocoumarin and mixtures thereof.

**[0031]** The raw material of the fragrance, having bp around 250°C or higher, and ClogP below 3.0 are called Quadrant II flavors. Non-limiting examples of Quadrant II perfume raw materials include coumarin, eugenol, isoeugenol, indole, methyl cinnamate, methyl dihydrojasmonate, methyl N-methyl anthranilate, beta-methylnaphthyl ketone, delta-N-non-alactone, vanillin, and mixtures thereof.

**[0032]** The raw material of the fragrance, having bp lower than 250°C and ClogP greater than about 3.0 are called Quadrant III flavors. Non-limiting examples of Quadrant III perfume raw materials include isobornyl acetate, carvacrol, alpha-citronellol, paracymene, dihydromyrcenol, geranyl acetate, d-limonene, linalyl acetate, vertenex.

**[0033]** The raw material of the fragrance having bp about 250° C or higher, and a ClogP of about 3.0 or higher, are referred to as Quadrant IV flavors or persistent flavors. Non-limiting examples of persistent perfume raw materials include allylcyclohexane propionate, ambrettolide, amyl benzoate, amyl cinnamate, amyl cinnamic aldehyde, amyl cinnamic aldehyde dimethyl acetal, isoamyl salicylate, hydroxycitronelal methyl anthranilate (known as auranthiol®), benzophenone, benzyl salicylate, p-tert-butylcyclohexyl acetate, beta-butylcyclohexyl acetate, beta-butylcyclohexyl acetate, beta-butylcyclohexyl acetate, , cedrol, cedrylacetate, cedryl formate, cinnamyl cinnamate, cyclohexyl salicylate, cyclamenaldehyde, dihydroisojasmonate, diphenylmethane, diphenyl oxide, dodecalactone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)ethanone (known as iso E super®), ethylene brassylate, methylphenyl glycidate, ethylundecylate, 15-hydroxypentadecanoic acid lactone (known as exaltolide®), 1,3,4,6,7,8-hexahydro-4 ,6,6,7,8,8-hexamethylcyclopenta-gamma-2-benzopyran (known as galaxolide®), geranyl anthranilate, geranylphenyl acetate, hexadecanolide, hexenyl salicylate, hexyl cinnamic aldehyde, hexyl salicylate, alpha iron, gamma io non, gamma-n-methyl ionone, p-tert-butyl-alpha-methylhydrocinnamaldehyde (known as lillial®), lillial (p-tert-bucinal)®, linalyl benzoate, 2-methoxynaphthalene, methylidihydrojasmonone, musky indanone, musk ketone, musky tibetine, myristicin, oxahexadecanolide-10, oxahexadecanolide-11, patchouli alcohol, 5-acetyl-1,1,2,3,3,6-hexamethylindane (known as Phantolid), phenylethyl benzoate, phenylethylphenylacetate, phenylheptanol, phenylhexanol, alpha -santalol, delta-undecalactone, gamma-undecalactone, vetiveryl acetate, yara-yara, ylangen.

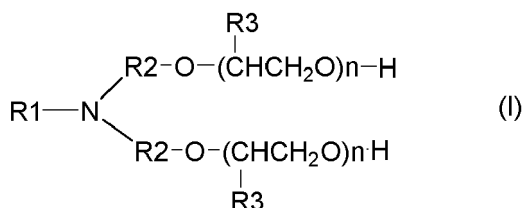
**[0034]** The perfume according to the present invention may contain from about 15% to about 60%, preferably from about 20 to about 55%, more preferably from about 25% to about 50% by weight of the perfume combination of labile perfume components. The non-persistent perfume components include Quadrant I, II and III perfume components.

## 55 MIXTURES OF CATIONIC SURFACTANTS

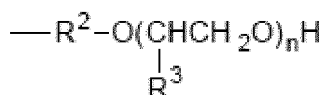
**[0035]** The mixture of cationic surfactants is obtainable by a process comprising the steps: Step I: esterification of a) with b), and Step II: cation formation from the reaction products of Step I, wherein:

a) is a hydroxyl group-containing compound or a mixture of hydroxyl group-containing compounds comprising a.1 and optionally a.2, wherein:

a.1) is an alkanolamine or a mixture of alkanolamines of the general formula (I):



in which R1 is selected from hydrogen, a C1-C6 alkyl group, and the residue



R2 is a C1-C6 alkylene group, R3 is hydrogen or methyl, n is 0 or an integer from 1 to 20; and

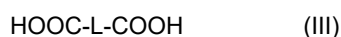
a.2) is a polyol, which can be optionally alkoxyated, and is characterized by a MW in the range from 60 to 190 g/mol;

b) is a mixture of compounds containing one or more carboxylic groups comprising b.1 and b.2, wherein:

b.1) is a monocarboxylic acid or a mixture of monocarboxylic acids of formula (II):



In which R6 is a linear or branched C6-C23 alkyl or alkenyl group; or an alkyl ester or glyceride thereof, preferably a linear or branched C6-C23 alkyl or alkenyl ester; and b.2) is a dicarboxylic acid or mixture of dicarboxylic acids of the general formula (III), or reactive derivative(s) thereof:



Wherein L is a saturated or unsaturated, linear or branched group having 1 to 10 carbon atoms, or a cyclic group having 3 to 10 carbon atoms, each of which atoms is optionally substituted by a C1-C6 saturated or unsaturated group; and is preferably represented by (CH(R11))<sub>m</sub> or by (C6-C10arylene) optionally substituted by one or more R11, in which each R11 is independently a hydrogen, OH or a C1-C6 saturated or unsaturated group, m is 0 or an integer from 1 to 10, wherein for m ≥ 2 the chain (CH)<sub>m</sub> optionally contains one or more double bonds and/or cyclic group(s);

Wherein a.1), a.2), b.1) and b.2) are introduced in the reaction system of Step I in amounts resulting in the following molar ratios:

- the molar ratio of monoacid(s)/diacid(s) (b.1/b.2) is 2.5 to 5.0
- the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) present in the system is from 0.4 to 0.8; and
- the molar ratio between the compound(s) within the definition a.2 and the compound(s) under definition a.1 is 0 to 0.5.

**[0036]** In an embodiment of the invention, the molar ratio of monoacid/diacid (b1/b2) is 2.5 to 5.0, preferably from 2.5 to 4.0, more preferably from 3.0 to 4.0.

**[0037]** In another embodiment of the invention, the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) present in the system is from 0.4 to 0.8, preferably from 0.5 to 0.7.

**[0038]** In an embodiment of the invention, the molar ratio between the compound(s) within the definition a.2 and the compounds under the definition of a.1 is 0 or 0.1 to 0.5, preferably 0 (i.e., in the absence of any polyol).

**[0039]** Without wishing to be bound by theory, these above particular ratios individually or in combination can contribute to even further improving the softening effect and/or stability of the formulations formed by using the mixtures of cationic

surfactants according to the invention.

**[0040]** In an embodiment of the invention, the molar ratio of monoacid/diacid (b1/b2) is from 3.0 to 4.0, the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH(OH)) is from 0.5 to 0.7, and the molar ratio between the compound(s) within the definition a.2 and the compounds under the definition of a.1 is 0.

**[0041]** In an embodiment of the invention, the alkanolamine(s) of formula (I) is/are selected from triethanolamine, N-methyldiethanolamine, N-methyl-diisopropanolamine and triisopropanolamine, each of which is optionally alkoxylated with ethylene oxide or propylene oxide, and mixtures thereof.

**[0042]** In an embodiment of the invention, in the dicarboxylic acid(s) of formula (III), each L is selected from ethane-1,2-diyl, 1-hydroxyethane-1,2-diyl, cis-ethene-1,2-diyl, trans-ethene-1,2-diyl, propane-1,2-diyl, propane-1,3-diyl, butane-1,4-diyl, pentane-1,5-diyl, hexane-1,6-diyl, cyclohexane-1,4-diyl, octane-1,8-diyl and 1,4-phenylenyl; preferably butane-1,4-diyl, hexane-1,6-diyl or octane-1,8-diyl.

**[0043]** In another embodiment of the invention, the dicarboxylic acid of formula (III) is selected from succinic, malic, glutaric, adipic, sebacic, pimelic, suberic, maleic and terephthalic acid, acids obtained by thermal oligomerisation of unsaturated fatty acids, and mixtures thereof.

**[0044]** In an embodiment of the invention, the reactive derivative(s) of the dicarboxylic acid(s) of the general formula (III) are one or more selected from halide, anhydride, preferably mixed anhydride with acetic acid or cyclic anhydride.

**[0045]** The monocarboxylic acid(s) of formula (II) are synthetic fatty acids and/or are obtained from fats or oils of natural origin, and are optionally hydrogenated; or are derived from oils of vegetal origin which are optionally hydrogenated.

**[0046]** In an embodiment of the invention, the monocarboxylic acid(s) of formula (II) are selected from those which are obtained from tallow, palm, olive, coconut, sunflower, soya, rapeseed, grape marc and grape, each of which can be hydrogenated, partially hydrogenated, or non-hydrogenated.

**[0047]** In an embodiment of the invention, the carboxylic monoacid(s) of formula (II) is one or more selected from caproic acid, caprylic acid, 2-ethylhexanoic acid, capric acid, lauric acid, isotridecanoic acid, myristic acid, palmitic acid, palmoleic acid, stearic acid, isostearic acid, oleic acid, elaidic acid, petroselinic acid, linoleic acid, linolenic acid, eleostearic acid, arachic acid, gadoleic acid, behenic acid and erucic acid, and mixtures thereof which are obtained for example by pressure splitting of natural fats and oils, in the reduction of aldehydes from Roelen's oxosynthesis or dimerization of unsaturated fatty acids, stearic acids, isostearic acid, palmitic acid, myristic acid, lauric acid, capric acid, caprylic acid, 2-ethylhexanoic acid, 2-octyl-dodecanoic acid, capric acid, oleic acid, linoleic acid, linolenic acid, partially hydrogenated coconut fatty acid, palm fatty acid, partially hydrogenated distilled palm fatty acid, hydrogenated distilled palm fatty acid, palm kernel fatty acid, tallow fatty acid, distilled tallow fatty acid, and rapeseed fatty acid.

**[0048]** In an embodiment of the invention, the iodine value of the carboxylic monoacid(s) of formula (II) is from 50 to 100, preferably from 65 to 85.

**[0049]** In another embodiment of the invention, the compounds corresponding to a.1 and/or a.2 can be from natural origin or from synthetic origin.

**[0050]** In an embodiment of the invention, the polyol a.2 is one or more selected from trimethylolpropane (TMP), glycerine and neopentyl glycol (NPG), each of which can be optionally alkoxylated, preferably ethoxylated; wherein the polyol a.2 is more preferably trimethylolpropane (TMP), or is absent.

**[0051]** Step I is an esterification step of reacting a) with b). In an exemplary embodiment, monoacid b.1 and diacid b.2 are combined with alkanolamine a.1 and optionally the polyol b.2. The obtained mixture is heated. Preferably, the mixture is heated to reflux under atmospheric pressure, e.g., for 1-5, preferably 2-4 hours at 140-200 °C, preferably 160-180 °C. Preferably, step I is performed until no more water is distilled off the reaction mixture.

**[0052]** The reaction product obtained from step I is subjected to cation formation in step II. Preferably, an organic solvent is added before step II. The organic solvent does not play an active role in a chemical reaction, but it is added for the purpose of facilitating the reaction taking place in step II. Step II can correspond to the formation of the addition salts of the alkanolamine esters obtained from Step I with mineral or organic acids, preferably wherein the mineral or organic acids are one or more selected from hydrochloric, sulphuric, phosphoric, citric and lactic acid. Alternatively, step II can correspond to the quaternisation of reaction mixtures of Step I with alkylating agent(s), preferably wherein the alkylating agents are one or more selected from methyl chloride, methyl bromide, dimethyl sulphate, diethyl sulphate and dimethyl carbonate. Step II can be performed at room temperature or elevated temperature, e.g., 40-100 °C, preferably 50-90 °C; preferably for 1-5 hours, more preferably 2-4 hours, or until the virtually complete absence of amine value was verified by acid/base assay.

**[0053]** In an embodiment of the invention, the mixture further comprises an organic solvent, preferably an alcohol, more preferably ethanol, n-propanol or isopropanol, butanols, glycol, propane or butanediol, glycerol, diglycol, propyl or butyl diglycol, ethylene glycol methyl ether, ethylene glycol ethyl ether, ethylene glycol propyl ether, ethylene glycol mono-n-butyl ether, diethylene glycol methyl ether, diethylene glycol ethyl ether, propylene glycol methyl, ethyl or propyl ether, dipropylene glycol methyl or ethyl ether, methoxy, ethoxy or butoxy triglycol, 1-butoxyethoxy-2-propanol, 3-methyl-3-methoxybutanol, or propylene glycol t-butyl ether. For instance, such solvent may be added during the preparation step, e.g., during Step I and/or II, preferably before Step II. Preferably the organic solvent is ethanol, n-propanol or isopropanol, or propylene glycol, more preferably ethanol, isopropanol.

[0054] In an embodiment of the invention, the content of the organic solvent in the cationic surfactant mixture is 0-30%, preferably 0-20%, more preferably 10-20% by weight.

[0055] In an embodiment of the invention, the mixture is essentially water-free.

[0056] In an embodiment of the invention, the mixture essentially consists of the reaction products of steps I and II, and optionally an organic solvent. Preferably, the mixture consists of the reaction products of steps I and II and solvent, if any, and unreacted starting materials as well as inevitable impurities from the production process, if any.

#### COMPOSITIONS INCLUDING THE MIXTURE OF CATIONIC SURFACTANTS

[0057] All the embodiments provided above regarding the mixture of cationic surfactants and perfume, are also embodiments of the composition of the invention.

[0058] In one embodiment of the present invention, the weight ratio between the cationic mixture and the perfume is from 99.1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25.

[0059] In another embodiment of the invention, the mixture of the perfume with the mixture of cationic surfactants is a clear viscous liquid that can be directly, and easily dispersed in water, wherein such diluted formulations are stable upon storage.

[0060] Advantageously, the perfume can efficiently disperse the mixture of cationic surfactant(s) which already forms part of a fabric softening and/or keratin-based-fibres softening. As it is shown below, the resulting softening dispersions exhibited improved stability upon prolonged storage. This is indicative of the remarkable dispersant effect provided by the perfume in the context of the invention: the remaining ingredients forming part of the softening composition, such as for instance, thickener, do not have any negative effect on the dispersing effect.

[0061] The use of a perfume allows the mixture of cationic surfactants forming part of a softening composition be easy and rapidly dispersed, independently of the water hardness (that is, it can be dispersed in non-deionized water) and the dispersed composition is stable upon storage for at least 3 months.

[0062] In one embodiment, the water has a hardness value from 0 to 800 ppm of CaCO<sub>3</sub>, from 0 to 600 ppm CaCO<sub>3</sub>, from 0 to 400 ppm CaCO<sub>3</sub>, from 0 to 200 ppm CaCO<sub>3</sub>, from 5 to 800 ppm CaCO<sub>3</sub>, from 5 to 600 ppm CaCO<sub>3</sub>, from 5 to 400 ppm CaCO<sub>3</sub>, from 5 to 200 ppm CaCO<sub>3</sub>, from 10 to 800 ppm CaCO<sub>3</sub>, from 10 to 600 ppm CaCO<sub>3</sub>, from 10 to 400 ppm CaCO<sub>3</sub>, from 10 to 200 ppm CaCO<sub>3</sub>. In a particular embodiment, the water is deionized water. In an alternative embodiment, the water is tap water.

[0063] In another embodiment the composition has a water content higher than 50% wt., preferably higher than 80% wt., more preferably higher than 85% wt., based on the total weight of the fabric softener.

[0064] Alternatively, the composition can be a concentrated softener composition, wherein water content is lower than 50% wt., preferably lower than 30% wt., more preferably lower than 10% wt., even more preferably lower than 5% wt. most preferably lower than 1% wt., based on the total weight of the fabric softener. Such concentrated compositions are suitable for being dispersed in cold water by consumer at home.

[0065] The invention also refers to softener compositions, preferably a fabric-softening and/or a keratin-based-fibres softening compositions. In one embodiment, the fabric softener composition further comprises optional components.

[0066] In referring to the optional components, without this having to be regarded as an exhaustive description of all possibilities, which, on the other hand, are well known to the person skilled in the art, the following may be mentioned:

a) other products that enhance the performance of the softener compositions, such as silicones, amine oxides, anionic surfactants, such as lauryl ether sulphate or lauryl sulphate, amphoteric surfactants, such as cocoamidopropyl betaine or alkyl betaines, sulphosuccinates, polyglucoside derivatives, etc.

b) stabilising products, such as salts of amines having a short chain, which are quaternised or non-quaternised, for example of triethanolamine, N-methyldiethanolamine, etc., and also non-ionic surfactants, such as ethoxylated fatty alcohols, ethoxylated fatty amines.

c) products that improve viscosity control, such as inorganic salts, for example, calcium chloride, magnesium chloride, calcium sulphate, sodium chloride, etc.; products which can be used to reduce viscosity in concentrated compositions, such as compounds of the glycol type, for example, ethylene glycol, dipropylene glycol, polyglycols, etc.; thickening agents for diluted compositions, such as polymers, suitable polymers are water soluble or dispersible, preferably the polymers are cationic. Suitable cationic polymeric materials include cationic guar polymers, cationic cellulose derivatives, cationic potato starch, cationic polyacrylamides. Especially suitable are crosslinked water swellable cationic polymers. Those described polymers may also act as deposition aids.

d) components for adjusting the pH, which is from 2.0 to 6.0, preferably from 2.5 to 4.0, such as any type of inorganic and/or organic acid, for example hydrochloric, sulphuric, phosphoric, lactic acid, citric acid etc.

e) agents that improve soil release, such as the known polymers or copolymers based on terephthalates.

f) preservatives, such as bactericides, for example, 1,2-benzisothiazolin-3-one, 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one, or their combinations, 2-bromo-2-nitropropane-1,3-diol, etc.

g) other products such as antioxidants, coloring agents, perfumes, germicides, fungicides, anti-corrosive agents, anti-crease agents, opacifiers, optical brighteners, pearl luster agents, etc.

**[0067]** In another embodiment of the invention, the softening composition further comprises a thickener, e.g., a thickening polymer. The weight ratio the cationic surfactant mixture to the thickener is preferably from 150:1 to 10:5, more preferably from 100:1 to 10:2. A thickener may be added to increase the viscosity of the composition. Suitable thickeners are, e.g., PEG-150 distearate, Hydroxyethyl cellulose, hydroxymethyl cellulose and derivatives thereof, PEG-120 Methyl Glucose Dioleate, PEG-120 Methyl Glucose Trioleate, (and) propanediol, and ethoxylated Sorbitan Triisostearate (e.g., PEG-160 Sorbitan Triisostearate, such as Kaopan TW IS-559S from Kao Chemicals Europe, S.L.), and copolymers of acrylamide and dimethyl amino ethyl methacrylate methyl chloride cross- methylene bisacrylamide (such as FLOSOFT 222 manufactured by SNF).

**[0068]** In another embodiment of the invention, the composition further comprises an encapsulated perfume, which is different from the perfume hereinabove described. Preferably the perfume is encapsulated in a biodegradable microcapsule, more preferably the microcapsule is based on chitosan.

**[0069]** In an embodiment of the invention, the water content in the dispersed composition of the invention is preferably higher than 50% wt., more preferably higher than 80% wt., most preferably higher than 85% wt., based in the total weight of the softener composition. The solid residue is preferably lower than 50% wt., more preferably lower than 25% wt., even more preferably lower between 2 and 15% wt., based on the total weight of the softener composition.

**[0070]** In an alternative embodiment of the invention, the dispersed composition comprises a water content lower than 50%wt., preferably lower than 30% wt., preferably lower than 10% wt., even more preferably lower than 5% wt., most preferably lower than 1% wt. Such compositions are liquid and transparent at temperatures from 5°C to 80°C, preferably from 10 to 60°C, more preferably from 15°C to 40°C, even more preferably from 15°C to 25°C.

**[0071]** In an embodiment the invention provides a dispersed softening composition comprising the perfume, the mixture of cationic surfactant and water, wherein water has a hardness value from 0 to 800 ppm CaCO<sub>3</sub>, from 0 to 600 ppm CaCO<sub>3</sub>, from 0 to 400 ppm CaCO<sub>3</sub>, from 0 to 200 ppm CaCO<sub>3</sub>, from 5 to 800 ppm CaCO<sub>3</sub>, from 5 to 600 ppm CaCO<sub>3</sub>, from 5 to 400 ppm CaCO<sub>3</sub>, from 5 to 200 ppm CaCO<sub>3</sub>, from 10 to 800 ppm CaCO<sub>3</sub>, from 10 to 600 ppm CaCO<sub>3</sub>, from 10 to 400 ppm CaCO<sub>3</sub>, from 10 to 200 ppm CaCO<sub>3</sub>. In a particular embodiment, the water is deionized water. In an alternative embodiment, the water is tap water.

**[0072]** In an embodiment the invention provides a dispersed softening composition comprising the perfume, the mixture of cationic surfactants and water, wherein:

(a) the mixture of cationic surfactants is one wherein: the molar ratio of monoacid/diacid (b1/b2) is from 3.0 to 4.0, the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH /OH) is from 0.5 to 0.7, and the molar ratio between the compound(s) within the definition a.2 and the compounds under the definition of a.1 is 0; and

(b) water has a hardness value from 0 to 800 ppm of CaCO<sub>3</sub>, from 0 to 600 ppm CaCO<sub>3</sub>, from 0 to 400 ppm CaCO<sub>3</sub>, from 0 to 200 ppm CaCO<sub>3</sub>, from 5 to 800 ppm CaCO<sub>3</sub>, from 5 to 600 ppm CaCO<sub>3</sub>, from 5 to 400 ppm CaCO<sub>3</sub>, from 5 to 200 ppm CaCO<sub>3</sub>, from 10 to 800 ppm CaCO<sub>3</sub>, from 10 to 600 ppm CaCO<sub>3</sub>, from 10 to 400 ppm CaCO<sub>3</sub>, from 10 to 200 ppm CaCO<sub>3</sub>. In a particular embodiment, the water is deionized water. In an alternative embodiment, the water is tap water.

**[0073]** Water hardness can be defined as the concentrations of calcium and magnesium ions in water expressed in terms of calcium carbonate. Whereas deionized water is water that has been treated to have a water hardness lower than 5 ppm CaCO<sub>3</sub>, water available at households, that is, tap water has typically hardness values from 10 to 400 ppm of CaCO<sub>3</sub>.

**[0074]** Water hardness can be measured according to UNE-EN-12829

**[0075]** In another embodiment, the cationic surfactant mixture is homogeneously and easily dispersed in water.

**[0076]** In another embodiment, the dispersed composition may have a viscosity at 20°C of 5 to 500 cps, as measured on a Brookfield LVT viscometer with spindle 2 at 60 rpm.

**[0077]** In an embodiment of the invention, the dispersed softener compositions are stable upon storage at a range of temperature from 5°C to 40°C, preferably from 10°C to 30°C, more preferably from 15°C to 25°C for at least 2 months, preferably at least 3 months, more preferably at least 6 months.

**[0078]** In another embodiment of the invention, the dispersed composition, particularly the dispersed softening composition, is stable for at least three months, wherein, the mixture of cationic surfactants is characterized by a molar ratio of monoacid/diacid (b1/b2) from 3.0 to 4.0, the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) is from 0.5 to 0.7, and the molar ratio between the compound(s) within the definition a.2 and the compounds under the definition of a.1 is 0.

**[0079]** In another embodiment of the invention, the dispersed composition, particularly the dispersed softening

composition, is stable for at least three months, wherein, the mixture of cationic surfactant is characterized by a molar ratio of monoacid/diacid (b1/b2) from 3.0 to 4.0, the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) is from 0.5 to 0.7, the molar ratio between the compound(s) within the definition a.2 and the compounds under the definition of a.1 is 0, and the iodine value of the monocarboxylic acid is from 65 to 85.

**[0080]** In an embodiment of the invention, the composition, particularly the softener composition, is a dispersed composition, comprising the perfume (as defined in any of the above embodiments), the mixture of cationic surfactants comprises (as defined in any of the above embodiments) an water, wherein:

- the amount of the mixture of cationic surfactants is from 3 to 20% wt., preferably from 5 to 15% wt., more preferably from 5 to 12% wt. based on the total weight of the softener composition,
- the perfume is in an amount from 0.2 to 5% wt., preferably from 0.3 to 3% wt., more preferably from 0.5 to 2% wt., based on the total weight of the softening composition of a perfume.
- from 0 to 1.0., preferably from 0 to 0.5 % wt. of a thickener.

**[0081]** Such concentrated compositions are suitable for being dispersed in cold water by consumer at home.

### PREPARATION OF THE DISPERSION

**[0082]** The present invention also provides processes to prepare aqueous dispersions including the mixture of cationic surfactants as defined hereinabove and the perfume. All the embodiments provided above related to the mixture, perfume and compositions, amounts and ratios of the different components, are also embodiments of these processes for preparing the dispersion.

**[0083]** In one aspect, the process comprises the step of (a) mixing the mixture of cationic surfactants with a perfume having a ClogP value from 0.5 to 8, preferably from 2 to 7, particularly at a weight ratio from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; (b) adding water; and (c) stirring.

**[0084]** The mixing of steps (a) and (c) can be performed by any suitable means, such as stirring with an agitator or manually. In one embodiment, the mixture of cationic surfactants and the perfume are mixed under constant stirring, preferably at a temperature from 10 to 80°C, preferably from 20 to 60°C, more preferably from 20 to 40°C.

**[0085]** Steps (b) and (c) can be performed consecutively or simultaneously, by any suitable means.

**[0086]** The perfume and the cationic surfactant mixture can be dispersed in water at a temperature from 5°C to 40°C, preferably from 10 to 30°C, more preferably from 15°C to 25°C.

**[0087]** The water added in step (b) has a hardness value from 0 to 800 ppm of CaCO<sub>3</sub>, from 0 to 600 ppm CaCO<sub>3</sub>, from 0 to 400 ppm CaCO<sub>3</sub>, from 0 to 200 ppm CaCO<sub>3</sub>, from 5 to 800 ppm CaCO<sub>3</sub>, from 5 to 600 ppm CaCO<sub>3</sub>, from 5 to 400 ppm CaCO<sub>3</sub>, from 5 to 200 ppm CaCO<sub>3</sub>, from 10 to 800 ppm CaCO<sub>3</sub>, from 10 to 600 ppm CaCO<sub>3</sub>, from 10 to 400 ppm CaCO<sub>3</sub>, from 10 to 200 ppm CaCO<sub>3</sub>. In a particular embodiment, the water is deionized water. In an alternative embodiment, the water is tap water.

**[0088]** In one embodiment, the water amount added to the mixture resulting from step (a) is higher than 50% wt., more preferably higher than 80% wt., most preferably higher than 85% wt., based in the total weight of the softener composition. The solid residue is preferably lower than 50% wt., more preferably lower than 25% wt., even more preferably lower between 2 and 15% wt., based on the total weight of the softener composition. In an alternative embodiment, the water amount added is lower than 50% wt, preferably lower than 30% wt., preferably lower than 10% wt., even more preferably lower than 5% wt., most preferably lower than 1% wt.

**[0089]** In another aspect the invention also provides a process for preparing an aqueous dispersed softening composition comprising a mixture of cationic surfactants as defined hereinabove, the process comprising:

- (i) adding water to a softening composition already including a perfume having a ClogP value from 0.5 to 8 as well as the mixture of cationic surfactants as defined hereinabove, wherein the weight ratio between the mixture and the perfume is particularly from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; and (ii) stirring;

or, alternatively, the process comprising the steps of:

- (iii) adding a perfume with a ClogP value from 0.5 to 8 to a softening composition already comprising the mixture of cationic surfactants as defined hereinabove, wherein the weight ratio between the mixture and the perfume is particularly from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; (iv) stirring, (v) adding water, particularly tap water; and (vi) stirring.

**[0090]** In one embodiment, the stirring of step (iv) is performed under constant stirring, preferably at a temperature from 10 to 80°C, preferably from 20 to 60°C, more preferably from 20 to 40°C.

**[0091]** Steps (i)-(ii) or (v)-(vi) can be performed consecutively or simultaneously, by any suitable means.

[0092] The perfume and the cationic surfactant mixture can be dispersed in water at a temperature from 5°C to 40°C, preferably from 10 to 30°C, more preferably from 15°C to 25°C.

[0093] The water added in step (i) or (v) has a hardness value from 0 to 800 ppm of CaCO<sub>3</sub>, from 0 to 600 ppm CaCO<sub>3</sub>, from 0 to 400 ppm CaCO<sub>3</sub>, from 0 to 200 ppm CaCO<sub>3</sub>, from 5 to 800 ppm CaCO<sub>3</sub>, from 5 to 600 ppm CaCO<sub>3</sub>, from 5 to 400 ppm CaCO<sub>3</sub>, from 5 to 200 ppm CaCO<sub>3</sub>, from 10 to 800 ppm CaCO<sub>3</sub>, from 10 to 600 ppm CaCO<sub>3</sub>, from 10 to 400 ppm CaCO<sub>3</sub>, from 10 to 200 ppm CaCO<sub>3</sub>. In a particular embodiment, the water is deionized water. In an alternative embodiment, the water is tap water.

[0094] In one embodiment, the water amount is higher than 50% wt., more preferably higher than 80% wt., most preferably higher than 85% wt., based in the total weight of the composition. The solid residue is preferably lower than 50% wt., more preferably lower than 25% wt., even more preferably lower between 2 and 15% wt., based on the total weight of the softener composition.

[0095] The present invention further provides a softener composition comprising the perfume and the mixture of cationic surfactants as described hereinabove, and having a water content lower than 50%wt., preferably lower than 30% wt., more preferably lower than 10%wt., even more preferably lower than 5% wt. most preferably lower than 1% wt. Hereinafter this composition is also referred as "concentrated softener composition".

[0096] In an embodiment of the invention, the concentrated softener composition comprising the perfume and the mixture of cationic surfactants as described hereinabove, and having a water content lower than 50%wt., preferably lower than 30% wt., more preferably lower than 10%wt., even more preferably lower than 5% wt is suitable for being dispersed in cold water, at temperatures from 5 to 40°C, preferably from 10 to 30°C, more preferably from 15 to 25°C.

[0097] In another embodiment, the concentrated softener composition can be dispersed with water at a temperature from 5°C to 40°C, preferably from 10 to 30°C, more preferably from 15°C to 25°C.

[0098] In another embodiment, the concentrated softener composition can be dispersed in water at cold temperatures, that is, at temperatures from 5°C to 40°C, preferably from 10 to 30°C, more preferably from 15°C to 25°C.

[0099] In another embodiment, the concentrated softener composition can be dispersed in tap water, that is, water directly obtained directly from a faucet or tap connected to the main supply of the local water system, that has not been distilled and/or deionized.

[0100] In another embodiment, the concentrated softener composition can be dispersed in water, wherein the water has a hardness value from 0 to 800, from 0 to 600 ppm CaCO<sub>3</sub>, from 0 to 400 ppm CaCO<sub>3</sub>, from 0 to 200 ppm CaCO<sub>3</sub>, from 5 to 800 ppm CaCO<sub>3</sub>, from 5 to 600 ppm CaCO<sub>3</sub>, from 5 to 400 ppm CaCO<sub>3</sub>, from 5 to 200 ppm CaCO<sub>3</sub>, from 10 to 800 ppm CaCO<sub>3</sub>, from 10 to 600 ppm CaCO<sub>3</sub>, from 10 to 400 ppm CaCO<sub>3</sub>, from 10 to 200 ppm CaCO<sub>3</sub>.

[0101] Preferably, such compositions exhibit advantageous storage stability.

[0102] In an embodiment of the invention, the concentrated softener compositions dispersed in water are stable upon storage at a range of temperature from 5°C to 40°C, preferably from 10°C to 30°C, more preferably from 15°C to 25°C for at least 2 months, preferably at least 3 months, more preferably at least 6 months.

[0103] In another embodiment, the concentrated softener compositions may have a viscosity at 20 °C of 200-50,000 cps, as measured on a Brookfield LVT viscometer with spindle 2 at 60 rpm or with spindle 4 at 12 rpm. Preferably, such compositions are non-newtonian and have a viscosity of 200 to 5,000 mPas as measured on a Brookfield LVT viscometer with spindle 4 at 12 rpm, optionally 200 to 800 mPas; or are newtonian and have a viscosity of 200 to 800 mPas as measured on a Brookfield LVT viscometer with spindle 2 at 30 rpm.

#### PREPARATION OF THE DISPERSIONS OF THE INVENTION

[0104] The present invention also provides processes to prepare aqueous dispersions including the mixture of cationic surfactants as defined hereinabove and the perfume. All the embodiments provided above related to the mixture, perfume and compositions, amounts and ratios of the different components, are also embodiments of these processes for preparing the dispersion.

[0105] In one aspect, the process comprises the step of (a) mixing the mixture of cationic surfactants with a perfume having a ClogP value from 0.5 to 8, particularly at a weight ratio from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; (b) adding water; and (c) stirring.

[0106] The mixing of steps (a) and (c) can be performed by any suitable means, such as stirring with an agitator or manually. In one embodiment, the mixture of cationic surfactants and the perfume are mixed under constant stirring, preferably at a temperature from 10 to 80°C, preferably from 20 to 60°C, more preferably from 20 to 40°C.

[0107] Steps (b) and (c) can be performed consecutively or simultaneously, by any suitable means.

[0108] The perfume and the cationic surfactant mixture can be dispersed in water at a temperature from 5°C to 40°C, preferably from 10 to 30°C, more preferably from 15°C to 25°C.

[0109] The water added in step (b) has a hardness value from 0 to 800 ppm of CaCO<sub>3</sub>, from 0 to 600 ppm CaCO<sub>3</sub>, from 0 to 400 ppm CaCO<sub>3</sub>, from 0 to 200 ppm CaCO<sub>3</sub>, from 5 to 800 ppm CaCO<sub>3</sub>, from 5 to 600 ppm CaCO<sub>3</sub>, from 5 to 400 ppm CaCO<sub>3</sub>, from 5 to 200 ppm CaCO<sub>3</sub>, from 10 to 800 ppm CaCO<sub>3</sub>, from 10 to 600 ppm CaCO<sub>3</sub>, from 10 to 400 ppm CaCO<sub>3</sub>,

from 10 to 200 ppm CaCO<sub>3</sub>. In a particular embodiment, the water is deionized water. In an alternative embodiment, the water is tap water.

**[0110]** In one embodiment, the water amount added to the mixture resulting from step (a) is higher than 50% wt., more preferably higher than 80% wt., most preferably higher than 85% wt., based in the total weight of the softener composition. The solid residue is preferably lower than 50% wt., more preferably lower than 25% wt., even more preferably lower between 2 and 15% wt., based on the total weight of the softener composition. In an alternative embodiment, the water amount added is lower than 50% wt, preferably lower than 30% wt., preferably lower than 10% wt., even more preferably lower than 5% wt., most preferably lower than 1% wt.

**[0111]** In another aspect the invention also provides a process for preparing an aqueous dispersed softening composition comprising a mixture of cationic surfactants as defined hereinabove, the process comprising:

- (i) adding water to a softening composition already including a perfume having a ClogP value from 0.5 to 8 as well as the mixture of cationic surfactants as defined hereinabove, wherein the weight ratio between the mixture and the perfume is particularly from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; (ii) adding water, particularly tap water; and (iii) stirring;

or, alternatively, the process comprising the steps of:

- (iv) adding a perfume with a ClogP value from 0.5 to 8 to a softening composition already comprising the mixture of cationic surfactants as defined hereinabove, wherein the weight ratio between the mixture and the perfume is particularly from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; (v) stirring, (vi) adding water, particularly tap water; and (vii) stirring.

**[0112]** In one embodiment of the steps (i) or (iv), the softening composition is a concentrated softening composition as defined hereinabove.

**[0113]** In one embodiment, the stirring of step (v) is performed under constant stirring, preferably at a temperature from 10 to 80°C, preferably from 20 to 60°C, more preferably from 20 to 40°C. Steps (ii)-(iii) or (vi)-(vii) can be performed consecutively or simultaneously, by any suitable means.

**[0114]** The perfume and the cationic surfactant mixture can be dispersed in water at a temperature from 5°C to 40°C, preferably from 10 to 30°C, more preferably from 15°C to 25°C.

**[0115]** The water added in step (ii) or (vi) has a hardness value from 0 to 800 ppm of CaCO<sub>3</sub>, from 0 to 600 ppm CaCO<sub>3</sub>, from 0 to 400 ppm CaCO<sub>3</sub>, from 0 to 200 ppm CaCO<sub>3</sub>, from 5 to 800 ppm CaCO<sub>3</sub>, from 5 to 600 ppm CaCO<sub>3</sub>, from 5 to 400 ppm CaCO<sub>3</sub>, from 5 to 200 ppm CaCO<sub>3</sub>, from 10 to 800 ppm CaCO<sub>3</sub>, from 10 to 600 ppm CaCO<sub>3</sub>, from 10 to 400 ppm CaCO<sub>3</sub>, from 10 to 200 ppm CaCO<sub>3</sub>. In a particular embodiment, the water is deionized water. In an alternative embodiment, the water is tap water.

**[0116]** In one embodiment, the water amount is higher than 50% wt., more preferably higher than 80% wt., most preferably higher than 85% wt., based in the total weight of the composition. The solid residue is preferably lower than 50% wt., more preferably lower than 25% wt., even more preferably lower between 2 and 15% wt., based on the total weight of the softener composition. In an alternative embodiment, the water amount added is lower than 50% wt, preferably lower than 30% wt., preferably lower than 10% wt., even more preferably lower than 5% wt., most preferably lower than 1% wt.

USES:

**[0117]** The present invention provides the use of perfume to disperse in water a mixture of cationic surfactants obtainable as hereinabove described.

**[0118]** In another embodiment of the invention, the use comprises dispersing the perfume and the cationic surfactant mixture in water to obtain a softener composition, then comprising the step of contacting the mixture with the fabrics and/or fibres.

**[0119]** In a preferred embodiment, the invention provides the use of a perfume to disperse a cationic surfactant mixture for concentrated softener composition suitable for preparing a domestic softener formulation by dilution. Such compositions are preferably liquid at temperatures from 5°C to 80°C, preferably from 10 to 60°C, more preferably from 15°C to 40°C, even more preferably from 15°C to 25°C; comprises the cationic surfactant mixture as described hereinabove and the perfume, and has a water content lower than 50% wt., preferably lower than 30%wt., more preferably lower than 10% wt., even more preferably lower than 5%wt, most preferably lower than 1% wt.

**[0120]** In another embodiment of the invention, the use of a perfume to disperse a cationic surfactant mixture for concentrated softening compositions is suitable for being dispersed in cold water by consumer at home, wherein obtained compositions are stable for at least three months, wherein, in the definition of the cationic mixture, the molar ratio of monoacid/diacid (b1/b2) is from 3.0 to 4.0, the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) is from 0.5 to 0.7, and the molar ratio between the compound(s) within the definition a.2 and the compounds under the definition of a.1 is 0.

**[0121]** In another embodiment of the invention, the use of a perfume to disperse a cationic surfactant mixture for concentrated softening compositions is suitable for being dispersed in cold water by consumer at home, wherein obtained compositions are stable for at least two months, wherein, in the definition of the cationic mixture, the molar ratio of monoacid/diacid (b1/b2) is from 3.0 to 4.0, the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) is from 0.5 to 0.7, the molar ratio between the compound(s) within the definition a.2 and the compounds under the definition of a.1 is 0, and wherein the iodine value of the monocarboxylic acid is from 65 to 85.

**[0122]** In an embodiment of the invention, the method for conditioning textiles of fabrics comprises the steps of contacting one or more fabric articles with the fabric softener composition of the invention at one or more points during the laundering process, and allowing the fabric articles to dry or mechanically tumble-drying them.

**[0123]** The use of the fabric conditioner composition of the invention for the conditioning treatment of textiles is another embodiment of the invention.

**[0124]** As used herein, a stable softener composition refers to a composition which maintains their appearance, colour, viscosity, as well as any other parameter of initial dispersion remains the same, or with little variation, within an interval of time, immediately after their preparation and after storage. Preferably compositions are stable for at least 2 months, preferably at least 3 months, more preferably at least 6 months.

**[0125]** In an embodiment of the invention, a stable softener composition refers to a composition which maintains its viscosity, within an interval of time, immediately after its preparation and after storage. Preferably compositions are stable for at least 2 months, preferably at least 3 months, even more preferably at least 6 months.

**[0126]** In the context of the invention, a stable composition which "maintains its viscosity within an interval of time" encompasses variations up to  $\pm 10\%$ , up to  $\pm 9\%$ , up to  $\pm 8\%$ , up to  $\pm 7\%$ , up to  $\pm 6\%$ , up to  $\pm 5\%$ , up to  $\pm 4\%$ , up to  $\pm 3\%$ , up to  $\pm 2\%$ , or up to  $1\%$  in the viscosity value of the composition immediately after its preparation.

**[0127]** As used herein, in cases where a ratio (e.g., molar ratio) "x/y" between compound(s) within a first definition "x" and compound(s) under a second definition "y" is 0, this means that compounds within the first definition "x" are absent or essentially absent.

**[0128]** As used herein, viscosity is measured on a Brookfield LVT viscometer at 20 °C with a spindle 2 at 30 or 60 rpm (preferably: for low viscosities), or with a spindle 4 at 12 rpm (preferably: for high viscosities).

**[0129]** As used herein, "iodine number" (or "iodine value", or "iodine adsorption value", commonly abbreviated as IV) describes the degree of unsaturation, e.g., of a fatty acid, and can be determined according to EN 14111:2003. Iodine value is the mass of iodine in grams that is consumed by 100 grams of a chemical substance or composition. Iodine value is commonly used to determine the amount of unsaturation in fats, oils and waxes. Thus, the iodine value is suitable to determine the degree of unsaturations of the carboxylic acids of the present invention.

**[0130]** In the context of the invention, iodine value can be calculated from the original source of fatty acid (i.e. the carboxylic acids), alternatively it can be measured from the composition as hereinabove defined, comprising the mixture of cationic surfactants and the perfume.

**[0131]** As used herein, "room temperature" is understood as a temperature from 5 to 40°C, preferably from 10 to 30°C.

**[0132]** As used herein, "cold water" is understood as water at a temperature from 5°C to 40°C, preferably from 10°C to 30°C, more preferably from 15°C to 25°C.

**[0133]** As used herein, "tap water" is understood as non-deionized water, that is, water that is not free of dissolved minerals. The content of minerals is expressed as water hardness, which is quantified in ppm of CaCO<sub>3</sub>. For deionized water, it is considered that the content of ppm of CaCO<sub>3</sub> is 0 or lower than 5 ppm CaCO<sub>3</sub>, preferably lower than 3 ppm CaCO<sub>3</sub>.

**[0134]** As used herein, "to disperse" is understood as to the formation of a dispersion, that is, a system wherein particles of one material are distributed evenly in a continuous phase of another material, thus allowing the formation of a colloid or suspension. Within the invention, the mixture of cationic surfactants and perfume are evenly distributed in water obtaining a dispersion. The final appearance if the obtained dispersion is opaque, homogeneous and liquid.

**[0135]** As used herein, a fabric-textile material comprises materials such natural, synthetic and artificial fibres. Natural fibres include vegetal fibres such cotton, or keratinic fibres (wool, silk). Some common man-made fibres, are polyester, polyamide, acrylic, modal, polyurethane, viscose and mixtures thereof.

## 50 EXAMPLES:

**[0136]** The following examples are given in order to provide a person skilled in the art with a sufficiently clear and complete explanation of the present invention, but should not be considered as limiting of the essential aspects of its subject, as set out in the preceding portions of this description.

**[0137]** The first part of the Examples section refers to the preparation of the mixture of cationic surfactants.

**[0138]** The second part refers to the use of perfume to disperse the mixture or cationic surfactants in water and preparation of a fabric softener composition according to the invention and the determination of the stability of the dispersion.

Example 1: Synthetic procedurePreparation of Compound A (according to the invention):

5 Esterification:

**[0139]** 128.3 grams (0.48 mol) of palm fatty acid and 604.7 grams (2.14 mol) of oleic fatty acid were introduced in an inert atmosphere into a glass reactor, together with 325.2 grams (2.18 mol) of triethanolamine and 95.8 grams (0.66 mol) of adipic acid, which were added with stirring. The mixture was heated for at least 4 hours at 160-180°C in order to remove water from the reaction. The final point of the reaction is monitored by an acid value assay until the value was below 2 mg KOH/g. (Iodine value of total monocarboxylic acid is 80).

**[0140]** A yellowish liquid product from the esterification was obtained, consisting essentially of a mixture of unesterified fatty acids and adipic acid, mono-, di- and triesterified triethanolamine with fatty acids, mono-, di- and triesterified triethanolamine with adipic acid or a combination thereof, together with unreacted triethanolamine.

15 Quaternisation:

**[0141]** 142 grams (2.36 mol) of 2-propanol were added with stirring to 1029.3 grams of the product from esterification step (containing 2.07 mol of esterified product). Then, 248.4 grams (1.97 mol) of dimethyl sulphate were added with stirring at a temperature of 50-90°C. After four hours of digestion, the virtually complete absence of amine value was verified by acid/base assay. 1403.6 grams of the final product was obtained.

Calculations:

25 Molar ratio monocarboxylic acid/dicarboxylic acid:

**[0142]**

30  $(0.48 \text{ mol palm fatty acid} + 2.14 \text{ mol oleic fatty acid}) / 0.66 \text{ mol adipic acid} = 4.0$

Equivalentents ration COOH/OH:

35 **[0143]**

40  $(1 \text{ eq} * 0.48 \text{ mol tallow fatty acid} + 1 \text{ eq} * 2.14 \text{ mol oleic fatty acid} + 2 \text{ eq} * 0.66 \text{ mol adipic acid}) / (3 \text{ eq} * 2.18 \text{ mol triethanolamine}) = 0.60$

Preparation of Compound B (comparative)

45 Esterification:

**[0144]** 121.9 grams (0.45 mol) of palm fatty acid and 574.4 grams (2.04 mol) of oleic fatty acid were introduced in an inert atmosphere into a glass reactor, together with 412.2 grams (2.77 mol) of triethanolamine and 182.0 grams (1.25 mol) of adipic acid, which were added with stirring. The mixture was heated for at least 4 hours at 160-180°C in order to remove water from the reaction. The final point of the reaction is monitored by an acid value assay until the value is below 4 mg KOH/g. (Iodine value of total monocarboxylic acid is 80).

**[0145]** A yellowish liquid product from the esterification was obtained, consisting essentially of a mixture of unesterified fatty acids and adipic acid, mono-, di- and triesterified triethanolamine with fatty acids, mono-, di- and triesterified triethanolamine with adipic acid or a combination thereof, together with unreacted triethanolamine.

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Quaternisation:

**[0146]** 161.8 grams (2.69 mol) of 2-propanol were added with stirring to 1141.0 grams of the product from esterification step (containing 2.63 mol of esterified product). Then, 314.8 grams (2.50 mol) of dimethyl sulphate were added with stirring at a temperature of 50-90°C. After four hours of digestion, the virtually complete absence of amine value is verified by acid/base assay. 1597.4 grams of the final product is obtained.

## Calculations:

Molar ratio monocarboxylic acid/dicarboxylic acid:

**[0147]**

$$(0.45 \text{ mol palm fatty acid} + 2.04 \text{ mol oleic fatty acid}) / 1.25 \text{ mol adipic acid} = 2.0$$

## Equivalent ratio COOH/OH:

**[0148]**

$$(1 \text{ eq} * 0.45 \text{ mol palm fatty acid} + 1 \text{ eq} * 2.04 \text{ mol oleic fatty acid} + 2 \text{ eq} * 1.25 \text{ mol adipic acid}) / (3 \text{ eq} * 2.77 \text{ mol triethanolamine}) = 0.60$$

Preparation of Compound C (comparative)

## Esterification:

**[0149]** 1144.9 grams (4.06 mol) of Oleic fatty acid (iodine value 95) and 351.7 grams (2.36 mol) of triethanolamine were introduced in an inert atmosphere into a glass reactor, which was added with stirring. The mixture was heated for at least 4 hours at 160-180°C in order to remove water from the reaction. The final point of the reaction was monitored by an acid value assay until the value was below 4 mg KOH/g.

**[0150]** A yellowish liquid product from the esterification was obtained, consisting essentially of a mixture of unesterified fatty acids, mono-, di- and triesterified triethanolamine.

## Quaternisation:

**[0151]** 182.0 grams (3.03 mol) of 2-propanol were added with stirring to 1368.9 grams of the product from esterification step (containing 2.27 mol of esterified product). Then, 269.1 grams (2.14 mol) of dimethyl sulphate were added with stirring at a temperature of 50-90°C. After four hours of digestion, the virtually complete absence of amine value was verified by acid/base assay. 1802.1 grams of the final product was obtained.

Example 2: preparation of fabric softening compositionsExample A (according to the invention)

Preparation of the composition comprising the perfume and the mixture of cationic surfactants:

**[0152]** 94.4 grams of the mixture of compound A was added to a vessel at room temperature under proper stirring. 15 grams of the perfume (commercial standard fabric softener fragrance for blue line products, available from KAO Chemicals Europe, with ClogP=3.64), was stirred for 5 minutes at room temperature. A clear, homogeneous and viscous mixture was obtained.

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Preparation of the fabric softener:

**[0153]** 450 grams of water (water hardness 20°fH = 200 ppm CaCO<sub>3</sub>) were added to a vessel under stirring at 150 rpm. 50 grams of the mixture above prepared were added to the water under constant stirring. An opaque dispersion was obtained in 15 seconds. Afterwards, a study of stability of dispersion was carried on, based on study of viscosity of dispersion at several times.

**[0154]** Table 1 showed results for dispersion time and stability for softener compositions. Complete dispersion was observed for Example A (according to the invention), as well as it showed stable formulations (showing no- or little- variations in viscosity), at different temperatures, during a prolonged period of time.

Example	A	
Dispersion time in water 20°HF	<15 seconds	
Appearance of dispersion	Opaque and homogeneous	
Viscosity (at 5°C)	(t1)24h	150
	(t2)28days	148
	(t3)56days	149
	(t4)84days	145
Viscosity (at 20°C)	(t1)24h	150
	(t2)28days	152
	(t3)56days	148
	(t4)84days	155
Viscosity (at 40°C)	(t1)24h	150
	(t2)28days	152
	(t3)56days	156
	(t4)84days	158

**[0155]** Viscosity is measured with a Brookfield LVT viscometer with spindle 2 at 60 rpm

**[0156]** Differences in viscosity for different times (24h, 28h, 56 days, 84 days) are not significant.

### Example B (comparative)

Preparation of the composition comprising the perfume and the mixture of cationic surfactants:

**[0157]** 94.4 grams of compound B were added to a vessel at room temperature under proper stirring. 15 grams of the perfume (commercial standard fabric softener fragrance for blue line products, available from KAO Chemicals Europe with ClogP=3.64) were added to the vessel under stirring. Mixture was stirred for 5 minutes at room temperature. A clear, homogeneous and viscous mixture was obtained.

Preparation of the fabric softener:

**[0158]** 450 grams of water (water hardness 20°fH = 200 ppm CaCO<sub>3</sub>) were added to a vessel under stirring at 150 rpm. 50 grams of the mixture above prepared were added to the water under constant stirring.

**[0159]** After 5 minutes, an opaque dispersion was obtained.

**[0160]** After 7 days, dispersion showed separation.

**[0161]** The inventors found that under the same conditions as the ones necessary to prepare dispersion A (according to the invention), it was not possible to obtain a dispersion stable upon storage under the same conditions as the invention.

Example C (comparative)

Preparation of the composition comprising the perfume and the mixture of cationic surfactants:

5 **[0162]** 94.4 grams of compound C were added to a vessel at room temperature under proper stirring. 15 grams of the perfume (commercial standard fabric softener fragrance for blue line products, available from KAO Chemicals Europe with ClogP=3.64) were added to the vessel under stirring. Mixture was stirred for 5 minutes at room temperature. A pasty, mucus-like product was obtained, even after 5 minutes of stirring.

10 **[0163]** The inventors found that under the same conditions as the ones necessary to prepare dispersion A (according to the invention), it was not possible to obtain a dispersion, but a mucus-like paste.

**Claims**

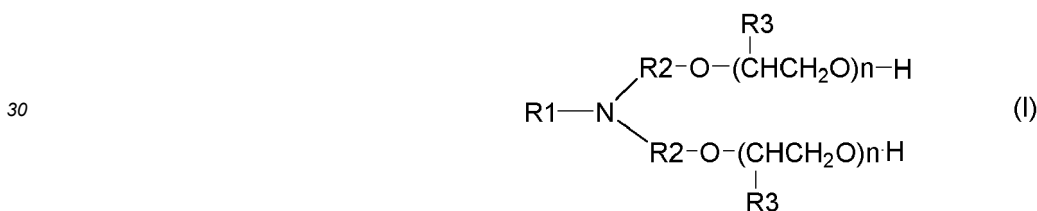
15 **1.** Use of a perfume having a ClogP value from 0.5 to 8 to disperse a mixture of cationic surfactants in water, wherein the mixture of cationic surfactants is obtainable by a process comprising the steps:

Step I: esterification of a) with b), and

20 Step II: cation formation from the reaction products of Step I, wherein:

a) is a hydroxyl group-containing compound or a mixture of hydroxyl group-containing compounds comprising a.1 and optionally a.2, wherein:

25 - a.1 is an alkanolamine or a mixture of alkanolamines of the general formula (I):



35 In which R1 is selected from hydrogen, a C1-C6 alkyl group, and the residue



R2 is a C1-C6 alkylene group, R3 is hydrogen or methyl, n is 0 or an integer from 1 to 20; and

- a.2 is a polyol, which can be optionally alkoxyated, and is **characterized by** a MW in the range from 60 to 190 g/mol;

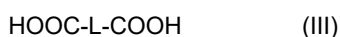
45 b) is a mixture of compounds containing one or more carboxylic groups comprising b.1 and b.2, wherein:

- b.1 is a monocarboxylic acid or a mixture of monocarboxylic acids of formula (II):



In which R6 is a linear or branched C6-C23 alkyl or alkenyl group; or an alkyl ester or glyceride thereof, preferably a linear or branched C6-C23 alkyl or alkenyl ester; and

55 - b.2 is a dicarboxylic acid or a mixture of dicarboxylic acids of the general formula (III), or reactive derivative(s) thereof:



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Wherein L is a saturated or unsaturated, linear or branched group having 1 to 10 carbon atoms, or a cyclic group having 3 to 10 carbon atoms, each of which carbon atoms is optionally substituted by a C1-C6 saturated or unsaturated group; and is preferably represented by (CH(R11))<sub>m</sub> or by (C6-C10 arylene) optionally substituted by one or more R11, in which each R11 is independently a hydrogen, OH or a C1-C6 saturated or unsaturated group, m is 0 or an integer from 1 to 10, wherein for  $m \geq 2$ , the chain (CH)<sub>m</sub> optionally contains one or more double bonds and/or cyclic group(s);

Wherein a.1), a.2), b.1) and b.2) are introduced in the reaction system of Step I in amounts resulting in the following molar ratios:

- the molar ratio of monoacid(s)/ diacid(s) (b.1/b.2) is 2.5 to 5.0;
- the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) present in the system is 0.4 to 0.8;
- the molar ratio between the compound(s) within the definition a.2 and the compound(s) under definition a.1 is 0.

2. Use of a perfume having a ClogP value from 0.5 to 8 to disperse a softening composition comprising a mixture of cationic surfactants as defined in any of the preceding claims.

3. The use according to claim 1 or 2, wherein the amounts of the compounds a.1, a.2, b.1 and b.2 are introduced in the reaction system of Step I in amounts that result in the following molar ratios:

- the molar ratio of monoacid(s)/ diacid(s) (b.1/b.2) is from 2.5 to 4.0, preferably from 3.0 to 4.0;
- the equivalent ratio between organic carboxylic groups and organic hydroxyl groups (COOH/OH) present in the system is from 0.5 to 0.7;
- the molar ratio between the compound(s) within the definition a.2 and the compound(s) under definition a.1 is 0.

4. The use according to any of the preceding claims, wherein

- the alkanolamine(s) of formula (I) is selected from triethanolamine, N-methyldiethanolamine, N-methyldiisopropanolamine and triisopropanolamine, each of which is optionally alkoxylated with ethylene oxide or propylene oxide, and mixtures thereof; and/or
- the dicarboxylic acid(s) of formula (III) is selected from succinic, malic, glutaric, adipic, sebacic, pimelic, suberic, maleic and terephthalic acid, acids obtained by thermal oligomerization of unsaturated fatty acids, and mixtures thereof; and/or
- the monocarboxylic acid(s) of formula (II) are synthetic fatty acids or are obtained from fats or oils of natural origin and are optionally hydrogenated, preferably from oils of vegetal origin which are optionally hydrogenated, preferably wherein the monocarboxylic acids of formula (II) are selected from those which are obtained from tallow, palm, olive, coconut, sunflower, soya, rapeseed, grape marc and grape, each of which can be hydrogenated, partially hydrogenated, or non-hydrogenated; and/or
- the compounds corresponding to a.1 and/or a.2 are from natural origin.

5. The use according to any of the preceding claims, wherein:- Step II corresponds to the formation of the addition salts of the alkanolamine esters obtained from Step I with mineral or organic acids, preferably wherein the mineral or organic acids are one or more selected from hydrochloric, sulphuric, phosphoric, citric and lactic acid; or

- Step II corresponds to the quaternization of reaction mixtures of Step I with alkylating agent(s), preferably wherein the alkylating agent are one or more selected from methyl chloride, methyl bromide, dimethyl sulphate, diethyl sulphate and dimethyl carbonate.

6. The use according to any of the preceding claims, wherein the weight ratio between the mixture of cationic surfactants and the perfume is from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25.

7. An aqueous dispersed composition, particularly a dispersed softening composition, comprising the perfume and mixture of cationic surfactants, as defined in any of the preceding claims, and water.

8. The aqueous dispersed composition according to claim 7 which is stable upon storage for at least two months, preferably at least three months, more preferably at least four months, even more preferably at least six months, at a temperature from 5°C to 40°C, preferably from 10°C to 30°C, more preferably from 15°C to 25°C.

9. The aqueous dispersion according to any of the claims 7-8 wherein the water content is higher than 50% wt., preferably higher than 80% wt., more preferably higher than 85% wt., based in the total weight of the composition.

5 10. The aqueous dispersed composition according to any of the claims 7-9, wherein the water content is lower than 50% wt., preferably lower than 30%wt., more preferably lower than 10% wt., even more preferably lower than 5%wt, based in the total weight of the composition.

10 11. A process to prepare an aqueous dispersion of a mixture of cationic surfactants as defined in any of the claims 1, 2-6, the process comprising the step of (a) mixing the mixture with a perfume having a ClogP value from 0.5 to 8, particularly in a weight ratio from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25, (b) adding water, and (c) stirring.

15 12. A process for preparing an aqueous dispersed softening composition comprising a mixture of cationic surfactants as defined in any of the claims 1, 2-6, the process comprising:

(i) adding water to a softening composition already including a perfume having a ClogP value from 0.5 to 8 as well as the mixture of cationic surfactants as defined hereinabove, wherein the weight ratio between the mixture and the perfume is particularly from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; and (ii) stirring;

20 or, alternatively, the process comprising the steps of:

(iii) adding a perfume with a ClogP value from 0.5 to 8 to a softening composition already comprising the mixture of cationic surfactants as defined hereinabove, wherein the weight ratio between the mixture and the perfume is particularly from 99:1 to 40:60, preferably from 95:5 to 70:30, more preferably from 90:10 to 75:25; (iv) stirring, (v) adding water, particularly tap water; and (vi) stirring.

25 13. The use according to any of the preceding claims 1-6, the aqueous dispersion according to any of the claims 7-10, or the process according to claims 11-12, wherein the water has a hardness value from 0 to 800 ppm of CaCO<sub>3</sub>.

30 14. Use of the dispersed composition according to any of the preceding claims 7-10, for softening fabrics and/or keratin-based-fibres.

35 15. A method for softening fabrics and/or keratin-based fibres comprising preparing a softener dispersed composition as defined in preceding claims 11-13, and contacting the dispersion with the fabrics or fibers.



EUROPEAN SEARCH REPORT

Application Number

EP 23 38 2900

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CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

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