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(71) Applicant: **L'OREAL** [FR/FR]; 14, rue Royale, F-75008 Paris (FR).

(72) Inventors: **DE BONI, Maxime**; Crest Court Sadohara 413, 2-1-4 Ichigaya Sadoharacho, Shinjuku-ku, Tokyo, 162-0842 (JP). **TRIPATHI, Virendra**; L'Oreal India Private Limited, 8th Floor - Universal Majestic, Ghatkopar Mankhurd Link Road, Chembur, 400071 Mumbai (IN). **ROY, Dhimoy**; #302, Purva, Sanpada sector 1, plot no30, Navi Mumbai (IN).

(74) Agent: **DODIN, Catherine**; l'Oreal, D.I.P.I., 25-29 Quai Aulagnier, F-92665 Asnieres-sur-Seine Cedex (FR).

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(54) Title: COSMETIC COMPOSITION FOR CARING FOR KERATIN FIBERS, PROCESS FOR COSMETIC TREATMENT AND USE THEREOF FOR CLEANSING AND CONDITIONING THE KERATIN FIBERS

(57) Abstract: The invention relates to a composition for caring for keratin fibers and use thereof for cleansing and conditioning the keratin fibers, especially the hair, which comprises: A) a surfactant selected from the group consisting of anionic, nonionic, amphoteric surfactant, or a mixture thereof; B) a cationic polymer with a charge density greater than 4 meq/g; C) an aminated silicone; D) an insoluble, non-aminated silicone; E) a pearlescent agent; and F) an oxyethylenated polymer having a molecular weight of greater or equal to 300,000.



Cosmetic composition for caring for keratin fibers, process for cosmetic treatment and use thereof for cleansing and conditioning the keratin fibers

5 The present invention relates to hair care cosmetic field; more specifically, it relates to cosmetic composition such as shampoo which has good appearance and hair care effect.

10 It is known to the art to use detergent and conditioning hair care composition, or shampoo, based essentially on surfactants, especially of anionic surfactants, in combination with conditioning agents, in order to overcome the damages issue due to the aggressive nature of such a surfactant.

15 In order to improve the cosmetic properties of the above detergent composition, and more especially detergent compositions for application to sensitized hair, i.e., hair which is damaged or weakened, in particular through the chemical action of environmental agents and/or of hair treatments such as permanent-waving, dyeing or bleaching, it is known to introduce into these compositions conditioning agents. The main purpose of these conditioning agents is to rectify or limit the undesirable effects induced by the various treatments or types of attach to which the hair fibers are more or
20 less repeatedly subjected to and, of course, they can also improve the cosmetic behavior of natural hair.

The conditioning agents most commonly used to date in shampoos are cationic polymers, silicones and/or silicone derivatives which impart to washed, dry or wet hair a disentangling, softness and a smoothness which are markedly enhanced in comparison to what can be obtained with corresponding cleansing compositions which do not
25 contain them.

Moreover, the appearance of shampoo products has always been one of the key factors to satisfy the needs of the consumers. Pearlescent shampoos are the most favored by the consumers. It is known to use pearlescent agents, inorganic or organic,
30 to produce shampoos with pleasant appearance.

It has been found that, in spite of the current progress in the field of pearlescent shampoos based on a combination of particularly and appropriately selected types of silicones and/or its derivatives and cationic polymers with pearlescent agents, they are not completely satisfactory, in terms of, for example, conditioning power (especially on dry hair), or foaming quality (such as foaming creaminess). Thus there is still
35 a need for new products displaying improved performance in respect to one or more of the cosmetic properties mentioned above.

The present invention is directed towards meeting this need.

40 One of the aims of the present invention is to obtain a composition for cleansing and

conditioning keratin fibers, especially the hair, which possess a pleasant pearlescent appearance, a noteworthy conditioning effect which manifests itself, in particular, in disentangling as well as in providing volume, bounce, smoothness, softness, and suppleness, in particular for dry hair, and moreover in providing an increased foam quality, such as an increased aeration rate and firmness.

The aim of the present invention is achieved by a cosmetic composition, preferably for hair care, comprising, in an aqueous medium,

A) at least one surfactant preferably selected from the group consisting of anionic, nonionic, and amphoteric surfactant, or a mixture thereof;

B) at least one cationic polymer with a charge density greater than 4 meq/g, preferably greater than 5 meq/g;

C) at least one aminated silicone;

D) at least one insoluble, non-aminated silicone;

E) at least one pearlescent agent; and

F) at least one oxyethylenated polymer having a molecular weight (Mw) of greater than or equal to 300,000.

Another subject of the present invention is a process for the cosmetic treatment of keratin materials, preferably for washing and conditioning keratin fibers, especially the hair, comprising the steps of applying to said materials or fibers, preferably in a wet state, the composition described above, and optionally rinsing them with water after an optional period of exposure.

Yet another subject of the present invention is the use of the composition described above in cleansing and conditioning keratin fibers, especially hair.

Thus, the invention makes it possible to obtain a composition with pearlescent appearance and improved foam quality, good cleansing and conditioning properties, and meanwhile stable over time. More particularly, improved foam quality is presented by the aeration rate and firmness of the invention, and conditioning properties are presented by better disentangling of dry hair.

By "aeration rate" we intend to mean the amount of air present in the volume of foam generated. Higher the aeration rate, better is the foaming ability of the composition.

By "foam firmness" we intend to mean the amount of force required to compress generated volume of foam in a packed container. The higher the force required, creamier the foam is.

The composition according to the invention more particularly presents a very good foam quality (foamability) together with a good pearlescent aspect.

In the description, the terms "at least a" or "at least one" are equivalent to "one or more".

As stated above, the essential components of the composition according to the invention, are A) at least one surfactant preferably selected from the group consisting of anionic, nonionic, and amphoteric surfactant, or a mixture thereof; B) at least one cationic polymer with a charge density greater than 4 meq/g, preferably greater than 5 meq/g; C) at least one aminated silicone; and D) at least one insoluble, non-aminated silicone; E) at least one pearlescent agent; and F) at least one oxyethylenated polymer having a molecular weight (Mw) of greater than or equal to 300,000.

A) Surfactants

The cosmetic composition according to the invention is preferably a hair shampoo composition.

It comprises at least one surfactant, which is preferably selected from the group consisting of anionic, nonionic and amphoteric surfactants, or a mixture thereof.

15 i) Anionic surfactant

According to an embodiment of the invention the at least surfactant is chosen from the anionic surfactants or "surface-active agents".

Anionic surfactant is understood to mean an amphiphilic compound in which the hydrophobic part carries an anionic hydrophilic group with a cationic counterion which is generally metallic (alkali metal, such as Na or K) or ammonium; the hydrophilic group is thus polar and capable of dissociating to give anions in aqueous solution.

More particularly the anionic part of the anionic surfactant is belonging to the group chosen from : C(O)OH, -C(O)O⁻, -SO₃H, -S(O)₂O⁻, -OS(O)₂OH, -OS(O)₂O⁻, -P(O)OH₂, -P(O)₂O⁻, -P(O)O₂⁻, -P(OH)₂, =P(O)OH, -P(OH)O⁻, =P(O)O⁻, =POH, =PO⁻, the anionic part comprising a cationic counter anion such as alkali or alkaline earth metal or organic cationic counter anion such as ammonium. Mention may be made, as anionic surface-active agents, of surface-active agents comprising carboxylate, sulfate, sulfonate, sulfoacetate, sulfosuccinate, phosphate, isethionate, sarcosinate, glutamate, lactylate or taurate anionic groups, salts of fatty acids, salts of galactosiduronic acids, salts of ether carboxylic acids and their mixtures.

More particularly, the anionic surfactants according to the invention are chosen from:

- (C₆-C₃₀)alkyl sulfates, (C₆-C₃₀)alkyl ether sulfates, (C₆-C₃₀)alkylamido ether sulfates, alkylaryl polyether sulfates or monoglyceride sulfates;
- (C₆-C₃₀)alkyl sulfonates, (C₆-C₃₀)alkylamidesulfonates, (C₆-C₃₀)alkylaryl sulfonates, α-olefin sulfonates, paraffin sulfonates;
- (C₆-C₃₀)alkyl phosphates;
- (C₆-C₃₀)alkyl sulfosuccinates, (C₆-C₃₀)alkyl ether sulfosuccinates or (C₆-C₃₀)alkylamido sulfosuccinates;
- (C₆-C₃₀)alkyl sulfoacetates;
- (C₆-C₂₄)acylsarcosinates;

- (C₆-C₂₄)acylglutamates;
- (C₆-C₃₀)alkylpolyglycoside carboxylic ethers; (C₆-C₃₀)alkylpolyglycoside sulfosuccinates;
- (C₆-C₃₀)alkyl sulfosuccinamates;
- 5 - (C₆-C₂₄)acyl isethionates;
- N-[(C₆-C₂₄)acyl] taurates;
- salts of fatty acids for example having from 8 to 30 carbon atoms;
- (C₈-C₂₀)acyl lactylates;
- salts of (C₆-C₃₀)alkyl-D-galactosiduronic acids;
- 10 - salts of (C₆-C₃₀)alkyl polyoxyalkylenated ether carboxylic acids, of (C₆-C₃₀)alkylaryl polyoxyalkylenated ether carboxylic acids or of (C₆-C₃₀)alkylamido polyoxyalkylenated ether carboxylic acids;
- and their mixtures.

These anionic surfactants are advantageously found in the form of salts in the composition according to the invention, in particular of salts of alkali metals, such as sodium; of alkaline earth metals, such as, for example, magnesium; of ammonium salts; of amine salts; or of aminoalcohol salts. They might also, according to the conditions, occur in their acid form.

It should be noted that the alkyl or acyl radicals of these various compounds preferably comprise from 12 to 20 carbon atoms. Preferably, the aryl radical denotes a phenyl or benzyl group.

Furthermore, the polyoxyalkylenated anionic surfactants preferably comprise from 2 to 50 alkylene oxide groups, in particular ethylene oxide groups.

In accordance with a preferred embodiment of the invention, the anionic surfactant is chosen from salts of fatty acids.

Preferably, the anionic surfactants of the invention are sulfates, more specifically is chosen from (C₆-C₃₀)alkyl sulfates, (C₆-C₃₀)alkyl ether sulfates, (C₆-C₃₀)alkylamido ether sulfates, alkylaryl polyether sulfates and monoglyceride sulfates, their salts such as alkali salts, such as sodium, and their mixtures.

More preferably the anionic surfactants of the invention are chosen from (C₆-C₃₀)alkyl sulfates, (C₆-C₃₀)alkyl ether sulfates, particularly (C₆-C₃₀)alkyl ether sulfates such as lauryl ether sulfate, their salts, such as sodium lauryl ether sulfate.

ii) Nonionic surfactant

According to an embodiment of the invention the at least surfactant is chosen from the nonionic surfactants.

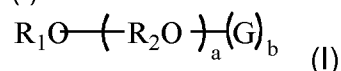
Among the nonionic surfactants according to the invention, mention may be made, alone or as mixtures, of fatty alcohols, α -diols and alkylphenols, these three types of compound being oxyalkylated such as polyethoxylated, polypropoxylated and/or polyglycerolated and containing a fatty chain comprising, for example, 6 to 40 carbon at-

oms, the number of alkylene oxide such as ethylene oxide or propylene oxide groups possibly ranging especially from 2 to 50 and/or the number of glycerol groups possibly ranging especially from 2 to 30. Mention may also be made of copolymers of ethylene oxide and propylene oxide, condensates of ethylene oxide and of propylene oxide with fatty alcohols; polyethoxylated fatty amides preferably having from 2 to 30 mol of ethylene oxide, polyglycerolated fatty amides containing on average 1 to 5, and in particular 1.5 to 4 glycerol groups, ethoxylated fatty acid esters of sorbitan containing from 2 to 30 mol of ethylene oxide, fatty acid esters of sucrose, fatty acid esters of polyethylene glycol, alkylpolyglycosides, N-alkylglucamine derivatives, amine oxides such as (C10-C14)alkylamine oxides or N-acylaminopropylmorpholine oxides. Preferably the nonionic surfactant is chosen from (poly)ethoxylated fatty alcohols; glycerolated fatty alcohols; alkylpolyglycosides.

Wherein "fatty chain" means a linear or branched, saturated or unsaturated hydrocarbon-based chain comprising from 6 to 30 carbon atoms and preferably from 8 to 30 carbon atoms.

As regards the alkyl polyglycosides or APGs, these compounds are well known to a person skilled in the art.

These compounds are represented more particularly by the following general formula (I):



in which formula (I):

- R_1 represents a saturated or unsaturated, and linear or branched alkyl and/or alkenyl radical comprising from 8 to 24 carbon atoms or an alkylphenyl radical, wherein the linear or branched alkyl radical of which comprises from 8 to 24 carbon atoms;
- R_2 represents an alkylene radical comprising approximately from 2 to 4 carbon atoms;
- G represents a sugar unit comprising from 5 to 6 carbon atoms;
- a denotes a value ranging from 0 to 10 and preferably from 0 to 4, and b denotes a value ranging from 1 to 15.

Preferred alkyl polyglycosides useful in the composition of the present invention are compounds of formula (I) in which R_1 more particularly denotes a saturated or unsaturated and linear or branched alkyl radical comprising from 8 to 18 carbon atoms, a denotes a value ranging from 0 to 3 and more particularly still equal to 0, and G can denote glucose, fructose or galactose, preferably glucose.

The degree of polymerization, i.e. the value of b in the formula (I), can range from 1 to 15 and preferably from 1 to 4. The average degree of polymerization is more particularly between 1 and 2 and even more preferentially from 1.1 to 1.5.

The glycoside bonds between the sugar units are of 1-6 or 1-4 type and preferably of

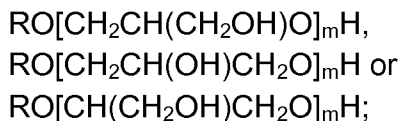
1-4 type.

Compounds of formula (I) are represented in particular by the products sold by Cognis under the names Plantaren[®] (600 CS/U, 1200 and 2000) or Plantacare[®] (818, 1200 and 2000). Use may also be made of the products sold by Seppic under the names Triton CG 110 (or Oramix CG 110) and Triton CG 312 (or Oramix[®] NS 10), the products sold by BASF under the name Lutensol GD 70 or the products sold by Chem Y under the name AG10 LK.

Use may also be made, for example, of C₈-C₁₆ alkyl 1,4-polyglucoside as a 53% aqueous solution, sold by Cognis under the reference Plantacare[®] 818 UP.

As regards the mono- or polyglycerolated surfactants, they preferably comprise on average from 1 to 30 glycerol groups, more particularly from 1 to 10 glycerol groups and in particular from 1.5 to 5.

The monoglycerolated or polyglycerolated surfactants are preferably chosen from the compounds of the following formulae:



in which formulae:

- R represents a saturated or unsaturated, linear or branched hydrocarbon-based radical comprising from 8 to 40 carbon atoms and preferably from 10 to 30 carbon atoms; R may optionally comprise heteroatoms, for instance oxygen and nitrogen.

- m is an integer between 1 and 30, preferably between 1 and 10 and more particularly from 1.5 to 6;

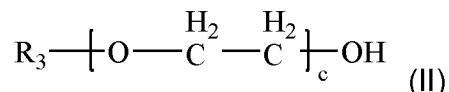
In particular, R may optionally comprise one or more hydroxyl and/or ether and/or amide groups. R preferably denotes mono- or polyhydroxylated C₁₀-C₂₀ alkyl, and/or alkenyl radicals.

Use may be made, for example, of the polyglycerolated (3.5 mol) hydroxylauryl ether sold under the name Chimexane[®] NF from Chimex.

The (poly)ethoxylated fatty alcohols that are suitable for performing the invention are chosen more particularly from alcohols containing from 8 to 30 carbon atoms, and preferably from 12 to 22 carbon atoms.

The (poly)ethoxylated fatty alcohols more particularly contain one or more linear or branched, saturated or unsaturated hydrocarbon-based groups, comprising 8 to 30 carbon atoms, which are optionally substituted, in particular with one or more (in particular 1 to 4) hydroxyl groups. If they are unsaturated, these compounds may comprise one to three conjugated or non-conjugated carbon-carbon double bonds.

The (poly)ethoxylated fatty alcohol(s) preferably have the following formula (II):



with

- R_3 representing a linear or branched C_8 - C_{40} alkyl or alenyl group and preferably C_8 - C_{30} alkyl or alkenyl group, optionally substituted with one or more hydroxyl groups, and

- c is an integer between 1 and 200 inclusive, preferentially between 2 and 50 and more particularly between 8 and 30, such as 20.

The (poly)ethoxylated fatty alcohols are more particularly fatty alcohols comprising from 8 to 22 carbon atoms, oxyethylenated with 1 to 30 mol of ethylene oxide (1 to 30 OE). Among these, mention may be made more particularly of lauryl alcohol 2 OE, lauryl alcohol 3 OE, decyl alcohol 3 OE, decyl alcohol 5 OE and oleyl alcohol 20 OE.

Mixtures of these (poly)oxyethylenated fatty alcohols may also be used.

Among the nonionic surfactants, use is preferably made of C_6 - C_{24} alkyl polyglucosides and (poly)ethoxylated fatty alcohols, C_6 - C_{16} alkyl polyglucosides are more particularly used.

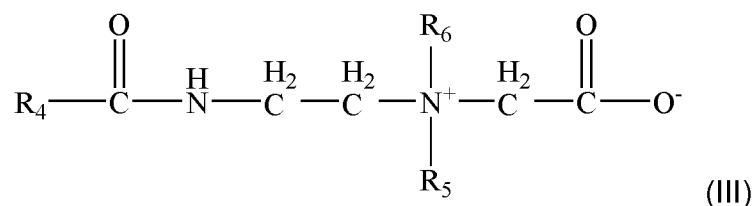
iii) Amphoteric surfactant

According to an embodiment of the invention the at least one surfactant is chosen from the amphoteric surfactants.

The amphoteric or zwitterionic surfactant(s) that may be used in the present invention may be quaternized secondary or tertiary aliphatic amine derivatives containing at least one anionic group, for instance a carboxylate, sulfonate, sulfate, phosphate or phosphonate group, and in which the aliphatic group or at least one of the aliphatic groups is a linear or branched chain comprising from 8 to 22 carbon atoms.

Mention may be made in particular of (C_8 - C_{20})alkylbetaines, sulfobetaines, (C_8 - C_{20} alkyl)amido(C_2 - C_8 alkyl)betaines and (C_8 - C_{20} alkyl)amido(C_2 - C_8 alkyl)sulfobetaines.

Among the optionally quaternized secondary or tertiary aliphatic amine derivatives that may be used, as defined above, mention may also be made of the compounds of respective structures (III) and (IV) below:

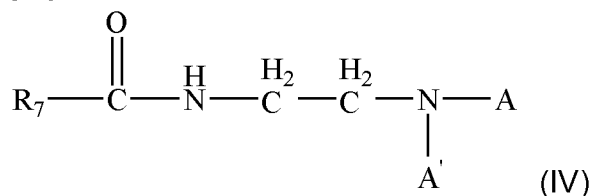


in which formula (III):

- R_4 represents a C_{10} - C_{30} alkyl or alkenyl group derived from an acid $R_4-C(O)-OH$ preferably present in hydrolysed coconut oil, or a heptyl, nonyl or undecyl group;

- R_5 represents a β -hydroxyethyl group; and

- R_6 represents a carboxymethyl group;
and



wherein formula (IV):

- A represents $-\text{CH}_2\text{CH}_2\text{OX}'$;
- A' represents $-(\text{CH}_2)_z-\text{Y}'$, with $z = 1$ or 2 ;
- X' represents the group $-\text{CH}_2-\text{C}(\text{O})-\text{OH}$, $-\text{CH}_2-\text{C}(\text{O})-\text{OZ}'$, $-\text{CH}_2\text{CH}_2-\text{C}(\text{O})-\text{OH}$, $-\text{CH}_2-\text{CH}_2-\text{C}(\text{O})-\text{OZ}'$, or a hydrogen atom;
- Y' represents $-\text{C}(\text{O})-\text{OH}$, $-\text{C}(\text{O})-\text{OZ}'$ or the group $-\text{CH}_2-\text{CH}(\text{OH})-\text{SO}_3\text{H}$ or $-\text{CH}_2-\text{CH}(\text{OH})-\text{SO}_3\text{Z}'$;
- Z' represents an ion derived from an alkali or alkaline-earth metal, such as sodium, potassium or magnesium; an ammonium ion; or an ion derived from an organic amine and in particular from an aminoalcohol, such as mono-, di- and triethanolamine, mono-, di- or triisopropanolamine, 2-amino-2-methyl-1-propanol, 2-amino-2-methyl-1,3-propanediol and tris(hydroxymethyl)aminomethane.
- R_7 represents a $\text{C}_{10}-\text{C}_{30}$ alkyl or alkenyl group of an acid $R_7\text{C}(\text{O})-\text{OH}$ preferably present in coconut oil or in hydrolysed linseed oil, an alkyl group, especially of C_{17} and its iso form, or an unsaturated C_{17} group.

- The compounds corresponding to formula (IV) are preferred. These compounds are also classified in the CTFA dictionary, 5th edition, 1993, under the names disodium cocoamphodiacetate, disodium lauroamphodiacetate, disodium caprylamphodiacetate, disodium caprylamphodiacetate, disodium cocoamphodipropionate, disodium lauroamphodipropionate, disodium caprylamphodipropionate, disodium caprylamphodipropionate, lauroamphodipropionic acid, cocoamphodipropionic acid.

By way of example, mention may be made of the N-cocoynamidocarboxymethyl glycinate of an alkali metal such as sodium, or cocoamphodiacetate sold for example by the company Rhodia under the trade name Miranol® C2M concentrate.

- Among all the amphoteric or zwitterionic surfactants iii) mentioned above, use is preferably made of cocoylamidopropylbetaine, cocoylbetaine and the N-cocoylamidocarboxymethyl glycinate of an alkali metal such as sodium.
- According to one specific embodiment of the present invention, the amphoteric surfactant iii) mentioned above is cocoylbetaine.

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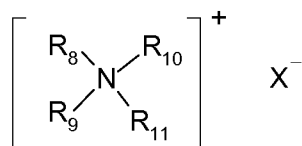
iv) Cationic surfactant

In addition to the at least surfactant preferably selected from the group consisting of

anionic, nonionic and amphoteric, surfactant, or a mixture thereof, the composition according to the invention could additionally comprise at least one cationic surfactant.

Mention may be made, for example, of optionally polyoxyalkylenated primary, secondary or tertiary fatty amine salts, quaternary ammonium salts, and mixtures thereof. Examples of quaternary ammonium salts that may especially be mentioned include:

- a) those corresponding to the general formula (V) below:



(V)

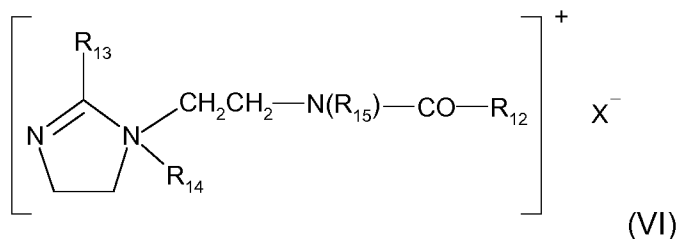
in which formula (V) the groups R_8 to R_{11} , which may be identical or different, represent a linear or branched aliphatic group comprising from 1 to 30 carbon atoms or an aromatic group such as aryl or alkaryl, at least one of the groups R_8 to R_{11} comprising from 8 to 30 carbon atoms and preferably from 12 to 24 carbon atoms. The aliphatic groups may comprise heteroatoms such as, in particular, oxygen, nitrogen, sulfur and halogens.

The aliphatic groups are chosen, for example, from C_1 - C_{30} alkyl, C_1 - C_{30} alkoxy, polyoxy(C_2 - C_6)alkylene, C_1 - C_{30} alkylamide, (C_{12} - C_{22})alkylamido(C_2 - C_6)alkyl, (C_{12} - C_{22})alkylacetate, C_1 - C_{30} hydroxyalkyl, X^- is an anionic counterion chosen from halides, phosphates, acetates, lactates, (C_1 - C_4)alkyl sulfates, and (C_1 - C_4)alkyl- or (C_1 - C_4)alkarylsulfonates.

Among the quaternary ammonium salts of formula (V), preference is given firstly to tetraalkylammonium halides such as tetraalkylammonium chlorides, for instance tetraalkylammonium or alkyltrimethylammonium halides such as dialkyldimethylammonium or alkyltrimethylammonium chlorides in which the alkyl group contains from approximately 12 to 22 carbon atoms, in particular halides such as behenyltrimethylammonium chloride, distearyltrimethylammonium chloride, cetyltrimethylammonium chloride, benzyldimethylstearyltrimethylammonium chloride, or else, secondly, alkoxy sulfates, especially distearoylethylhydroxyethylmethylammonium methosulfate, dipalmitoylethylhydroxyethylammonium methosulfate or distearoylethylhydroxyethylammonium methosulfate, or else, lastly, palmitylamidopropyltrimethylammonium halide, particularly the chloride or stearamidopropyltrimethylammonium halide, particularly the chloride or stearamidopropyltrimethylammonium acetate)ammonium chloride, sold under the name Ceraphyl[®] 70 by the company Van Dyk;

- b) quaternary ammonium salts of imidazoline of formula (VI) below:

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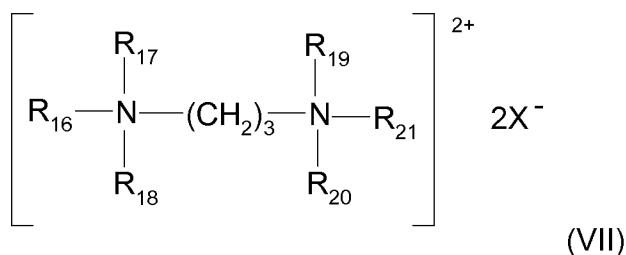


in which formula (VI):

- R₁₂ represents an alkenyl or alkyl group comprising from 8 to 30 carbon atoms, for example fatty acid derivatives of tallow;
- 5 ➤ R₁₃ represents a hydrogen atom, a C₁-C₄ alkyl group or an alkenyl or alkyl group comprising from 8 to 30 carbon atoms;
- R₁₄ represents a C₁-C₄ alkyl group;
- R₁₅ represents a hydrogen atom or a C₁-C₄ alkyl group;
- X⁻ represents an anionic counterion chosen in particular from halides, phosphates, acetates, lactates, (C₁-C₄)alkyl sulfates, (C₁-C₄)alkyl- or (C₁-C₄)alkylarylsulfonates.

R₁₂ and R₁₃ preferably denote a mixture of alkyl or alkenyl groups containing from 12 to 21 carbon atoms, derived for example from tallow fatty acids, R₁₄ preferably denotes a methyl group, and R₁₅ preferably denotes a hydrogen atom. Such a product is sold, for example, under the name Rewoquat[®] W 75 by the company Rewo;

- c) quaternary diammonium or triammonium salts of formula (VII) below:

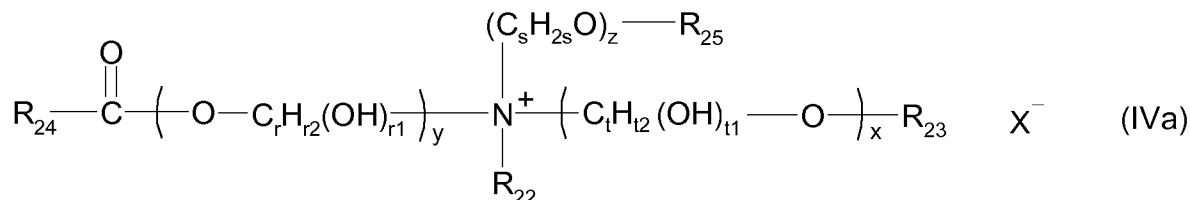


in which formula (VII):

- R₁₆ denotes an alkyl group comprising from about 16 to 30 carbon atoms, which is optionally hydroxylated and/or interrupted with one or more oxygen atoms;
- R₁₇ is chosen from hydrogen, an alkyl group comprising from 1 to 4 carbon atoms or a group -(CH₂)₃-N⁺(R_{16a})(R_{17a})(R_{18a}); R_{16a}, R_{17a}, R_{18a}, R₁₈, R₁₉, R₂₀ and R₂₁, which may be identical or different, are chosen from hydrogen and an alkyl group comprising from 1 to 4 carbon atoms, and
- 25 - X⁻ represents an anionic counterion chosen in particular from halides, acetates, phosphates, nitrates, (C₁-C₄)alkyl sulfates, (C₁-C₄)alkyl- or (C₁-C₄)alkylarylsulfonates, in particular methyl sulfate and ethyl sulfate.

Such compounds are, for example, Finquat CT-P, available from the company Finetex (Quaternium 89), and Finquat CT, available from the company Finetex (Quaternium 75);

- d) quaternary ammonium salts containing one or more ester functions, such as those of formula (VIII) below:



5

in which:

R₂₂ is chosen from C₁-C₆ alkyl groups and C₁-C₆ hydroxyalkyl or C₁-C₆ dihydroxyalkyl groups;

10 R₂₃ is chosen from the group R₂₆-C(=O)-; hydrocarbon-based linear or branched, saturated or unsaturated C₁-C₂₂ groups R₂₇; and a hydrogen atom;

R₂₅ is chosen from the group R₂₈-C(=O)-; hydrocarbon-based linear or branched, saturated or unsaturated C₁-C₆ groups R₂₉; and a hydrogen atom;

R₂₄, R₂₆ and R₂₈, which may be identical or different, are chosen from linear or branched, saturated or unsaturated C₇-C₂₁ hydrocarbon-based groups;

15 r, s and t, which may be identical or different, are integers ranging from 2 to 6;

r₁ and t₁, which may be identical or different, are equal to 0 or 1;

r₂ + r₁ = 2 r and t₁ + t₂ = 2 t;

y is an integer ranging from 1 to 10;

x and z, which may be identical or different, are integers ranging from 0 to 10;

20 the sum x + y + z is from 1 to 15,

X⁻ is an anion;

with the proviso that, when x is 0 then R₂₃ denotes R₂₇, and that when z is 0 then R₂₅ denotes R₂₉.

25 The alkyl groups R₂₂ may be linear or branched, and more particularly linear. Preferably, R₂₂ denotes a methyl, ethyl, hydroxyethyl or dihydroxypropyl group, and more particularly a methyl or ethyl group.

When R₂₃ is an R₂₇ hydrocarbon group, it may have from 12 to 22 carbon atoms, or may have from 1 to 3 carbon atoms.

When R₂₅ is an R₂₉ hydrocarbon group, it preferably has 1 to 3 carbon atoms.

30 Advantageously, R₂₄, R₂₆ and R₂₈, which are identical or different, are chosen from linear or branched, saturated or unsaturated C₁₁-C₂₁ hydrocarbon groups, and more particularly from linear or branched C₁₁-C₂₁ alkyl and alkenyl groups.

Preferably, x and z, which may be identical or different, are equal to 0 or 1.

Advantageously, y is equal to 1.

35 Advantageously, the sum x + y + z is from 1 to 10.

Preferably, r, s and t, which may be identical or different, are equal to 2 or 3, and

even more particularly are equal to 2.

The anionic counterion X^- is preferably a halide, preferably such as chloride, bromide or iodide, a (C₁-C₄)alkyl sulfate or a (C₁-C₄)alkyl- or (C₁-C₄)alkylaryl-sulfonate. However, use may be made of methanesulfonate, phosphate, nitrate, tosylate, an
5 anion derived from an organic acid, such as acetate or lactate, or any other anion compatible with the ammonium containing an ester function.

The anionic counterion X^- is even more particularly chloride, methyl sulfate or ethyl sulfate.

Use is made more particularly, in the composition according to the invention, of the
10 ammonium salts of formula (VIII) in which:

- R₂₂ denotes a methyl or ethyl group,

- x and y are equal to 1,

- z is equal to 0 or 1,

- r, s and t are equal to 2,

- 15 - R₂₃ is chosen from the group R₂₆-C(=O)-; methyl groups, ethyl groups or hydrocarbon-based C₁₄-C₂₂ groups; and a hydrogen atom,

- R₂₅ is chosen from the group R₂₈-C(=O)-; and a hydrogen atom,

- R₂₄, R₂₆ and R₂₈, which may be identical or different, are chosen from linear or branched, saturated or unsaturated C₁₃-C₁₇ hydrocarbon groups, and preferably from
20 linear or branched, saturated or unsaturated C₁₃-C₁₇ alkyl and alkenyl groups.

Advantageously, the hydrocarbon-based radicals are linear.

Among the quaternary ammonium salts containing one or more ester functions of formula (VIII), examples that may be mentioned include salts, especially the chloride or methyl sulfate, of diacyloxyethyltrimethylammonium, diacyloxyethylhydroxy-
25 ethyltrimethylammonium, monoacyloxyethyldihydroxyethyltrimethylammonium, triacyloxyethyltrimethylammonium or monoacyloxyethylhydroxyethyltrimethylammonium, and mixtures thereof. The acyl groups preferably contain 14 to 18 carbon atoms and are obtained more particularly from a plant oil such as palm oil or sunflower oil. When the compound contains several acyl groups, these groups may be identical or different.

30 These products are obtained, for example, by direct esterification of triethanolamine, triisopropanolamine, an alkyldiethanolamine or an alkyl-diisopropanolamine, which are optionally oxyalkylenated, with fatty acids or with fatty acid mixtures of plant or animal origin, or by transesterification of the methyl esters thereof. This esterification is followed by a quaternization by means of an alkylating agent such as an alkyl halide,
35 preferably methyl or ethyl halide, a dialkyl sulfate, preferably methyl or ethyl sulfate, methyl methanesulfonate, methyl para-toluenesulfonate, glycol chlorohydrin or glycerol chlorohydrin.

Such compounds are sold, for example, under the names Dehyquart[®] by the company Henkel, Stepanquat[®] by the company Stepan, Noxanium[®] by the company Ceca or Rewoquat[®] WE 18 by the company Rewo-Witco.
40

The composition according to the invention may contain, for example, a mixture of quaternary ammonium salts of mono-, di- and triesters with a weight majority of diester salts.

It is also possible to use the ammonium salts containing at least one ester function that are described in patents US-A-4 874 554 and US-A-4 137 180.

Use may be made of behenoylhydroxypropyltrimethylammonium chloride sold by KAO under the name Quatarmin BTC 131.

Preferably, the ammonium salts containing at least one ester function contain two ester functions.

Among the cationic surfactants that may be present in the composition according to the invention, it is more particularly preferred to choose cetyltrimethylammonium, behenyltrimethylammonium and dipalmitoylethylhydroxyethylmethylammonium salts, and mixtures thereof, and more particularly behenyltrimethylammonium chloride, cetyltrimethylammonium chloride, and dipalmitoylethylhydroxyethylammonium methosulfate, and mixtures thereof.

Preferably, the surfactant is selected from the group consisting of anionic surfactants and amphoteric surfactants. Based on this particular embodiment, the composition according to the invention comprises a combination of anionic surfactant(s) and amphoteric surfactant(s).

More preferably, the composition according to the invention contains a combination of a sulfate anionic surfactant and a betaine surfactant, preferably a combination of a sodium lauryl ether sulfate and of cocoylbetain.

Advantageously, the composition according to the invention comprises the surfactant(s) in a quantity ranging of from 4% to 50% by weight, with respect to the weight of the composition, preferably from 6% to 40% by weight, more preferably from 10% to 20% by weight, even more preferably from 12% to 19% by weight, and even more preferably from 12 to 16% by weight, with respect to the weight of the composition.

B) Cationic polymer with a charge density greater than 4meq/g

The composition according to the present invention comprises at least one cationic polymer with a charge density greater than 4 meq/g, preferably greater than 5 meq/g.

It is first recalled that, for the purposes of the present invention, the term "cationic polymer" denotes any polymer containing cationic groups and/or groups that can be ionized into cationic groups.

In view of the present invention, the charge density of the cationic polymers according to the invention is greater than 4 meq/g and even more preferentially greater than 5 meq/g.

This charge density is especially determined by the Kjeldahl method.

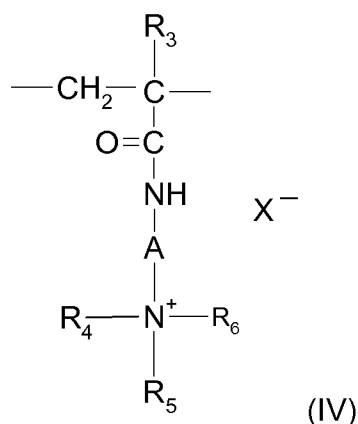
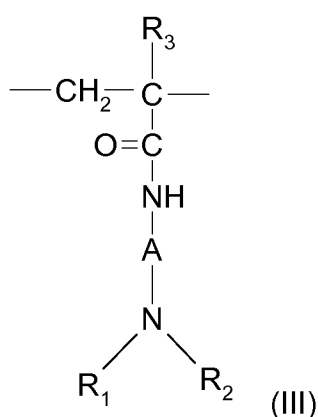
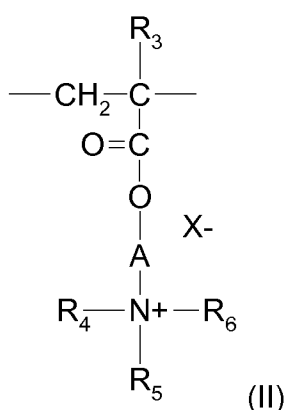
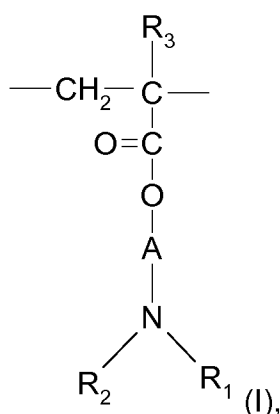
It may also be calculated from the chemical nature of the polymer.

The cationic polymers used generally have a weight-average molar mass (Mw) of between 500 and 5×10^6 approximately and preferably between 10^3 and 3×10^6 approximately.

- 5 Among the cationic polymers that may more particularly be mentioned are polymers of the polyamine, polyaminoamide and polyquaternary ammonium type.

Among these polymers, mention may be made of:

- 10 (1) homopolymers or copolymers derived from acrylic or methacrylic esters or amides and comprising at least one of the units of formula (I) to (IV) below:



15

in which:

R_3 , which may be identical or different, denote a hydrogen atom or a CH_3 radical;

- 20 A, which may be identical or different, represent a linear or branched alkyl group of 1 to 6 carbon atoms, preferably 2 or 3 carbon atoms, or a hydroxyalkyl group of 1 to 4 carbon atoms;

R_4 , R_5 and R_6 , which may be identical or different, represent an alkyl group containing from 1 to 18 carbon atoms or a benzyl radical, and preferably an alkyl group contain-

ing from 1 to 6 carbon atoms;

R_1 and R_2 , which may be identical or different, represent hydrogen or an alkyl group containing from 1 to 6 carbon atoms and preferably methyl or ethyl;

X^- denotes an anion derived from an inorganic or organic acid, in particular a methosulfate anion or a halide, in particular chloride or bromide.

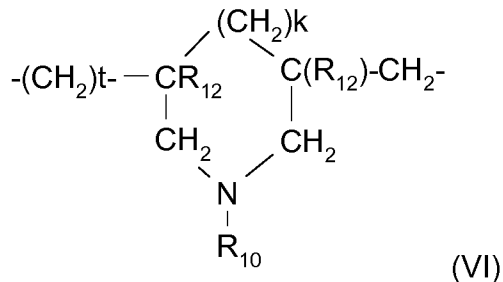
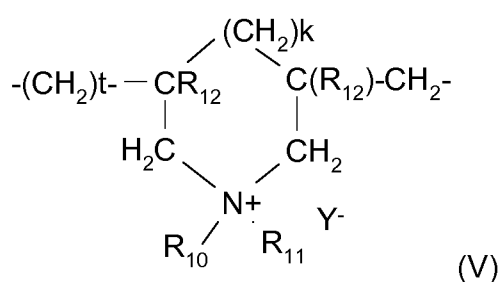
The copolymers of family (1) can also contain one or more units derived from comonomers that may be chosen from the family of acrylamides, methacrylamides, diacetone acrylamides, acrylamides and methacrylamides substituted on the nitrogen with lower (C_1 - C_4) alkyls, acrylic or methacrylic acids or esters thereof, vinyl lactams such as vinylpyrrolidone or vinylcaprolactam, and vinyl esters.

Thus, among these copolymers of family (1), mention may be made of:

- copolymers of acrylamide and of dimethylaminoethyl methacrylate quaternized with dimethyl sulfate or with a dimethyl halide,
- copolymers of acrylamide and of methacryloyloxyethyltrimethylammonium chloride described, for example, in patent application EP-A-080 976,
- copolymers of acrylamide and of methacryloyloxyethyltrimethylammonium methosulfate,
- quaternized or non-quaternized vinylpyrrolidone/dialkylaminoalkyl acrylate or methacrylate copolymers. These polymers are described in detail in French patent Nos. 2 077 143 and 2 393 573,
- dimethylaminoethyl methacrylate/vinylcaprolactam/vinylpyrrolidone terpolymers,
- vinylpyrrolidone/methacrylamidopropyl dimethylamine copolymers,
- quaternized vinylpyrrolidone/dimethylaminopropyl methacrylamide copolymers,
- and crosslinked polymers of methacryloyloxy(C_1 - C_4)alkyltri(C_1 - C_4)alkylammonium salts such as the polymers obtained by homopolymerization of dimethylaminoethyl methacrylate quaternized with methyl chloride, or by copolymerization of acrylamide with dimethylaminoethyl methacrylate quaternized with methyl chloride, the homo- or copolymerization being followed by crosslinking with an olefinically unsaturated compound, in particular methylenebisacrylamide. A crosslinked acrylamide/methacryloyloxyethyltrimethylammonium chloride copolymer (20/80 by weight) in the form of a dispersion containing 50% by weight of said copolymer in mineral oil may be used more particularly. This dispersion is sold under the name Salcare[®] SC 92 by the company Ciba. A crosslinked methacryloyloxyethyltrimethylammonium chloride homopolymer containing about 50% by weight of the homopolymer in mineral oil or in a liquid ester can also be used. These dispersions are sold under the names Salcare[®] SC 95 and Salcare[®] SC 96 by the company Ciba.

(2) cyclopolymers of alkyl diallylamine or of dialkyl diallylammonium, such as the homopolymers or copolymers containing, as constituent of the chain, units correspond-

ing to formula (V) or (VI):



5 in which formulae :

k and t are equal to 0 or 1, the sum k + t being equal to 1;

R₁₂ denotes a hydrogen atom or a methyl radical;

10 R₁₀ and R₁₁, independently of one another, denote an alkyl group having from 1 to 6 carbon atoms, a hydroxyalkyl group in which the alkyl group has preferably 1 to 5 carbon atoms, a lower (C₁-C₄) amidoalkyl group, or R₁₀ and R₁₁ may denote, together with the nitrogen atom to which they are attached, heterocyclic groups, such as piperidyl or morpholinyl;

Y⁻ is an anion such as bromide, chloride, acetate, borate, citrate, tartrate, bisulfate, bisulfite, sulfate or phosphate.

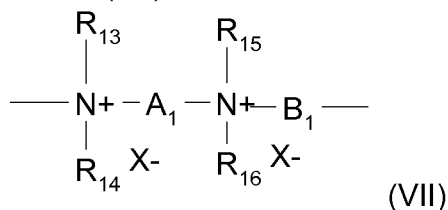
15 R₁₀ and R₁₁, independently of one another, preferably denote an alkyl group containing from 1 to 4 carbon atoms.

Among the polymers defined above, mention may be made more particularly of the dimethyldiallylammonium salt (for example chloride) homopolymers sold in particular under the name Merquat 100 by the company Nalco (and its homologues of low weight-average molar mass) and the product provided under the name Alcofix 131 by the company BASF;

(3) quaternary copolymers of vinyl lactam (vinylpyrrolidone and/or vinylcaprolactam) and of vinylimidazole;

25

(4) diquaternary ammonium polymers containing repeating units corresponding to formula (VII):



in which formula (VII):

30 R₁₃, R₁₄, R₁₅ and R₁₆, which may be identical or different, represent aliphatic, alicyclic

or arylaliphatic radicals containing from 1 to 20 carbon atoms, or C₁-C₆ lower hydroxyalkylaliphatic radicals, or else R₁₃, R₁₄, R₁₅ and R₁₆, together or separately, constitute, with the nitrogen atoms to which they are attached, heterocycles optionally comprising a second heteroatom other than the nitrogen, or else R₁₃, R₁₄, R₁₅ and R₁₆ represent a linear or branched C₁-C₆ alkyl radical which is substituted with a nitrile, ester, acyl, amide or -CO-O-R₁₇-D or -CO-NH-R₁₇-D group in which R₁₇ is an alkylene and D is a quaternary ammonium group;

A₁ and B₁ represent polymethylene groups containing from 2 to 20 carbon atoms, which groups may be linear or branched, saturated or unsaturated, and which may contain, linked to or intercalated in the main chain, one or more aromatic rings or one or more oxygen or sulfur atoms or sulfoxide, sulfone, disulfide, amino, alkylamino, hydroxyl, quaternary ammonium, ureido, amide or ester groups, and

X⁻ denotes an anion derived from an inorganic or organic acid;

A₁, R₁₃ and R₁₅ may form, with the two nitrogen atoms to which they are attached, a piperazine ring; in addition, if A₁ denotes a saturated or unsaturated, linear or branched alkylene or hydroxyalkylene radical, B₁ may also denote a group (CH₂)_n-CO-D-OC-(CH₂)_p- in which n and p, which may be identical or different, are integers ranging from 2 to 20 approximately, and D denotes:

a) a glycol residue of formula: -O-Z-O-, where Z denotes a linear or branched hydrocarbon-based radical or a group corresponding to one of the following formula:

-(CH₂-CH₂-O)_x-CH₂-CH₂-

-[CH₂-CH(CH₃)-O]_y-CH₂-CH(CH₃)-

where x and y denote an integer from 1 to 4, representing a defined and unique degree of polymerization, or any number from 1 to 4, representing an average degree of polymerization;

b) a bis-secondary diamine residue such as a piperazine derivative;

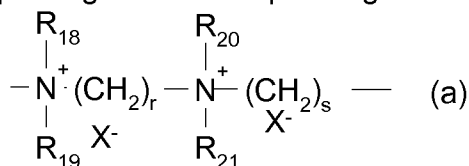
c) a bis-primary diamine residue of formula: -NH-Y-NH-, where Y denotes a linear or branched hydrocarbon-based radical, or alternatively the divalent radical -CH₂-CH₂-S-S-CH₂-CH₂-;

d) a ureylene group of formula: -NH-CO-NH-;

Preferably, X⁻ is an anion such as chloride or bromide.

These polymers have a number-average molecular weight of generally between 1000 and 100 000.

It is more particularly possible to use polymers that are formed essentially from repeating units corresponding to the formula:

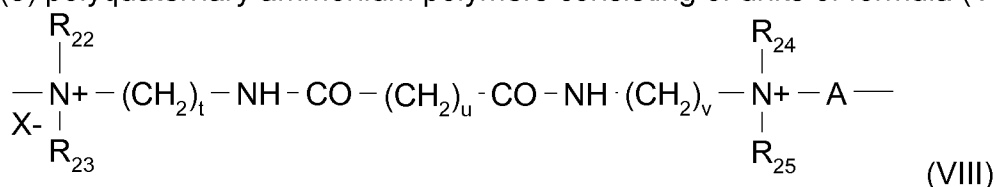


in which R₁₈, R₁₉, R₂₀ and R₂₁, which may be identical or different, denote an alkyl or

hydroxyalkyl radical containing from 1 to 4 carbon atoms approximately, r and s are integers ranging from 2 to 20 approximately, and X⁻ is an anion derived from an inorganic or organic acid.

- One particularly preferred compound of formula (a) is that for which R₁₈, R₁₉, R₂₀ and R₂₁ represent a methyl radical and r = 3, s = 6 and X = Cl, which is called Hexadimethrine chloride according to INCI nomenclature (CTFA);

(5) polyquaternary ammonium polymers consisting of units of formula (VIII):



- in which formula (VIII):

R₂₂, R₂₃, R₂₄ and R₂₅, which may be identical or different, represent a hydrogen atom or a methyl, ethyl, propyl, β-hydroxyethyl, β-hydroxypropyl or -CH₂CH₂(OCH₂CH₂)_pOH radical,

- in which p is equal to 0 or to an integer between 1 and 6, with the proviso that R₂₂, R₂₃, R₂₄ and R₂₅ do not simultaneously represent a hydrogen atom, t and u, which may be identical or different, are integers between 1 and 6, v is equal to 0 or to an integer between 1 and 34, X⁻ denotes an anion such as a halide,

A denotes a radical of a dihalide or represents preferably -CH₂-CH₂-O-CH₂-CH₂-.

- Among these, mention may be made, for example, of the products Mirapol[®] A 15, Mirapol[®] AD1, Mirapol[®] AZ1 and Mirapol[®] 175, provided by the company Miranol. Other cationic polymers that may be used in the context of the invention are polyalkyleneimines, in particular polyethyleneimines, polymers containing vinylpyridine or vinylpyridinium units, condensates of polyamines and of epichlorohydrin, polyquaternary ureylenes and chitin derivatives.

Preferably, the cationic polymers are chosen from the polymers of families (1) and (2) mentioned above.

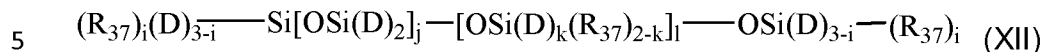
- Advantageously, the cationic polymer used in the present invention is present in the composition from 0.01% to 3% by weight, preferably from 0.1% to 2%, more preferably from 0.3% to 1% by weight relative to the total weight of the composition.

C) Aminated silicone

- According to the invention, the term "aminated silicone", or amino silicone, denotes any silicone comprising at least one primary, secondary or tertiary amine or one quaternary ammonium, and more particularly at least one primary amine. Amino silicones

do not comprise any quaternary ammonium groups.

The aminated silicones used in the cosmetic composition according to the present invention are chosen from the silicones of formula (XII) below:



in which,

D is a hydrogen atom, or a phenyl, hydroxyl (-OH), or C₁-C₈ alkyl, and preferably methyl, or C₁-C₈ alkoxy, preferably methoxy, radical,

i denotes the number 0 or an integer from 1 to 3, and preferably 0,

10 k denotes 0 or 1, and in particular 1,

j and l are numbers such that the sum (j + l) can range especially from 1 to 2000 and in particular from 50 to 150, it being possible for n to denote a number from 0 to 1999 and in particular from 49 to 149, and for m to denote a number from 1 to 2000 and in particular from 1 to 10;

15 R₃₇ is a monovalent radical of formula -C_qH_{2q}L in which q is a number from 2 to 8, it being possible for one or more hydrogen atoms to be substituted with a hydroxyl group, and L is an optionally quaternized amino group chosen from the groups:

-N(R₃₈)-CH₂-CH₂-N(R'₃₈)₂;

-N(R₃₈)₂;

20 -N⁺(R₃₈)₃Q⁻;

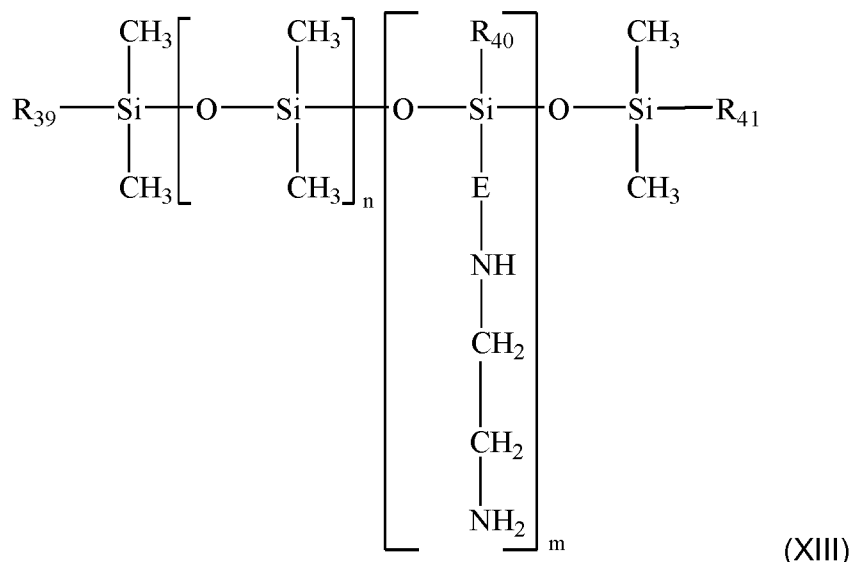
-N⁺(R₃₈)(H)₂Q⁻;

-N⁺(R₃₈)₂HQ⁻;

-N(R₃₈)-CH₂-CH₂-N⁺(R'₃₈)(H)₂Q⁻,

in which R₃₈ and R'₃₈ can denote a hydrogen atom, a phenyl, a benzyl, or a monovalent saturated hydrocarbon-based radical, for example a C₁-C₂₀ alkyl radical, and Q and Q⁻ represents an anion such as, for example, fluoride, chloride, bromide or iodide.

25 In particular, the aminated silicones corresponding to the definition of formula (XII) are chosen from the compounds corresponding to the formula (XIII) below:



in which R₃₉, R₄₀ and R₄₁, which may be identical or different, denote a C₁-C₄ alkyl radical, preferably CH₃; a C₁-C₄ alkoxy radical, preferably methoxy; or OH; E represents a linear or branched, C₃-C₈ and preferably C₃-C₆ alkylene radical; m and n are integers dependent on the molecular weight and the sum of which is between 1 and 2000.

According to a first possibility, R₃₉, R₄₀ and R₄₁, which may be identical or different, represent a C₁-C₄ alkyl radical, preferably methyl, or a hydroxyl radical, E represents a C₁-C₈ and preferably C₃-C₄ alkylene radical, and m and n are such that the weight-average molecular weight of the compound is between 5000 and 500 000 approximately. The compounds of this type are called "aminodimethicone" in the CTFA dictionary.

According to a second possibility, R₃₉, R₄₀ and R₄₁, which may be identical or different, represent a C₁-C₄ alkoxy or hydroxyl radical, at least one of the radicals R₃₉ or R₄₁ is an alkoxy radical and E represents a C₃ alkylene radical. The hydroxy/alkoxy molar ratio is preferably between 0.2/1 and 0.4/1 and advantageously equal to 0.3/1. Moreover, m and n are such that the weight-average molecular weight of the compound is between 2000 and 106. More particularly, n is between 0 and 999 and m is between 1 and 1000, the sum of n and m being between 1 and 1000.

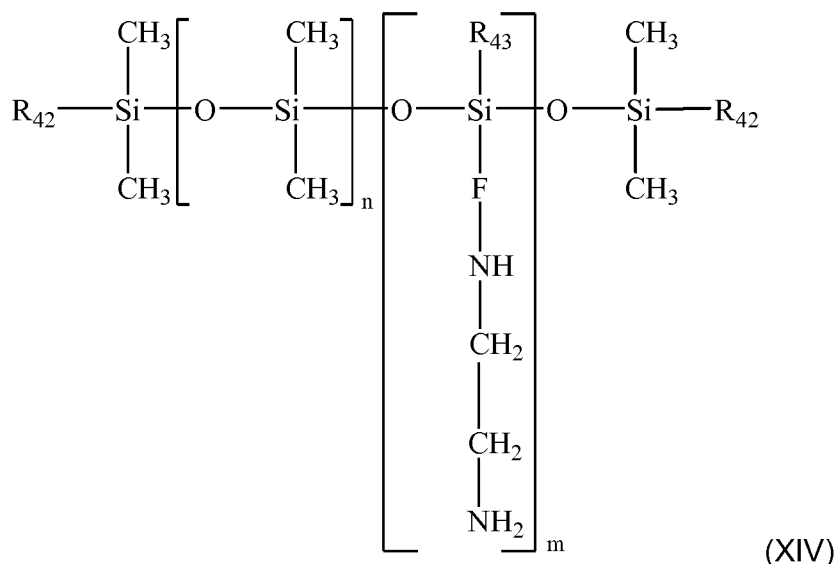
In this category of compounds, mention may be made, inter alia, of the product Belsil® ADM 652 sold by Wacker.

According to a third possibility, R₃₉ or R₄₁, which are same or different, represent a C₁-C₄ alkoxy or hydroxyl radical, at least one of the radicals R₄₀ or R₄₁ is an alkoxy radical, R₄₀ represents a methyl radical and E represents a propyl group, isopropyl group, or a isobutyl group. The hydroxy/alkoxy molar ratio is preferably between 1/0.8 and 1/1.1, and advantageously is equal to 1/0.95. Moreover, m and n are such that the weight-average molecular weight of the compound is between 2000 and 200 000. More particularly, n is between 0 and 999 and m is between 1 and 1000, the sum of n

and m being between 1 and 1000.

More particularly, mention may be made of the product Fluid WR[®] 1300 sold by Wacker. The amino silicones used in the composition in accordance with the invention preferably have general formula (XIV) below:

5



in which:

F denotes a C₂-C₈ and preferably C₂-C₆, better still C₃, linear or branched alkylene radical;

- 10 R₄₂ and R₄₃ denote, independently of one another, a C₁-C₄ alkyl, preferably methyl, radical or a C₁-C₄ alkoxy, preferably methoxy, radical or a hydroxyl radical, m and n are numbers such that the weight-average molecular weight (Mw) is greater than or equal to 75 000.

Preferably, the radicals R₄₂ are identical and denote a hydroxyl radical.

- 15 Preferably, the viscosity of the amino silicone according to the invention is greater than 25 000 mm²/s measured at 25°C. More preferentially, the viscosity of the amino silicone is between 30 000 and 200 000 mm²/s at 25°C and even more preferentially between 50 000 and 150 000 mm²/s, measured at 25°C, and even better still from 70 000 to 120 000 mm²/s. The viscosities of the silicones are, for example, measured according to standard "ASTM 445 Appendix C".

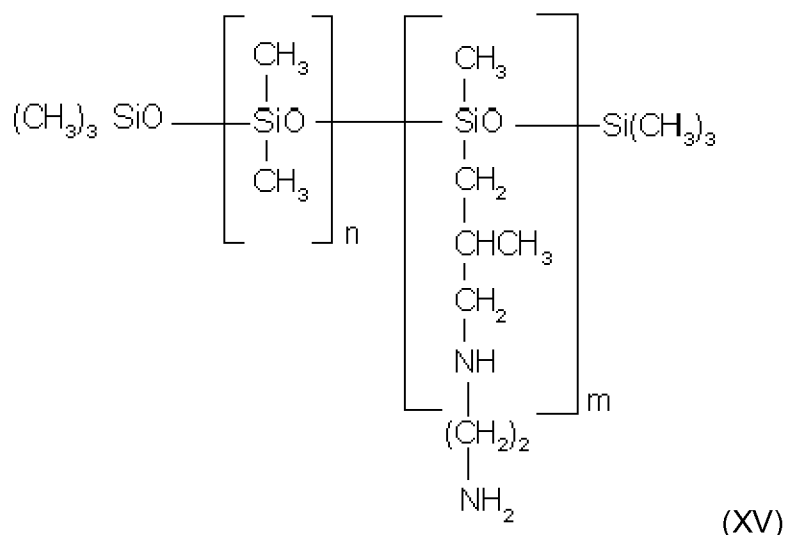
20 Preferably, the cationic charge of the aminated silicone according to the invention is less than or equal to 0.5 meq/g, preferably ranging from 0.01 to 0.1 meq/g and better still from 0.03 to 0.06 meq./g.

- 25 Preferably, the amino silicone according to the invention has a weight-average molecular weight (Mw) ranging from 75 000 to 1 000 000 and even more preferentially ranging from 100 000 to 200 000.

The weight-average molecular weights of the amino silicones according to the invention are measured by gel permeation chromatography (GPC) at ambient temperature,

as polystyrene equivalents. The columns used are μ styragel columns. The eluent is THF and the flow rate is 1 ml/minute. 200 μ l of a solution containing 0.5% by weight of silicone in THF are injected. Detection is performed by refractometry and UV-metry. A particularly preferred amino silicone corresponding to formula (XIV) is, for example,
 5 Dow Corning 2-8299 Cationic Emulsion from the company Dow Corning and the product Xiameter[®] MEM-8299 Emulsion sold by Dow Corning.
 A product corresponding to the definition of formula (XII) is in particular the polymer called "trimethylsilylamodimethicone" in the CTFA dictionary, corresponding to formula (XV) below:

10

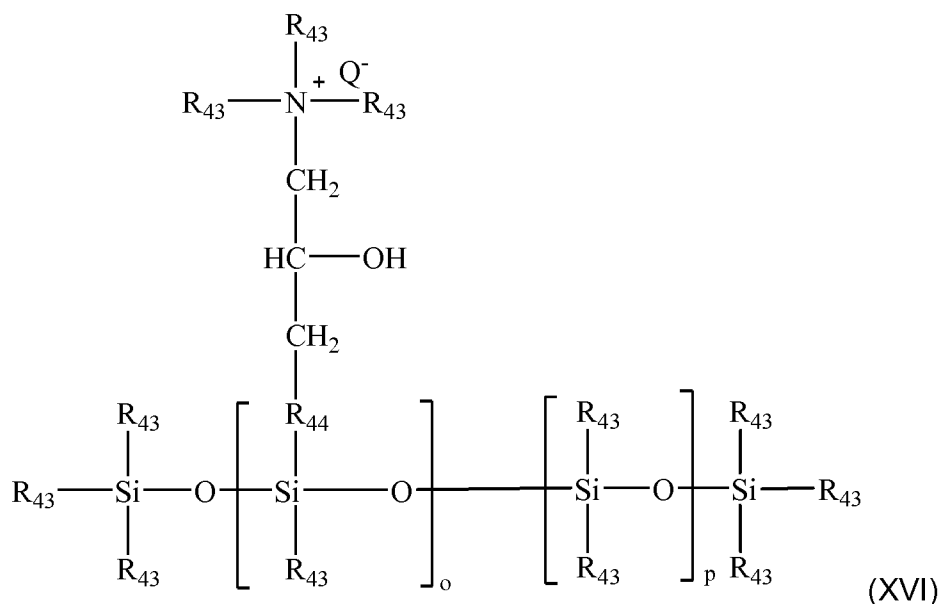


in which n and m have the meanings given above in accordance with formula (XIII).

Such compounds are described, for example, in EP 95238; a compound of formula (XIV) is, for example, sold under the name Q2-8220 by the company OSI.

15 Other amino silicones according to the invention are quaternized amino silicones, and in particular:

(a) the compounds corresponding to formula (XVI) below:



in which,

R₄₃ represents a C₁-C₁₈ alkyl radical, for example methyl;

R₄₄ represents a divalent hydrocarbon-based radical, in particular a C₁-C₁₈ alkylene radical:

Q^- is an anion, in particular chloride;

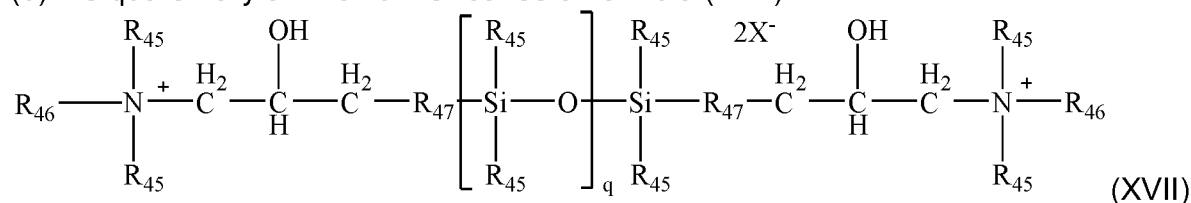
o represents a mean statistical value from 2 to 20 and in particular from 2 to 8;

p represents a mean statistical value from 20 to 200 and in particular from 20 to 50.

Such compounds are described more particularly in Patent US 4185087.

10 A compound falling within this class is the product sold by the company Union Car-
bide under the name Ucar Silicone ALE 56:

(b) the quaternary ammonium silicones of formula (XVII):



in which:

15 R₄₅, which may be identical or different, represent a monovalent hydrocarbon-based radical containing from 1 to 8 carbon atoms, and in particular a C₁-C₈ alkyl radical, for example methyl;

R₄₇ represents a divalent hydrocarbon-based radical, especially a C₁-C₁₈ alkylene radical or a divalent C₁-C₁₈, and for example C₁-C₈, alkylenoxy radical linked to the Si via an SiC bond:

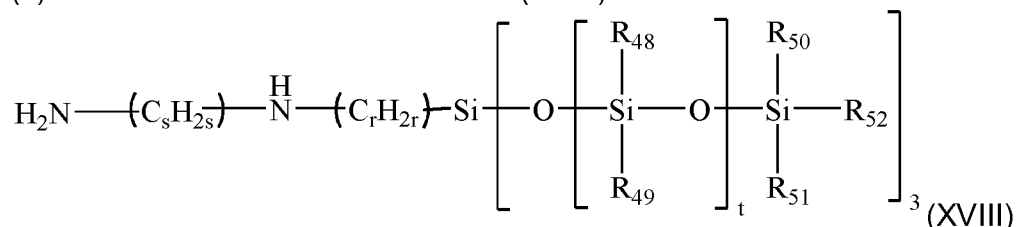
20 via an SiC bond;
R₄₆, which may be identical or different, represent a hydrogen atom, a monovalent hydrocarbon-based radical containing from 1 to 18 carbon atoms, and in particular a C₁-C₁₈ alkyl radical, a C₂-C₁₈ alkenyl radical or a radical -R₄₇-NHCOR₄₅;

X⁻ is an anion such as a halide ion, especially chloride, or an organic acid salt (acetate, etc.);

r represents a mean statistical value from 2 to 200 and in particular from 5 to 100.

These silicones are, for example, described in Application EP-A-0530974;

- 5 (c) the aminated silicones of formula (XVIII):



in which:

- R₄₈, R₄₉, R₅₀ and R₅₁, which may be identical or different, denote a C₁-C₄ alkyl radical or a phenyl group,

- 10 - R₅₂ denotes a C₁-C₄ alkyl radical or a hydroxyl group,

- r is an integer ranging from 1 to 5,

- s is an integer ranging from 1 to 5,

and in which t is selected such that the amine number is between 0.01 and 1 meq/g.

Preferably, the amino silicones of the invention are non-quaternized, i.e. they do not

- 15 comprise a nitrogen atom with a permanent charge.
The silicones which are particularly preferred in accordance with the invention are polysiloxanes comprising amino groups, such as amodimethicones or trimethylsilylamodimethicones, and in particular the compounds of formula (XIII), (XIV) and (XV).

- 20 According to a preferred embodiment, the aminated silicone suitable for the present invention is selected from amodimethicones of the formula (XIV).

When the aminated silicones of the invention are used, a particularly advantageous embodiment is their joint use with cationic and/or nonionic surfactants.

Mentions may be made of the product sold under the name Xiameter® MEM-8299

- 25 Emulsion sold by Dow Corning, which comprises, besides amodimethicone, a cationic surfactant which is cetrimonium chloride and a nonionic surfactant of formula: C₁₃H₂₇-(OC₂H₄)₆-OH, known under the CTFA name Trideceth-6.

By way of example, it is possible to use the product sold under the name Cationic Emulsion DC 929 by the company Dow Corning, which comprises, besides amodimethicone, a cationic surfactant comprising a mixture of products corresponding to the

- 30 formula:
- $$\begin{array}{c} \text{CH}_3 \\ | \\ \text{R}_{53}-\text{N}^+-\text{CH}_3 \\ | \\ \text{CH}_3 \end{array} \quad \text{Cl}^-$$

in which R_{53} denotes C_{14} - C_{22} alkenyl and/or alkyl radicals derived from tallow fatty acids, and known under the CTFA name tallowtrimonium chloride, in combination with a nonionic surfactant of formula: $C_9H_{19}-C_6H_4-(OC_2H_4)_{10}-OH$, known under the CTFA name Nonoxynol 10.

5 Use may also be made, for example, of the product sold under the name Cationic Emulsion DC 939 by the company Dow Corning, which comprises, besides amodimethicone, a cationic surfactant which is trimethylcetylammmonium chloride and a nonionic surfactant of formula: $C_{13}H_{27}-(OC_2H_4)_{12}-OH$, known under the CTFA name Trideceth-12.

10 When these amino silicones are used, one particularly advantageous embodiment consists in using them in the form of an oil-in-water emulsion.

The oil-in-water emulsion may comprise one or more surfactants. The surfactants may be of any nature but are preferably cationic and/or nonionic.

15 The silicone particles in the emulsion have a volume-average diameter [D4.3] generally ranging from 10 nm to 1000 nanometres, preferably from 50 nm to 800 nanometres, more particularly from 100 nm to 600 nanometres and even more particularly from 200 nm to 500 nanometres. These particle sizes may be determined especially using a laser granulometer, for example the Malvern Mastersizer 2000 granulometer.

20 According to the invention, all the silicones can also be used in the form of emulsions or of microemulsions.

According to the invention, the aminated silicone(s) of the present invention can represent from 0.01% to 7% by weight, preferably from 0.1% to 5% by weight and more particularly from 0.4% to 2% by weight relative to the total weight of the composition.

25

D) Insoluble, non-aminated silicone

In the context of the present invention, the term "insoluble" is understood to mean insoluble in the final composition.

30 In the context of the present invention, the term "silicone" is understood to mean, in conformity with the generally accepted definition, all organosilicon polymers or oligomers having a linear or cyclic, branched or crosslinked structure, of variable molecular weight, obtained by polymerization and/or polycondensation of appropriately functionalized silanes, and comprising in essence a repetition of main units in which the silicon atoms are joined to one another by oxygen atoms (siloxane link .tbd.Si--O--Si.tbd.), optionally substituted hydrocarbon radicals being linked directly via a carbon atom to the said silicon atoms. The most common hydrocarbon radicals are alkyl radicals, in particular C.sub.1 -C.sub.10 alkyl radicals and especially methyl, fluoroalkyl radicals, and aryl radicals and especially phenyl.

35 According to the invention, the silicone of appropriate viscosity is preferably selected from polydialkylsiloxanes; polydiarylsiloxanes; and polyalkylarylsiloxanes.

40

Among polydialkylsiloxanes, mention may preferably be made of: linear polydimethylsiloxanes containing terminal trimethylsilyl groups, such as, for example, and without implied limitation, the SILBIONE oils of the 70047 series, marketed by RHONE-POULENC, or the product sold under the tradename, for example Bel-sil[®] DM 60000 by the company Wacker, linear polydimethylsiloxanes containing terminal hydroxydimethylsilyl groups, such as the oils of the 48 V series from RHONE-POULENC, product Xiameter[®] PMX-200 silicone fluid 60000CS sold by Dow Corning, or a mixture thereof. In this class of polydialkylsiloxanes, mention may more preferably be made of the polyalkylsiloxanes sold by the company GOLDSCHMIDT under the trade names ABILWAX 9800 and ABILWAX 9801, which are poly(C1-C20)alkylsiloxanes.

Among polyalkylarylsiloxanes, mention may preferably be made of linear or branched polydimethylmethylphenylsiloxanes or polydimethyldiphenylsiloxanes, such as the product DC 556 COSMETIC GRAD FLUID from DOW CORNING. Preferably, the insoluble non-aminated silicone according to the present invention is polydimethylsiloxanes.

Advantageously, the amount of the insoluble, non-aminated silicone of the present invention is from 0.01% to 7% by weight, preferably from 0.1% to 5% by weight, more preferably from 0.5% to 3% by weight, even more preferably from 1% to 2% relative to the total weight of the composition.

E) Pearlescent agents

The composition of the present invention comprises at least one pearlescent agent. The pearlescent agent may be organic, inorganic, or a mixture thereof.

The term "pearlescent agents" should be understood as meaning iridescent pigments which are in particular produced by certain molluscs in their shells or which alternatively are synthesized.

Mention may be made, of pearlescent agents, such as mica covered with titanium dioxide or with bismuth oxychloride, coloured pearlescent pigments, such as mica covered with titanium dioxide and with iron oxides, mica covered with iron oxide, mica covered with titanium dioxide and in particular with ferric blue or chromium oxide or mica covered with titanium dioxide and with an organic pigment, and pearlescent pigments based on bismuth oxychloride. Mention may be made, as pearlescent pigments, of the following pearlescent agents: Cellini sold by Engelhard (mica-TiO₂-lake), Prestige sold by Eckart (mica-TiO₂), Prestige Bronze sold by Eckart (mica-Fe₂O₃) or Colorona sold by Merck (mica-TiO₂-Fe₂O₃), and Pearlescent Pigment Flonac MS 30C sold by Sundarshan Chemical.

Mention may also be made of pearlescent agents of gold color sold in particular by Engelhard under the names of Brilliant Gold 212G (Timica), Gold 222C (Cloisonne), Sparkle Gold (Timica), Gold 4504 (Chromalite), Monarch Gold 233X (Cloisonne), and

KTZ Sunburst Gold (Taizhu); bronze pearlescent agents sold in particular by Merck under the names Bronze Fine (17384) (Colorona) and Bronze (17353) (Colorona) and by Engelhard under the name Super Bronze (Cloisonne); orange pearlescent agents sold in particular by Engelhard under the names Orange 363C (Cloisonne) and Orange MCR 101 (Cosmica) and by Merck under the names Passion Orange (Colorona) and Matte Orange (17449) (Microna); brown-coloured pearlescent agents sold in particular by Engelhard under the names Nu-Antique Copper 340XB (Cloisonne) and Brown CL4509 (Chromalite); pearlescent agents with a copper glint sold in particular by Engelhard under the name Copper 340A (Timica); pearlescent agents with a red glint sold in particular by Merck under the name Sienna Fine (17386) (Colorona); pearlescent agents with a yellow glint sold in particular by Engelhard under the name Yellow (4502) (Chromalite); red-coloured pearlescent agents with a gold glint sold in particular by Engelhard under the name Sunstone G012 (Gemtone); pink pearlescent agents sold in particular by Engelhard under the name Tan Opale G005 (Gemtone); black pearlescent agents with a gold glint sold in particular by Engelhard under the name Nu-Antique Bronze 240 AB (Timica); blue pearlescent agents sold in particular by Merck under the name Matte Blue (17433) (Microna); white pearlescent agents with a silvery glint sold in particular by Merck under the name Xirona Silver; golden green pinkish orangey pearlescent agents sold in particular by Merck under the name Indian Summer (Xirona); and mixtures thereof.

Mention may also be made, still as examples of pearlescent agents, of particles comprising a borosilicate substrate coated with titanium oxide.

Particles having a glass substrate coated with titanium oxide are especially sold under the name Metashine MC1080RY by the company Toyal.

Finally, mention may also be made, as examples of pearlescent agents, of polyethylene terephthalate glitter, in particular that sold by Meadowbrook Inventions under the name Silver 1P 0.004X0.004 (silver glitter).

It is also possible to envisage multilayer pigments based on synthetic substrates, such as alumina, silica, calcium sodium borosilicate, calcium aluminium borosilicate and aluminium.

According to a preferred embodiment, the composition of the present invention comprises at least one inorganic pearlescent agent.

More preferably, the pearlescent agent of the present invention is chosen from mica coated with titanium dioxide and with iron oxides.

The pearlescent agent is present in the composition of the invention in an amount preferably ranging from 0,01% to 5% by weight, better from 0.03% to 3% by weight, better still from 0.05% to 3% by weight, even more preferably from 0,075% to 2% by weight, relative to the total weight of the composition.

F) Oxyethylenated polymer

The oxyethylenated polymers that may be used in the composition of the invention are those with a molecular weight (Mw) calculated by weight of greater than or equal to 300 000, the molecular weight preferably ranging from 400 000 to 4×10^6 and better still from 500 000 to 2×10^6 .

- 5 According to one preferred embodiment of the invention, the oxyethylenated polymer is a compound of formula (A): $\text{H}(\text{OCH}_2\text{CH}_2)_n\text{OH}$
in which n is an integer ranging from 7000 to 90 000, preferably from 10 000 to 75 000, more preferably from 25 000 to 65 000, even more preferably from 35 000 to 55 000.
- 10 As oxyethylenated polymer preferably used in the composition of the invention, mention may be made especially of PEG 14M (formula (A) in which n is 14 000) such as the product sold under the name Polyox WSR 205 by the company Amerchol, PEG-45M (formula (A) in which n is 45 000) such as the product sold under the name Polyox WSR N-60 K by the company Amerchol, and mixtures thereof.
- 15 The oxyethylenated polymer is present in the composition of the invention in an amount preferably ranging from 0,001% to 5% by weight and better still from 0,005% to 3% by weight, and even more preferably from 0,01% to 1% by weight, relative to the total weight of the composition.
- 20 The compositions according to the invention may naturally contain, in addition, all the standard adjuvants encountered in the field of shampoos, such as, for example, perfumes, preservatives, sequestering agents, thickeners, hydrating agents, antidandruff or antiseborrhoeic agents, vitamins, sunscreen agents, suspending agents and the like.
- 25 Naturally, a person skilled in the art will take care to choose this/these possible supplementary compound(s) and/or the amounts thereof in such a way that the advantageous combination according to the invention is not, or is not substantially, impaired by the addition or additions envisaged.
- The composition according to the invention may take the form of thickened liquid, 30 creams or gel. They may also take the form of lotions to be rinsed.
Preferably the composition is a hair composition, and more preferably it is a hair shampoo composition.
- The composition according to the invention may be provided in any galenical form conventionally used and in particular in the form of an aqueous, alcoholic or aqueous- 35 alcoholic solution or suspension or oily solution or suspension; of a dispersion of the lotion or serum type; of an emulsion, in particular having a liquid or semi-liquid consistency, of the O/W, W/O or multiple type; of an aqueous gel, or of any other cosmetic form.
- 40 The composition according to the invention is preferably aqueous and then comprises

water at a concentration preferably ranging from 5% to 99% by weight, especially from 20% to 98% by weight and better still from 50% to 95% by weight, relative to the total weight of the composition.

The composition can also comprise one or more organic solvents which are liquid at 25°C and 1 atm, in particular water-soluble solvents, such as C₁-C₇ alcohols; mention may in particular be made of aliphatic or aromatic C₁-C₇ monoalcohols, C₃-C₇ polyols or C₃-C₇ polyol ethers, which can thus be employed alone or as a mixture with water. Advantageously, the organic solvent may be chosen from ethanol, isopropanol, benzyl alcohol, hexyleneglycol and glycerol, and mixtures thereof.

10

Another subject of the present invention is a process for the cosmetic treatment of keratin materials, preferably for washing and conditioning keratin fibers, especially the hair, comprising the steps of applying to said materials or fibers, preferably in a wet state, the composition described above, and optionally rinsing them with water after an optional period of exposure.

15

Yet another aspect of the present invention is the use of the above composition of the invention for cleansing and conditioning keratin fibers, especially hair.

Non limiting examples illustrating the invention are given.

20

EXAMPLES

Two hair shampoos were prepared, one according to the invention (Invention A) and one comparative (Comparative B, without PEG-45M):

Ingredient name	% by weight of active ingredient (active matter = AM)	
	Invention A	ComparativeB
SODIUM LAURETH SULFATE containing 1 mol of ethylene oxide (SLES(N1EO))	13.5% AM	13.5% AM
COCOYLBETAINE (Mirataine [®] BB/FLA from Rhodia)	2.25%	2.25%
POLYQUATERNIUM-6 (Merquat [™] 100 from Nalco)	0.42%	0.42%
DIMETHICONE (Belsil [®] DM 60000 from Wacker)	1.2%	1.2%
AMODIMETHICONE (Xiameter [®] MEM-8299 Emulsion from Dow Corning)	0.4% AM	0.4% AM
CITRIC ACID	Qs pH 5.2	Qs pH 5.2

PEG-45M (Polyox WSR N 60 K from Amerchol, Dow Chemical)	0.02% AM	0
Mica (and) Titanium dioxide (and) Iron oxide (Pearlescent pigment flonac MS 30C from Sudarshan Chemical)	0,1	0,1
WATER	qsp 100 %	qsp 100 %

The pearlescent effect, foaming effect, and hair conditioning effect of the two shampoos, invention A and comparative B, were evaluated using the following methods.

- 5 Pearlescent effects of the invention A and comparative B were evaluated by a group of 6 women models, who have shoulder length hair, by investigating the two shampoos under daylight, both of which have a pleasant pearlescent appearance.

10 Foam qualities of the two shampoos were evaluated and measurements of aeration rate and firmness were taken.

Aeration rate was measured as the amount of air present in the volume of foam generated. Higher the aeration rate (%), better is the foaming ability of the shampoo.

15 Foam firmness was measured as the amount of force required to compress generated volume of foam in a packed container. The higher the force required (g), creamier the foam is.

The process was as follows:

- diluting the shampoos invention A and comparative B by water, under the ratio by volume shampoo : water being 1:3 and 1:10, respectively;
- whisking the diluted shampoos using hand blender from Philips® under the speed of 20 #2 of the blender for 2 minutes;
- evaluating the aeration rate and firmness of the foam using the texture analyzer TA.XT.^{PLUS} from Stable Micro Systems Ltd. (SMSTA), with the following standard: back-instruction at V = 40mm/s, and d = 40mm; probe being a disc of Ø 45mm, and thickness 5mm.

25 The scores on hair conditioning effect, especially disentangling of dry hair were evaluated by 6 women models with shoulder long hair, by applying 5g of the invention A and comparative B, respectively, on the hair of the models, rinsing the hair after 3 minutes of foam generation. The hairs were dried using hair dryer. The models gave 30 the scores on the disentangling of dry hair on a rating scale as below, by combing the dry hair using a conventional comb:

- 3 : very good conditioning effect, excellent disentangling effect on dry hair;
- 2 : acceptable conditioning effect especially disentangling effect on dry hair;
- 1 : poor conditioning effect, unacceptable disentangling effect on dry hair.

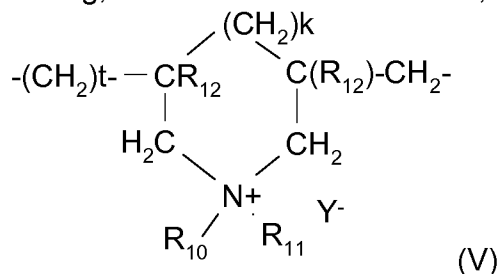
The evaluation results were given below.

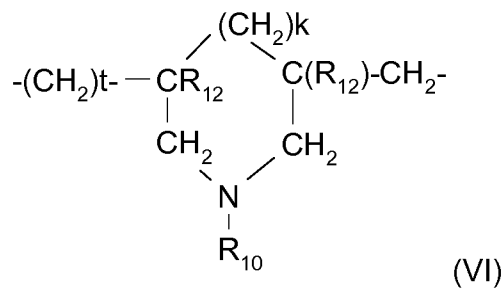
Evaluation result		Invention A	Comparative B
Pearlescent effect		Pleasant pearlescent appearance	Pleasant pearlescent appearance
Evaluation results when the shampoos were diluted		Invention A:water = 1:3 and 1:10	Comparative B:water =1:3 and 1:10
Foam quality	Aeration rate (%)	90.6 (1:3 dilution factor) 91.2 (1:10 dilution factor)	90 (1:3 dilution factor) 89.1 (1:10 dilution factor)
	Firmness (g)	84.4 (1:3 dilution factor) 67.9 (1:10 dilution factor)	64.2 (1:3 dilution factor) 59 (1:10 dilution factor)
Conditioning effect (disentangling of dry hair)		3	1

- 5 It was observed from the evaluations that comparing to the comparative B, the invention A has a pleasant pearlescent appearance, an improved conditioning effect, especially on the dry hair, and an improved foam quality.

CLAIMS

1. A cosmetic composition comprising, in a aqueous medium:
- 5 - at least one surfactant preferably selected from the group consisting of anionic, nonionic and amphoteric surfactant, or a mixture thereof;
 - at least one cationic polymer with a charge density greater than 4 meq/g, preferably greater than 5 meq/g;
 - at least one aminated silicone;
 - 10 - at least one insoluble, non-aminated silicone;
 - at least one pearlescent agent; and
 - at least one oxyethylenated polymer having a molecular weight (Mw) of greater than or equal to 300,000.
- 15 2. Composition according to claim 1, wherein the surfactant is selected from the group consisting of anionic surfactant, amphoteric surfactant, or a mixture thereof; preferably selected from sulfate surfactant, betaine surfactant, or a mixture thereof; more preferably selected from sodium laureth sulfate, cocoylbetaine, or a mixture thereof; even more preferably a mixture of sodium laureth sulfate and cocoylbetaine.
- 20 3. Composition according to any one of the preceding claims, wherein the said surfactant is present from 4% to 50% by weight, preferably from 6% to 40% by weight, more preferably from 10% to 20% by weight, even more preferably from 12% to 19% by weight, relative to the total weight of the composition.
- 25 4. Composition according to any one of the preceding claims, wherein the said at least one cationic polymer is selected from cyclopolymers of alkyldiallylamine or of dialkyldiallylammonium, preferably selected from homopolymers or copolymers containing, as constituent of the chain, units corresponding to formula (V) or (VI):



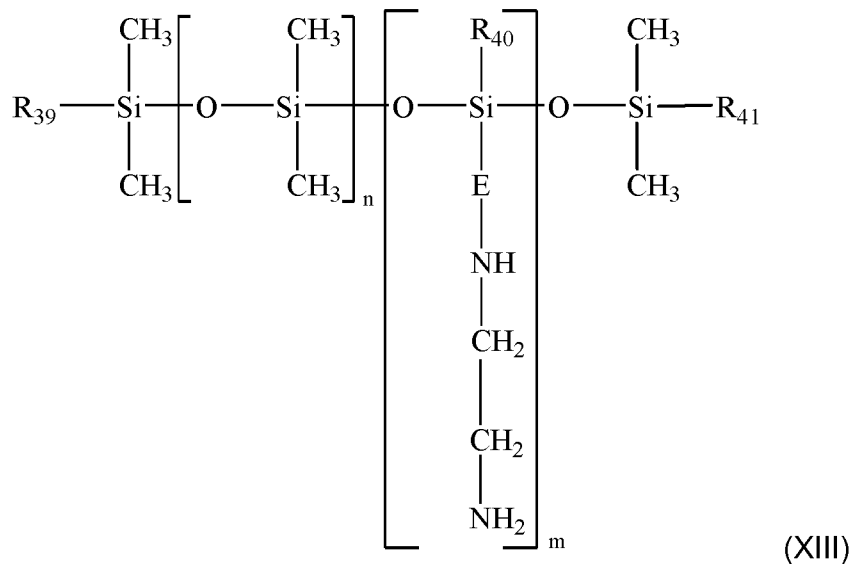


formula (V) and (VI) wherein:

k and t are equal to 0 or 1, the sum $k + t$ being equal to 1;

R₁₂ denotes a hydrogen atom or a methyl radical;

- 5 R₁₀ and R₁₁, independently of one another, denote an alkyl group having from 1 to 6 carbon atoms, a hydroxyalkyl group in which the alkyl group has preferably 1 to 5 carbon atoms, a lower (C₁-C₄) amidoalkyl group, or R₁₀ and R₁₁ may denote, together with the nitrogen atom to which they are attached, heterocyclic groups, such as piperidyl or morpholinyl;
- 10 Y⁻ is an anion such as bromide, chloride, acetate, borate, citrate, tartrate, bisulfate, bisulfite, sulfate or phosphate;
- more preferably, R₁₀ and R₁₁, independently of one another, preferably denote an alkyl group containing from 1 to 4 carbon atoms;
- more preferably, the cationic polymer is selected from dimethyldiallylammonium salt homopolymers; even more preferably polyquaternium-6.
- 15
5. Composition according to any one of the preceding claims, wherein the cationic polymer is present from 0.01% to 3% by weight, preferably from 0.1% to 2%, more preferably from 0.3% to 1% by weight relative to the total weight of the composition.
- 20
6. Composition according to any one of the preceding claims, wherein the at least one aminated silicone is selected from the group consisting of:
- compound of formula (XIII) :



wherein:

R₃₉, R₄₀ and R₄₁, which may be identical or different, denote a C₁-C₄ alkyl radical, preferably CH₃; a C₁-C₄ alkoxy radical, preferably methoxy; or OH;

5 E represents a linear or branched, C₃-C₈ and preferably C₃-C₆ alkylene radical;
m and n are integers dependent on the molecular weight and the sum of which is be-
tween 1 and 2000;

more preferably wherein,

R₃₉ represents a C₁-C₄ alkoxy or hydroxyl radical;

10 R₄₀ represents a methyl radical;

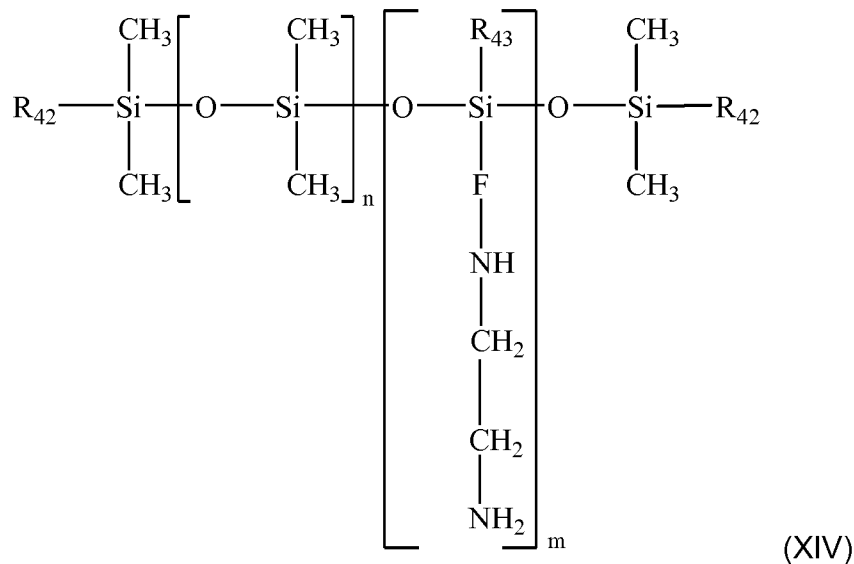
R₄₁, same or different from R₃₉, represents a C₁-C₄ alkoxy or hydroxyl radical; and at least one of R₄₀ or R₄₁ is an alkoxy radical;

E represents a propyl group, isopropyl group, or a isobutyl group;

15 m is an integer between 1 and 1000, and n is an integer between 0 and 999, wherein the sum of m and n between 1 and 1000;

- compound of formula (XIV)

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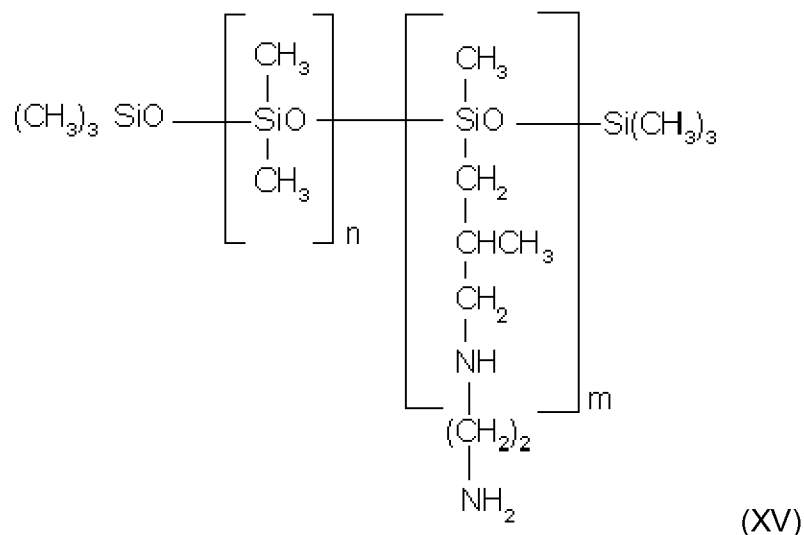


in which:

F denotes a C₂-C₈ and preferably C₂-C₆, better still C₃, linear or branched alkylene radical;

- 5 R₄₂ and R₄₃ denote, independently of one another, a C₁-C₄ alkyl, preferably methyl, radical or a C₁-C₄ alkoxy, preferably methoxy, radical or a hydroxyl radical;
 m and n are integers such that the weight-average molecular weight (M_w) is greater than or equal to 75 000;

- compound of formula (XV)



10 in which n and m have the meanings given above in accordance with formula (XIII);
 or a mixture thereof,

more preferably, the aminated silicone is selected from amodimethicone of formula (XIII).

15

7. Composition according to any one of the preceding claims, wherein the aminated silicone is present from 0.01% to 7% by weight, preferably from 0.1% to 5% by weight, more preferably from 0.4% to 2% by weight, relative to the total weight of the composition.

5

8. Composition according to any one of the preceding claims, wherein the at least one insoluble, non-aminated silicone is selected from the group consisting of polydialkylsiloxanes, polydiarylsiloxanes, polyalkarylsiloxanes, or a mixture thereof, preferably the non-aminated silicone is selected from polydialkylsiloxanes; more preferably selected from linear polydimethylsiloxanes.

10

9. Composition according to any one of the preceding claims, wherein the insoluble, non-aminated silicone is present from 0.01% to 7% by weight, preferably from 0.1% to 5% by weight, more preferably from 0.5% to 3% by weight, even more preferably from 1% to 2% by weight relative to the total weight of the composition.

15

10. Composition according to any one of the preceding claims, wherein the pearlescent agent is preferably chosen from inorganic pearlescent agents, more preferably chosen from mica coated with titanium dioxide, iron oxides, or a mixture thereof; more preferably chosen from mica coated with titanium dioxide and with iron oxides.

20

11. Composition according to any one of the preceding claims, wherein the pearlescent agent is present from 0,01% to 5% by weight and better still from 0.03% to 3% by weight, even more preferably from 0,075% to 2% by weight, relative to the total weight of the composition.

25

12. Composition according to any one of the preceding claims, wherein the oxyethylenated polymer is chosen from those with a molecular weight (Mw) from 400 000 to 4×10^6 , preferably from 500 000 to 2×10^6 , more preferably the oxyethylenated compound is a compound of the formula (A) : $\text{H}(\text{OCH}_2\text{CH}_2)_a\text{OH}$ in which a is an integer ranging from 7000 to 90 000, preferably 7500 to 70 000, more preferably from 8000 to 45 000.

30

13. Composition according to any one of the preceding claims, wherein the oxyethylenated polymer is present from 0,001% to 5% by weight and better still from 0,005% to 3% by weight, and even more preferably from 0,01% to 1% by weight, relative to the total weight of the composition.

35

14. A process for cosmetic treatment of keratin materials, preferably for washing and conditioning keratin fibers, especially the hair, comprising the steps of applying to said

40

materials or fibers, preferably in a wet state, the composition according to any of the claims 1 to 13, and optionally rinsing with water after an optional period of exposure.

15. Use of a composition according to any of the claims 1 to 13, for caring of keratin
5 fibers, such as cleansing and conditioning keratin fibers, especially hair.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/064399

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K8/25 A61K8/29 A61Q5/02 A61Q5/12 A61K8/81
A61K8/86 A61K8/891 A61K8/898

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K A61Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2014/023440 A1 (UNILEVER NV [NL]; UNILEVER PLC [GB]; CONOPCO INC DBA UNILEVER [US]) 13 February 2014 (2014-02-13) examples	1-15
X	----- DATABASE GNPD [Online] MINTEL; 1 October 2010 (2010-10-01), "Shampoo", XP002744720, Database accession no. 1414985 the whole document ----- -/-	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

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Miller, Bernhard

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