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(54) Title: COSMETIC COMPOSITION IN THE FORM OF AN OIL-IN-WATER NANOEMULSION FOR THE OXIDATION DYEING OF KERATIN FIBRES, AND PROCESS FOR THE SAME

(57) Abstract: Cosmetic composition in the form of an oil-in-water nanoemulsion for the oxidation dyeing of keratin fibres, and process for the same. The present invention relates to a cosmetic composition (A) in the form of an oil-in-water nanoemulsion comprising one or more oxidation dyes, one or more surfactants, one or more fatty substances and water in a content of greater than or equal to 40% by weight relative to the total weight of the composition; the number-average size of the oil droplets in the said nanoemulsion being less than or equal to 100 nm. The present invention also relates to a process for dyeing keratin fibres, which consists in applying to the keratin fibres composition (A) according to the invention and in particular an oxidizing composition (B), the said composition possibly being in the form of a nanoemulsion.



Cosmetic composition in the form of an oil-in-water nanoemulsion for the oxidation dyeing of keratin fibres, and process for the same

5 The present invention relates to a cosmetic composition in the form of an oil-in-water nanoemulsion for the oxidation dyeing of keratin fibres, in particular human keratin fibres such as the hair.

10 More precisely, a subject of the present invention is a dyeing cosmetic composition (A) in the form of an oil-in-water nanoemulsion comprising one or more oxidation dyes, one or more surfactants, one or more fatty substances and water in a content of greater than or equal to 40% by weight relative to the total weight of the composition; the number-average size of the oil droplets in the said nanoemulsion being less than or equal to 100 nm.

15 The present invention also relates to the use of the composition according to the invention for dyeing keratin fibres.

 The present invention also relates to a process for dyeing keratin fibres, in particular human keratin fibres such as the hair, using composition (A) according to the invention.

20 According to a preferred embodiment, this process also uses an oxidizing composition (B).

 Finally, the present invention relates to a kit for the oxidation dyeing of keratin fibres, which is suitable for performing such a process.

25 Many people have for a long time sought to modify the colour of their hair, and especially to dye it in order, for example, to mask their grey hair.

30 "Permanent" dyeing methods also known as oxidation dyeing, which use dye compositions containing oxidation dye precursors, generally referred to as oxidation bases, such as ortho- or para-phenylenediamines, ortho- or para-aminophenols and heterocyclic compounds, have been developed for dyeing human keratin fibres in a long-lasting manner. These oxidation bases are colourless or weakly

coloured compounds, which, when combined with oxidizing products, may give rise to coloured compounds via a process of oxidative condensation.

5 It is also known that the shades obtained with these oxidation bases can be varied by combining them with couplers or coloration modifiers, the latter being chosen especially from aromatic meta-diaminobenzenes, meta-aminophenols, meta-diphenols and certain heterocyclic compounds such as indole compounds.

10 One of the difficulties encountered during the implementation of the dyeing processes of the prior art arises from the fact that they are performed under alkaline conditions and in the presence of one or more oxidizing agents.

15 In order to improve the performance qualities of processes for dyeing human keratin fibres, and to limit the drawbacks associated with the use of alkaline agents and oxidizing agents, it has been proposed to use in dye compositions a substantial amount of one or more fatty substances.

20 However, the prior art compositions are not entirely satisfactory, and their performance qualities can be improved in particular, firstly, as regards the working qualities after mixing with an oxidizing composition, especially in terms of texture, ease of application and ease of spreading on the ends, and, secondly, as regards the dyeing qualities obtained with these mixtures, especially in terms of intensity, homogeneity and selectivity of the dyeing obtained.

25 The Applicant has now discovered that the use of an oxidation dye in an oil-in-water nanoemulsion makes it possible to obtain a cosmetic composition, for the oxidation dyeing of keratin fibres, which can overcome the above drawbacks and which has improved properties.

30 One subject of the present invention is thus a cosmetic composition (A) in the form of an oil-in-water nanoemulsion comprising one or more oxidation dyes, one or more surfactants, one or more fatty substances and at least 40% by weight of water, relative to the total weight of the composition; the number-average size of the

oil droplets in the said nanoemulsion being less than or equal to 100 nm.

The composition according to the invention has very good working qualities, and especially a particularly pleasant texture.

5 Furthermore, it is easy to apply and to spread on the locks of hair, in particular on the roots.

In addition, it does not run and remains well located at the points of application and spreads easily from the roots to the ends.

10 Finally, the composition according to the invention has superior dyeing quality, especially in terms of intensity, homogeneity and selectivity of the dyeing obtained.

This dye composition (A) may be used in a process for dyeing keratin fibres using this composition in combination with an oxidizing composition (B).

15 A subject of the invention is thus also a process for dyeing keratin fibres, which consists in applying to the keratin fibres a composition (A) according to the invention, the said composition being applied sequentially to or simultaneously with an oxidizing composition (B) comprising one or more oxidizing agents.

20 According to a particularly preferred embodiment, the oxidizing composition (B) is also in the form of a nanoemulsion and comprises one or more oxidizing agents, one or more surfactants, one or more fatty substances and water; the number-average size of the oil droplets in the said nanoemulsion being less than or equal to 100 nm.

25 Other characteristics and advantages of the invention will emerge more clearly on reading the description and the examples that follow.

30 According to the invention, composition (A) according to the invention is in the form of an oil-in-water nanoemulsion.

Preferably, the oxidizing composition (B) is also in the form of an oil-in-water nanoemulsion.

According to the present invention, the term "oil-in-water nanoemulsion" denotes a true emulsion, i.e. a thermodynamically unstable dispersion of oil droplets in a continuous aqueous phase.

5 Nanoemulsions are to be distinguished from microemulsions, which are thermodynamically stable dispersions in the form of micelles of oil-swollen surfactants, and which form spontaneously by simple mixing of the constituents, without substantial input of energy.

10 The number-average size of the oil droplets in the nanoemulsions according to the invention is less than or equal to 100 nm.

In a particularly preferred manner, the number-average size of the oil droplets of the nanoemulsion(s) according to the invention ranges from 10 to 90 nm, better still from 20 to 80 nm and more preferentially from 40 to 60 nm.

15 The number-average size of the particles may be determined in particular according to the known method of quasi-elastic light scattering. As a machine that may be used for this determination, mention may be made of the Brookhaven brand machine equipped with an SX 200 optical bed (with a 532 nm laser) and a BI 9000 correlator.
20 This machine gives a measurement of the mean diameter by photon correlation spectroscopy (PCS), which makes it possible to determine the number-average diameter from the polydispersity factor, which is also measured by the machine.

25 The nanoemulsion may also be characterized by measuring its turbidity according to the NTU method using a 2100P model turbidimeter from the company Hach, at room temperature. The turbidity of the nanoemulsions of the invention is generally less than 400 NTU units and preferably between 50 and 250 NTU units.

30 A nanoemulsion generally has a transparent to blueish or translucent appearance, in the absence of opacifying or nacreous additional compound(s).

In the compositions according to the invention, the reduction in the size of the oil globules makes it possible especially to promote the

penetration of the active ingredients into the keratin materials, for example through the surface layers of the hair (vehicle effect).

As indicated previously, the cosmetic composition (A) according to the invention comprises one or more oxidation dyes.

5 Preferably, the oxidizing composition (B) does not comprise any oxidation dyes.

The oxidation dyes that may be used in the present invention are generally chosen from oxidation bases, optionally combined with one or more couplers.

10 Preferentially, the oxidation dye(s) comprise one or more oxidation bases.

The oxidation bases may be chosen especially from para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols, ortho-aminophenols and heterocyclic bases, and the addition salts thereof.

15 Among the para-phenylenediamines, examples that may be mentioned include para-phenylenediamine, para-tolylenediamine, 2-chloro-para-phenylenediamine, 2,3-dimethyl-para-phenylenediamine, 2,6-dimethyl-para-phenylenediamine, 2,6-diethyl-para-phenylenediamine, 2,5-dimethyl-para-phenylenediamine, N,N-dimethyl-para-phenylenediamine, N,N-diethyl-para-phenylenediamine, N,N-dipropyl-para-phenylenediamine, 4-amino-N,N-diethyl-3-methylaniline, N,N-bis(β -hydroxyethyl)-para-phenylenediamine, 4-N,N-bis(β -hydroxyethyl)amino-2-methylaniline, 4-N,N-bis(β -hydroxyethyl)amino-2-chloroaniline, 2- β -hydroxyethyl-para-phenylenediamine, 2-fluoro-para-phenylenediamine, 2-isopropyl-para-phenylenediamine, N-(β -hydroxypropyl)-para-phenylenediamine, 2-hydroxymethyl-para-phenylenediamine, N,N-dimethyl-3-methyl-para-phenylenediamine, N,N-(ethyl- β -hydroxyethyl)-para-phenylenediamine, N-(β,γ -dihydroxypropyl)-para-phenylenediamine, N-(4'-aminophenyl)-para-phenylenediamine, N-phenyl-para-phenylenediamine, 2- β -hydroxyethyloxy-para-phenylenediamine, 2- β -acetylaminioethyloxy-para-phenylenediamine, N-(β -methoxyethyl)-para-phenylenediamine, 4-aminophenylpyrrolidine, 2-thienyl-para-

phenylenediamine, 2- β -hydroxyethylamino-5-aminotoluene and 3-hydroxy-1-(4'-aminophenyl)pyrrolidine, and the addition salts thereof with an acid.

Among the para-phenylenediamines mentioned above, para-phenylenediamine, para-tolylenediamine, 2-isopropyl-para-phenylenediamine, 2- β -hydroxyethyl-para-phenylenediamine, 2- β -hydroxyethoxy-para-phenylenediamine, 2,6-dimethyl-para-phenylenediamine, 2,6-diethyl-para-phenylenediamine, 2,3-dimethyl-para-phenylenediamine, N,N-bis(β -hydroxyethyl)-para-phenylenediamine, 2-chloro-para-phenylenediamine and 2- β -acetylaminethoxy-para-phenylenediamine, and the addition salts thereof with an acid, are particularly preferred.

Among the bis(phenyl)alkylenediamines, examples that may be mentioned include N,N'-bis(β -hydroxyethyl)-N,N'-bis(4'-aminophenyl)-1,3-diaminopropanol, N,N'-bis(β -hydroxyethyl)-N,N'-bis(4'-aminophenyl)ethylenediamine, N,N'-bis(4-aminophenyl)tetramethylenediamine, N,N'-bis(β -hydroxyethyl)-N,N'-bis(4-aminophenyl)tetramethylenediamine, N,N'-bis(4-methylaminophenyl)tetramethylenediamine, N,N'-bis(ethyl)-N,N'-bis(4'-amino-3'-methylphenyl)ethylenediamine, 1,8-bis(2,5-diaminophenoxy)-3,6-dioxaoctane and the addition salts thereof.

Among the para-aminophenols, examples that may be mentioned include para-aminophenol, 4-amino-3-methylphenol, 4-amino-3-fluorophenol, 4-amino-3-chlorophenol, 4-amino-3-hydroxymethylphenol, 4-amino-2-methylphenol, 4-amino-2-hydroxymethylphenol, 4-amino-2-methoxymethylphenol, 4-amino-2-aminomethylphenol, 4-amino-2-(β -hydroxyethyl-aminomethyl)phenol and 4-amino-2-fluorophenol, and the addition salts thereof with an acid.

Among the ortho-aminophenols, examples that may be mentioned include 2-aminophenol, 2-amino-5-methylphenol, 2-amino-6-methylphenol and 5-acetamido-2-aminophenol, and the addition salts thereof.

Among the heterocyclic bases, examples that may be mentioned include pyridine derivatives, pyrimidine derivatives and pyrazole derivatives.

5 Among the pyridine derivatives that may be mentioned are the compounds described, for example, in patents GB 1 026 978 and GB 1 153 196, for instance 2,5-diaminopyridine, 2-(4-methoxyphenyl)amino-3-aminopyridine and 3,4-diaminopyridine, and the addition salts thereof.

10 Other pyridine oxidation bases that are useful in the present invention are the 3-aminopyrazolo[1,5-a]pyridine oxidation bases or the addition salts thereof described, for example, in patent application FR 2 801 308. Examples that may be mentioned include pyrazolo[1,5-a]pyrid-3-ylamine, 2-(acetylamino)pyrazolo[1,5-a]pyrid-3-ylamine, 2-(morpholin-4-yl)pyrazolo[1,5-a]pyrid-3-ylamine, 3-aminopyrazolo[1,5-a]pyridine-2-carboxylic acid, 2-methoxypyrazolo[1,5-a]pyrid-3-ylamine, (3-aminopyrazolo[1,5-a]pyrid-7-yl)methanol, 2-(3-aminopyrazolo[1,5-a]pyrid-5-yl)ethanol, 2-(3-aminopyrazolo[1,5-a]pyrid-7-yl)ethanol, (3-aminopyrazolo[1,5-a]pyrid-2-yl)methanol, 3,6-diaminopyrazolo[1,5-a]pyridine, 3,4-diaminopyrazolo[1,5-a]pyridine, pyrazolo[1,5-a]pyridine-3,7-diamine, 7-(morpholin-4-yl)pyrazolo[1,5-a]pyrid-3-ylamine, pyrazolo[1,5-a]pyridine-3,5-diamine, 5-(morpholin-4-yl)pyrazolo[1,5-a]pyrid-3-ylamine, 2-[(3-aminopyrazolo[1,5-a]pyrid-5-yl)(2-hydroxyethyl)amino]ethanol, 2-[(3-aminopyrazolo[1,5-a]pyrid-7-yl)(2-hydroxyethyl)amino]ethanol, 3-aminopyrazolo[1,5-a]pyridin-5-ol, 3-aminopyrazolo[1,5-a]pyridin-4-ol, 3-aminopyrazolo[1,5-a]pyridin-6-ol, 3-aminopyrazolo[1,5-a]pyridin-7-ol and the addition salts thereof.

30 Among the pyrimidine derivatives that may be mentioned are the compounds described, for example, in the patents DE 2359399; JP 88-169571; JP 05-63124; EP 0770375 or patent application WO 96/15765, such as 2,4,5,6-tetraaminopyrimidine, 4-hydroxy-2,5,6-triaminopyrimidine, 2-hydroxy-4,5,6-triaminopyrimidine, 2,4-dihydroxy-5,6-diaminopyrimidine, 2,5,6-triaminopyrimidine and the

addition salts thereof and the tautomeric forms thereof, when a tautomeric equilibrium exists.

Among the pyrazole derivatives that may be mentioned are the compounds described in patents DE 3843892 and DE 4133957 and patent applications WO 94/08969, WO 94/08970, FR-A-2 733 749 and DE 195 43 988, for instance 4,5-diamino-1-methylpyrazole, 4,5-diamino-1-(β -hydroxyethyl)pyrazole, 3,4-diaminopyrazole, 4,5-diamino-1-(4'-chlorobenzyl)pyrazole, 4,5-diamino-1,3-dimethylpyrazole, 4,5-diamino-3-methyl-1-phenylpyrazole, 4,5-diamino-1-methyl-3-phenylpyrazole, 4-amino-1,3-dimethyl-5-hydrazinopyrazole, 1-benzyl-4,5-diamino-3-methylpyrazole, 4,5-diamino-3-tert-butyl-1-methylpyrazole, 4,5-diamino-1-tert-butyl-3-methylpyrazole, 4,5-diamino-1-(β -hydroxyethyl)-3-methylpyrazole, 4,5-diamino-1-ethyl-3-methylpyrazole, 4,5-diamino-1-ethyl-3-(4'-methoxyphenyl)pyrazole, 4,5-diamino-1-ethyl-3-hydroxymethylpyrazole, 4,5-diamino-3-hydroxymethyl-1-methylpyrazole, 4,5-diamino-3-hydroxymethyl-1-isopropylpyrazole, 4,5-diamino-3-methyl-1-isopropylpyrazole, 4-amino-5-(2'-aminoethyl)amino-1,3-dimethylpyrazole, 3,4,5-triaminopyrazole, 1-methyl-3,4,5-triaminopyrazole, 3,5-diamino-1-methyl-4-methylaminopyrazole and 3,5-diamino-4-(β -hydroxyethyl)amino-1-methylpyrazole, and the addition salts thereof. 4,5-Diamino-1-(β -methoxyethyl)pyrazole may also be used.

A 4,5-diaminopyrazole will preferably be used, and even more preferentially 4,5-diamino-1-(β -hydroxyethyl)pyrazole and/or a salt thereof.

Pyrazole derivatives that may also be mentioned include diamino-N,N-dihydropyrazolopyrazolones and especially those described in patent application FR-A-2 886 136, such as the following compounds and the addition salts thereof: 2,3-diamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2-amino-3-ethylamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2-amino-3-isopropylamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2-amino-3-(pyrrolidin-1-yl)-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-

1-one, 4,5-diamino-1,2-dimethyl-1,2-dihydropyrazol-3-one, 4,5-diamino-1,2-diethyl-1,2-dihydropyrazol-3-one, 4,5-diamino-1,2-bis(2-hydroxyethyl)-1,2-dihydropyrazol-3-one, 2-amino-3-(2-hydroxyethyl)amino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2-amino-3-dimethylamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one, 2,3-diamino-5,6,7,8-tetrahydro-1H,6H-pyridazino[1,2-a]pyrazol-1-one, 4-amino-1,2-diethyl-5-(pyrrolidin-1-yl)-1,2-dihydropyrazol-3-one, 4-amino-5-(3-dimethylaminopyrrolidin-1-yl)-1,2-diethyl-1,2-dihydropyrazol-3-one or 2,3-diamino-6-hydroxy-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one.

Use will preferably be made of 2,3-diamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one and/or one of its salts.

Heterocyclic bases that will preferentially be used include 4,5-diamino-1-(β -hydroxyethyl)pyrazole and/or 2,3-diamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one and/or a salt thereof.

The oxidation dye(s) may also comprise one or more couplers, which may be chosen from those conventionally used for the dyeing of keratin fibres.

Among these couplers, mention may be made especially of meta-phenylenediamines, meta-aminophenols, meta-diphenols, naphthalene-based couplers and heterocyclic couplers, and also the addition salts thereof.

Examples that may be mentioned include 1,3-dihydroxybenzene, 1,3-dihydroxy-2-methylbenzene, 4-chloro-1,3-dihydroxybenzene, 2,4-diamino-1-(β -hydroxyethyloxy)benzene, 2-amino-4-(β -hydroxyethylamino)-1-methoxybenzene, 1,3-diaminobenzene, 1,3-bis(2,4-diaminophenoxy)propane, 3-ureidoaniline, 3-ureido-1-dimethylaminobenzene, sesamol, 1- β -hydroxyethylamino-3,4-methylenedioxybenzene, α -naphthol, 2-methyl-1-naphthol, 6-hydroxyindole, 4-hydroxyindole, 4-hydroxy-N-methylindole, 2-amino-3-hydroxypyridine, 6-hydroxybenzomorpholine, 3,5-diamino-2,6-dimethoxypyridine, 1-N-(β -hydroxyethyl)amino-3,4-methylenedioxybenzene, 2,6-bis(β -hydroxyethylamino)toluene, 6-hydroxyindoline, 2,6-dihydroxy-4-

5 methylpyridine, 1-H-3-methylpyrazol-5-one, 1-phenyl-3-methylpyrazol-5-one, 2,6-dimethylpyrazolo[1,5-b]-1,2,4-triazole, 2,6-dimethyl[3,2-c]-1,2,4-triazole and 6-methylpyrazolo[1,5-a]benzimidazole, the addition salts thereof with an acid, and mixtures thereof.

10 In general, the addition salts of the oxidation bases and couplers that may be used within the context of the invention are especially chosen from the addition salts with an acid such as the hydrochlorides, hydrobromides, sulfates, citrates, succinates, tartrates, lactates, tosylates, benzenesulfonates, phosphates and acetates.

15 The oxidation base(s) may advantageously represent from 0.0001% to 10% by weight relative to the total weight of the composition containing them, preferably from 0.005% to 5% by weight and better still from 0.1% to 2% by weight relative to the total weight of this composition.

The coupler(s), if they are present, may advantageously represent from 0.0001% to 10% by weight relative to the total weight of the composition containing them, and preferably from 0.005% to 5% by weight relative to the total weight of this composition.

20 Composition (A) according to the invention comprises one or more surfactants.

Preferably, the oxidizing composition (B) also comprises one or more surfactants.

25 They may be chosen especially from nonionic, cationic, anionic and amphoteric or zwitterionic surfactants.

The said surfactant(s) according to the invention preferably comprise one or more nonionic surfactants.

30 The nonionic surfactant(s) that may be used in the compositions are described, for example, in the *Handbook of Surfactants* by M.R. Porter, published by Blackie & Son (Glasgow and London), 1991, pp. 116-178.

Examples of nonionic surfactants that may be mentioned include the following nonionic surfactants:

- oxyalkylenated (C₈-C₂₄)alkylphenols;

- saturated or unsaturated, linear or branched, oxyalkylenated or glycerolated C₈-C₄₀ alcohols, comprising one or two fatty chains;
- saturated or unsaturated, linear or branched, oxyalkylenated C₈-C₃₀ fatty acid amides;
- 5 - esters of saturated or unsaturated, linear or branched, C₈-C₃₀ acids and of polyethylene glycols;
- esters of saturated or unsaturated, linear or branched, C₈-C₃₀ acids and of sorbitol, preferably oxyethylenated;
- fatty acid esters of sucrose;
- 10 - (C₈-C₃₀)alkyl(poly)glucosides, (C₈-C₃₀)alkenyl(poly)glucosides, which are optionally oxyalkylenated (0 to 10 oxyalkylene units) and comprising from 1 to 15 glucose units, (C₈-C₃₀)alkyl (poly)glucoside esters;
- saturated or unsaturated, oxyethylenated plant oils;
- 15 - condensates of ethylene oxide and/or of propylene oxide, *inter alia*, alone or as mixtures;
- N-(C₈-C₃₀)alkylglucamine and N-(C₈-C₃₀) acylmethylglucamine derivatives;
- aldobionamides;
- 20 - amine oxides;
- oxyethylenated and/or oxypropylenated silicones;
- and mixtures thereof.

The oxyalkylene units are more particularly oxyethylene or oxypropylene units, or a combination thereof, preferably oxyethylene units.

The number of moles of ethylene oxide and/or propylene oxide preferably ranges from 1 to 250, more particularly from 2 to 100 and better still from 2 to 50; the number of moles of glycerol ranges especially from 1 to 50 and better still from 1 to 10.

Advantageously, the nonionic surfactants according to the invention do not comprise any oxypropylene units.

As examples of glycerolated nonionic surfactants, use is preferably made of monoglycerolated or polyglycerolated C₈-C₄₀

alcohols, comprising from 1 to 50 mol of glycerol and preferably from 1 to 10 mol of glycerol.

As examples of compounds of this type, mention may be made of lauryl alcohol containing 4 mol of glycerol (INCI name: Polyglyceryl-4 Lauryl Ether), lauryl alcohol containing 1.5 mol of glycerol, oleyl alcohol containing 4 mol of glycerol (INCI name: Polyglyceryl-4 Oleyl Ether), oleyl alcohol containing 2 mol of glycerol (INCI name: Polyglyceryl-2 Oleyl Ether), cetearyl alcohol containing 2 mol of glycerol, cetearyl alcohol containing 6 mol of glycerol, oleyl/cetyl alcohol containing 6 mol of glycerol, and octadecanol containing 6 mol of glycerol.

Among the glycerolated alcohols, it is more particularly preferred to use the C₈/C₁₀ alcohol containing 1 mol of glycerol, the C₁₀/C₁₂ alcohol containing 1 mol of glycerol and the C₁₂ alcohol containing 1.5 mol of glycerol.

The nonionic surfactant(s) according to the invention are preferentially chosen from:

- oxyethylenated C₈-C₄₀ alcohols comprising from 1 to 100 mol of ethylene oxide, preferably from 2 to 50 and more particularly from 2 to 40 mol of ethylene oxide and comprising one or two fatty chains;
- saturated or unsaturated oxyethylenated plant oils comprising from 1 to 100 and preferably from 2 to 50 mol of ethylene oxide;
- (C₈-C₃₀)alkyl(poly)glucosides, which are optionally oxyalkylenated (0 to 10 OE) and comprising 1 to 15 glucose units;
- monoglycerolated or polyglycerolated C₈-C₄₀ alcohols, comprising from 1 to 50 mol of glycerol and preferably from 1 to 10 mol of glycerol.
- saturated or unsaturated, linear or branched, oxyalkylenated C₈-C₃₀ fatty acid amides;
- esters of saturated or unsaturated, linear or branched, C₈-C₃₀ acids and of polyethylene glycols;
- and mixtures thereof.

Even more preferentially, the nonionic surfactant(s) according to the invention are chosen from:

- saturated or unsaturated, linear or branched, oxyalkylenated C₈-C₄₀ alcohols, comprising one or two fatty chains, especially cetareth-60 myristyl glycol;
- (C₈-C₃₀)alkyl(poly)glucosides, especially caprylyl/capryl glucoside;
- esters of saturated or unsaturated, linear or branched, C₈-C₃₀ acids and of polyethylene glycols and especially PEG-8 isostearate;
- and mixtures thereof.

Composition (A) according to the invention and the oxidizing composition (B) may comprise one or more cationic surfactants.

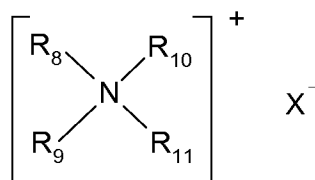
The term "cationic surfactant" means a surfactant that is positively charged when it is contained in the composition according to the invention. This surfactant may bear one or more positive permanent charges or may contain one or more cationizable functions in the compositions.

The cationic surfactant(s) are preferably chosen from optionally polyoxyalkylenated, primary, secondary or tertiary fatty amines, or salts thereof, and quaternary ammonium salts, and mixtures thereof.

The fatty amines generally comprise at least one C₈-C₃₀ hydrocarbon-based chain.

Examples of quaternary ammonium salts that may especially be mentioned include:

- those corresponding to the general formula (I) below:



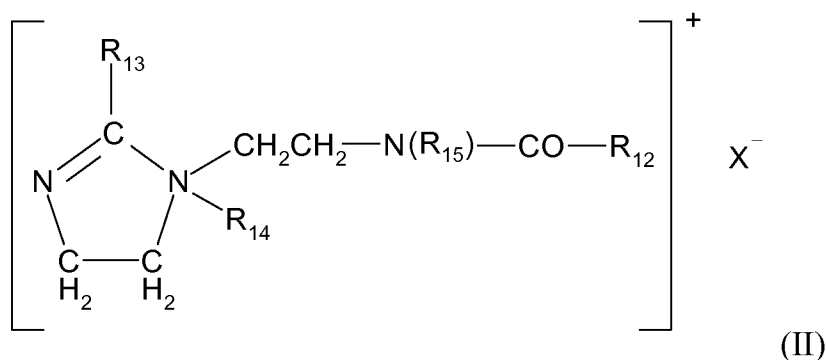
(I)

in which the groups R₈ to R₁₁, 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 alkylaryl, at least one of the groups R_8 to R_{11} denoting a group comprising from 8 to 30 carbon atoms and preferably from 12 to 24 carbon atoms. The aliphatic groups may comprise heteroatoms especially such as 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})alkyl acetate and C_1 - C_{30} hydroxyalkyl groups; X^- is an anion chosen from the group of halides, phosphates, acetates, lactates, (C_1 - C_4)alkyl sulfates, and (C_1 - C_4)alkyl- or (C_1 - C_4)alkylarylsulfonates.

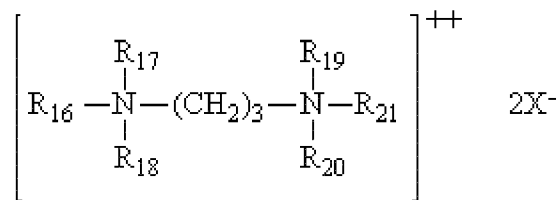
Among the quaternary ammonium salts of formula (I), those that are preferred are, on the one hand, tetraalkylammonium salts, for instance dialkyldimethylammonium or alkyltrimethylammonium salts in which the alkyl group contains approximately from 12 to 22 carbon atoms, in particular behenyltrimethylammonium, distearyldimethylammonium, cetyltrimethylammonium or benzyldimethylstearylammonium salts, or, on the other hand, the palmitylamidopropyltrimethylammonium salt, the stearamidopropyltrimethylammonium salt, the stearamidopropyldimethylcetearylammonium salt, or the stearamidopropyldimethyl(myristyl acetate)ammonium salt sold under the name Ceraphyl® 70 by the company Van Dyk. It is particularly preferred to use the chloride salts of these compounds.

- quaternary ammonium salts of imidazoline, for instance those of formula (II) below:



in which R₁₂ represents an alkenyl or alkyl group containing from 8 to 30 carbon atoms, derived for example from tallow fatty acids, R₁₃ represents a hydrogen atom, a C₁-C₄ alkyl group or an alkenyl or alkyl group containing 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⁻ is an anion chosen from the group consisting of halides, phosphates, acetates, lactates, alkyl sulfates, alkylsulfonates or alkylarylsulfonates in which the alkyl and aryl groups respectively preferably comprise from 1 to 20 carbon atoms and from 6 to 30 carbon atoms. R₁₂ and R₁₃ preferably denote a mixture of alkenyl or alkyl 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;

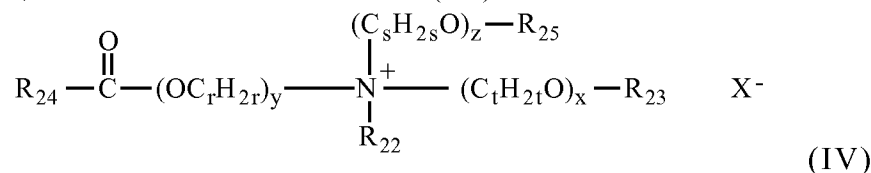
- di- or triquaternary ammonium salts, in particular of formula (III):



(III)

in which R₁₆ denotes an alkyl radical comprising approximately from 16 to 30 carbon atoms which is optionally hydroxylated and/or interrupted by one or more oxygen atoms, R₁₇ is chosen from hydrogen or an alkyl radical comprising from 1 to 4 carbon atoms or an (R_{16a})(R_{17a})(R_{18a})N-(CH₂)₃- group, R_{16a}, R_{17a}, R_{18a}, R₁₈, R₁₉, R₂₀ and R₂₁, which may be identical or different, are chosen from hydrogen or an alkyl radical comprising from 1 to 4 carbon atoms and X⁻ is an anion chosen from the group of the halides, acetates, phosphates, nitrates and methyl sulfates. 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).

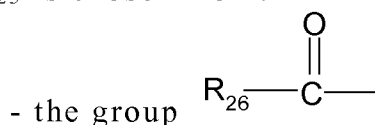
- quaternary ammonium salts containing at least one ester function, such as those of formula (IV) below:



in which:

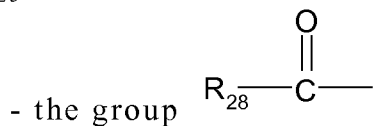
5 R_{22} is chosen from C_1 - C_6 alkyl groups and C_1 - C_6 hydroxyalkyl or dihydroxyalkyl groups;

R_{23} is chosen from:



10 - groups R_{27} , which are linear or branched, saturated or unsaturated C_1 - C_{22} hydrocarbon-based groups,
- a hydrogen atom,

R_{25} is chosen from:



15 - groups R_{29} , which are linear or branched, saturated or unsaturated C_1 - C_6 hydrocarbon-based groups,
- a hydrogen atom,

R_{24} , R_{26} and R_{28} , which may be identical or different, are chosen from linear or branched, saturated or unsaturated C_7 - C_{21} hydrocarbon-based groups;

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

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;

25 X^- is a simple or complex, organic or mineral anion;

with the proviso that the sum $x + y + z$ is from 1 to 15, that when x is 0 then R_{23} denotes R_{27} , and that when z is 0 then R_{25} denotes R_{29} .

The alkyl groups R_{22} may be linear or branched, and more particularly linear.

Preferably, R_{22} denotes a methyl, ethyl, hydroxyethyl or dihydroxypropyl group, and more particularly a methyl or ethyl group.

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

When R_{23} is an R_{27} hydrocarbon-based group, it may be long and may contain from 12 to 22 carbon atoms, or may be short and may contain from 1 to 3 carbon atoms.

10 When R_{25} is an R_{29} hydrocarbon-based group, it preferably contains 1 to 3 carbon atoms.

Advantageously, R_{24} , R_{26} and R_{28} , which may be identical or different, are chosen from linear or branched, saturated or unsaturated C_{11} - C_{21} hydrocarbon-based groups, and more particularly from linear or branched, saturated or unsaturated C_{11} - C_{21} alkyl and alkenyl groups.

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

Advantageously, y is equal to 1.

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.

20 The anion X^- is preferably a halide (chloride, bromide or iodide) or an alkyl sulfate, more particularly methyl sulfate. However, use may be made of methanesulfonate, phosphate, nitrate, tosylate, an anion derived from an organic acid, such as acetate or lactate, or any other anion compatible with the ammonium containing an ester

25 function.

The anion X^- is even more particularly chloride or methyl sulfate.

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

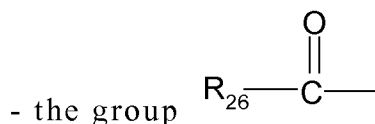
30 R_{22} denotes a methyl or ethyl group,

x and y are equal to 1;

z is equal to 0 or 1;

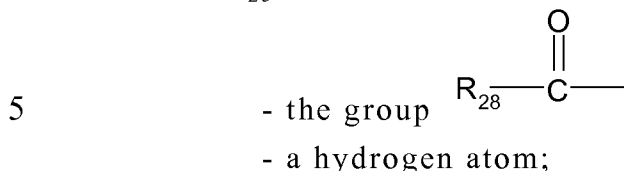
r , s and t are equal to 2;

R_{23} is chosen from:



- the group
- methyl, ethyl or C₁₄-C₂₂ hydrocarbon-based groups,
- a hydrogen atom;

R₂₅ is chosen from:



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

The hydrocarbon-based groups are advantageously linear.

Mention may be made, for example, of compounds of formula (IV), such as diacyloxyethyldimethylammonium, diacyloxyethyl(hydroxyethyl)methylammonium, monoacyloxyethyldi(hydroxyethyl)methylammonium, triacyloxyethylmethylammonium or monoacyloxyethyl(hydroxyethyl)dimethylammonium salts (in particular chloride or methyl sulfate), and mixtures thereof. The acyl groups preferably contain 14 to 18 carbon atoms and are obtained more particularly from a vegetable oil, such as palm oil or sunflower oil. When the compound contains several acyl groups, these groups may be identical or different.

These products are obtained, for example, by direct esterification of triethanolamine, triisopropanolamine, an alkyldiethanolamine or an alkyldiisopropanolamine, which are optionally oxyalkylenated, with C₁₀-C₃₀ fatty acids or with mixtures of C₁₀-C₃₀ fatty acids of plant or animal origin, or by transesterification of the methyl esters thereof. This esterification is followed by quaternization using an alkylating agent such as an alkyl (preferably methyl or ethyl) halide, a dialkyl (preferably methyl or ethyl) sulfate,

methyl methanesulfonate, methyl para-toluenesulfonate, glycol chlorohydrin or glycerol chlorohydrin.

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

The composition according to the invention may contain, for example, a mixture of quaternary ammonium monoester, diester and triester salts with a weight majority of diester salts.

Use may also be made of 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, provided by Kao under the name Quatarmin BTC 131.

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

Among the quaternary ammonium salts containing at least one ester function, which can be used, it is preferred to use dipalmitoylethylhydroxyethylmethylammonium salts.

The cationic surfactants are preferably chosen from those of formula (I) and those of formula (IV), and even more preferentially from those of formula (I).

Composition (A) according to the invention and the oxidizing composition (B) may comprise one or more anionic surfactants.

The term "anionic surfactant" means a surfactant comprising, as ionic or ionizable groups, only anionic groups. These anionic groups are preferably chosen from the following groups:

-COOH, -COO⁻, -SO₃H, -SO₃⁻, -OSO₃H, -OSO₃⁻, -PO₂H₂, -PO₂H⁻, -PO₂²⁻, -P(OH)₂, =P(O)OH, -P(OH)O⁻, =P(O)O⁻, =POH, =PO⁻, the anionic parts comprising a cationic counterion such as an alkali metal, an alkaline-earth metal or an ammonium.

As examples of anionic surfactants that may be used in the composition according to the invention, mention may be made of alkyl

sulfates, alkyl ether sulfates, alkylamido ether sulfates, alkylaryl polyether sulfates, monoglyceride sulfates, alkylsulfonates, alkylamidesulfonates, alkylarylsulfonates, α -olefin sulfonates, paraffin sulfonates, alkyl sulfosuccinates, alkyl ether sulfosuccinates, 5 alkylamide sulfosuccinates, alkyl sulfoacetates, acylsarcosinates, acylglutamates, alkyl sulfosuccinamates, acylisethionates and N-acyltaurates, polyglycoside polycarboxylic acid and alkyl monoester salts, acyl lactylates, salts of D-galactoside uronic acids, salts of alkyl ether carboxylic acids, salts of alkylaryl ether carboxylic acids, salts 10 of alkylamido ether carboxylic acids, and the corresponding non-salified forms of all these compounds; the alkyl and acyl groups of all these compounds comprising from 6 to 40 carbon atoms and the aryl group denoting a phenyl group.

These compounds can be oxyethylenated and then preferably 15 comprise from 1 to 50 ethylene oxide units.

The salts of C_6 - C_{24} alkyl monoesters of polyglycoside-polycarboxylic acids may be chosen from C_6 - C_{24} alkyl polyglycoside-citrates, C_6 - C_{24} alkyl polyglycoside-tartrates and C_6 - C_{24} alkyl polyglycoside-sulfosuccinates.

20 When the anionic surfactant(s) are in salt form, they may be chosen from alkali metal salts such as the sodium or potassium salt and preferably the sodium salt, ammonium salts, amine salts and in particular amino alcohol salts, or alkaline-earth metal salts such as the magnesium salts.

25 Examples of amino alcohol salts that may especially be mentioned include monoethanolamine, diethanolamine and triethanolamine salts, monoisopropanolamine, diisopropanolamine or triisopropanolamine salts, 2-amino-2-methyl-1-propanol salts, 2-amino-2-methyl-1,3-propanediol salts and 30 tris(hydroxymethyl)aminomethane salts.

Alkali metal or alkaline-earth metal salts, and in particular sodium or magnesium salts, are preferably used.

Among the anionic surfactants mentioned, use is preferably made of (C_6 - C_{24})alkyl sulfates, (C_6 - C_{24})alkyl ether sulfates comprising

from 2 to 50 ethylene oxide units, in particular in the form of alkali metal, ammonium, amino alcohol and alkaline-earth metal salts, or a mixture of these compounds.

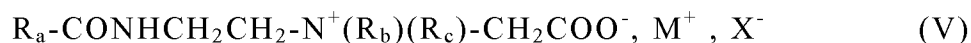
In particular, it is preferred to use (C₁₂-C₂₀)alkyl sulfates, (C₁₂-C₂₀)alkyl ether sulfates comprising from 2 to 20 ethylene oxide units, especially in the form of alkali metal, ammonium, amino alcohol and alkaline-earth metal salts, or a mixture of these compounds. Better still, it is preferred to use sodium lauryl ether sulfate containing 2.2 mol of ethylene oxide.

Composition (A) according to the invention and the oxidizing composition (B) may comprise one or more amphoteric or zwitterionic surfactants.

In particular, the amphoteric or zwitterionic surfactant(s), which are preferably non-silicone, which may be used in the present invention may especially be derivatives of aliphatic secondary or tertiary amines, optionally quaternized in which derivatives the aliphatic group is a linear or branched chain comprising from 8 to 22 carbon atoms, the said amine derivatives containing at least one anionic group, for instance a carboxylate, sulfonate, sulfate, phosphate or phosphonate group.

Mention may be made in particular of (C₈-C₂₀)alkylbetaines, (C₈-C₂₀)alkylsulfobetaines, (C₈-C₂₀)alkylamido(C₃-C₈)alkylbetaines and (C₈-C₂₀)alkylamido(C₆-C₈)alkylsulfobetaines.

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

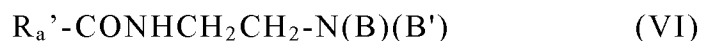


30

in which formula:

- R_a represents a C₁₀-C₃₀ alkyl or alkenyl group derived from an acid R_aCOOH preferably present in hydrolysed coconut oil, or a heptyl, nonyl or undecyl group;

- R_b represents a beta-hydroxyethyl group; and
- R_c represents a carboxymethyl group;
- M⁺ represents a cationic counterion derived from an alkali metal or alkaline-earth metal, such as sodium, an ammonium ion or an ion derived from an organic amine, and
- X⁻ represents an organic or mineral anionic counterion, such as that chosen from halides, acetates, phosphates, nitrates, (C₁-C₄)alkyl sulfates, (C₁-C₄)alkylsulfonates or (C₁-C₄)alkylarylsulfonates, in particular methyl sulfate and ethyl sulfate; or alternatively M⁺ and X⁻ are absent;



in which formula:

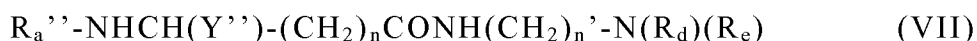
- B represents the group -CH₂CH₂OX';
- B' represents the group -(CH₂)_zY', with z = 1 or 2;
- X' represents the group -CH₂COOH, -CH₂-COOZ', -CH₂CH₂COOH, -CH₂CH₂-COOZ', or a hydrogen atom;
- Y' represents the group -COOH, -COOZ', -CH₂CH(OH)SO₃H or the group -CH₂CH(OH)SO₃Z';
- Z' represents a cationic counterion derived from an alkali metal or alkaline-earth metal, such as sodium, an ammonium ion or an ion derived from an organic amine;
- R_a' represents a C₁₀-C₃₀ alkyl or alkenyl group of an acid R_a'-COOH which is preferably present in coconut oil or in hydrolysed linseed oil, or an alkyl group, especially a C₁₇ group, and its iso form, or an unsaturated C₁₇ group.

These compounds are classified in the CTFA dictionary, 5th edition, 1993, under the names disodium cocoamphodiacetate, disodium lauroamphodiacetate, disodium caprylamphodiacetate, disodium caprylamphodipropionate, disodium lauroamphodipropionate, disodium caprylamphodipropionate, disodium caprylamphodipropionate, lauroamphodipropionic acid and cocoamphodipropionic acid.

By way of example, mention may be made of the cocoamphodiacetate sold by the company Rhodia under the trade name Miranol® C2M Concentrate.

Use may also be made of the compounds of formula (VII):

5



in which formula:

- Y'' represents the group -COOH, -COOZ'',
- 10 -CH₂CH(OH)SO₃H or the group -CH₂CH(OH)SO₃Z'';
- R_d and R_e represent, independently of each other, a C₁-C₄ alkyl or hydroxyalkyl radical;
- Z'' represents a cationic counterion derived from an alkali metal or alkaline-earth metal, such as sodium, an ammonium ion or an
- 15 ion derived from an organic amine;
- R_a'' represents a C₁₀-C₃₀ alkyl or alkenyl group of an acid R_a''-COOH which is preferably present in coconut oil or in hydrolysed linseed oil;
- n and n' denote, independently of each other, an integer
- 20 ranging from 1 to 3.

Among the compounds of formula (VII), mention may be made of the compound classified in the CTFA dictionary under the name sodium diethylaminopropyl cocoaspartamide and sold by the company Chimex under the name Chimexane HB.

25

These compounds may be used alone or as mixtures.

Among the amphoteric or zwitterionic surfactants mentioned above, use is preferably made of (C₈-C₂₀)alkylbetaines such as cocoylbetaine, (C₈-C₂₀)alkylamido(C₃-C₈)alkylbetaines such as cocamidopropylbetaine, and mixtures thereof, and the compounds of

30 formula (VII) such as the sodium salt of diethylaminopropyl laurylamino succinamate (INCI name: sodium diethylaminopropyl cocoaspartamide).

Among all the surfactants mentioned, use is preferably made of one or more nonionic surfactants.

In a preferred embodiment, composition (A) according to the invention and/or the oxidizing composition (B) comprise one or more nonionic surfactants and one or more cationic surfactants.

5 In general, the surfactant(s) represent from 1% to 50%, preferably from 5% to 40% and better still from 10% to 20% by weight relative to the total weight of composition (A).

10 When the oxidizing composition (B) contains one or more surfactants, these surfactants preferably represent from 1% to 50% by weight, more preferentially from 5% to 40% by weight and better still from 10% to 20% by weight relative to the total weight of composition (B).

As indicated previously, composition (A) according to the invention comprises one or more fatty substances.

15 Preferably, the oxidizing composition (B) also comprises one or more fatty substances.

20 The term "fatty substance" means an organic compound that is insoluble in water at ordinary temperature (25°C) and at atmospheric pressure (760 mmHg) (solubility of less than 5%, preferably less than 1% and even more preferentially less than 0.1%). They have in their structure at least one hydrocarbon-based chain comprising at least 6 carbon atoms or a sequence of at least two siloxane groups. In addition, the fatty substances are generally soluble in organic solvents under the same temperature and pressure conditions, for instance chloroform, dichloromethane, carbon tetrachloride, ethanol, benzene, 25 toluene, tetrahydrofuran (THF), liquid petroleum jelly or decamethylcyclopentasiloxane.

The fatty substances of the invention preferably do not contain any salified carboxylic acid groups.

30 Particularly, the fatty substances of the invention are neither oxyalkylenated nor glycerolated ethers.

The term "oil" means a "fatty substance" that is liquid at room temperature (25°C) and at atmospheric pressure (760 mmHg; i.e. 1.013×10^5 Pa).

The term "non-silicone oil" means an oil not containing any silicon atoms (Si) and the term "silicone oil" means an oil containing at least one silicon atom.

5 More particularly, the fatty substances are chosen from C₆-C₁₆ hydrocarbons, hydrocarbons containing more than 16 carbon atoms, non-silicone oils of animal origin, plant or synthetic oils of triglyceride type, fluoro oils, fatty alcohols, fatty acid and/or fatty alcohol esters other than triglycerides and plant waxes, non-silicone waxes other than fatty alcohols, and silicones, and mixtures thereof.

10 It is recalled that the fatty alcohols, esters and acids more particularly contain at least one saturated or unsaturated, linear or branched hydrocarbon-based group comprising 6 to 30 and better still from 8 to 30 carbon atoms, which is optionally substituted, in particular by one or more hydroxyl groups (in particular 1 to 4). If
15 they are unsaturated, these compounds may comprise one to three conjugated or unconjugated carbon-carbon double bonds.

As regards the C₆-C₁₆ hydrocarbons, they may be linear, branched, and optionally cyclic, and are preferably chosen from alkanes. Examples that may be mentioned include hexane, dodecane,
20 undecane, tridecane, and isoparaffins, for instance isohexadecane, isododecane and isodecane.

The linear or branched hydrocarbons of mineral or synthetic origin, containing more than 16 carbon atoms, are preferably chosen from liquid paraffins, petroleum jelly, liquid petroleum jelly,
25 polydecenes, squalane, and hydrogenated polyisobutene such as Parleam[®].

A hydrocarbon-based oil of animal origin that may be mentioned is perhydrosqualene.

30 The triglyceride oils of plant or synthetic origin are preferably chosen from liquid fatty acid triglycerides containing from 6 to 30 carbon atoms, for instance heptanoic or octanoic acid triglycerides, or alternatively, for example, sunflower oil, corn oil, soybean oil, pumpkin oil, grapeseed oil, sesame seed oil, hazelnut oil, apricot oil, macadamia oil, arara oil, sunflower oil, castor oil, avocado oil,

caprylic/capric acid triglycerides, for instance those sold by the company Stéarineries Dubois or those sold under the names Miglyol® 810, 812 and 818 by the company Dynamit Nobel, jojoba oil and shea butter oil.

5 Use will preferably be made of triglyceride oils of plant origin.
The fluoro oils may be chosen from perfluoromethylcyclopentane and perfluoro-1,3-dimethylcyclohexane, sold under the names Flutec® PC1 and Flutec® PC3 by the company BNFL Fluorochemicals; perfluoro-1,2-dimethylcyclobutane;
10 perfluoroalkanes such as dodecafluoropentane and tetradecafluorohexane, sold under the names PF 5050® and PF 5060® by the company 3M, or bromoperfluorooctyl sold under the name Foralkyl® by the company Atochem; nonafluoromethoxybutane and nonafluoroethoxyisobutane; perfluoromorpholine derivatives such as
15 4-trifluoromethyl perfluoromorpholine sold under the name PF 5052® by the company 3M.

The fatty alcohols that are suitable for use in the invention are more particularly chosen from linear or branched, saturated or unsaturated alcohols comprising from 6 to 30 carbon atoms and
20 preferably from 8 to 30 carbon atoms. Examples that may be mentioned include cetyl alcohol, stearyl alcohol and the mixture thereof (cetylstearyl alcohol), octyldodecanol, 2-butyloctanol, 2-hexyldecanol, 2-undecylpentadecanol, oleyl alcohol and linoleyl alcohol.

25 As regards the fatty acid and/or fatty alcohol esters, which are advantageously different from the triglycerides mentioned above, mention may be made especially of esters of saturated or unsaturated, linear or branched C₁-C₂₆ aliphatic mono- or polyacids and of saturated or unsaturated, linear or branched C₁-C₂₆ aliphatic mono- or
30 polyalcohols, the total carbon number of the esters being greater than or equal to 6 and more advantageously greater than or equal to 10.

Among the monoesters, mention may be made of dihydroabietyl behenate; octyldodecyl behenate; isocetyl behenate; cetyl lactate; C₁₂-C₁₅ alkyl lactate; isostearyl lactate; lauryl lactate; linoleyl lactate;

oleyl lactate; (iso)stearyl octanoate; isocetyl octanoate; octyl octanoate; cetyl octanoate; decyl oleate; isocetyl isostearate; isocetyl laurate; isocetyl stearate; isodecyl octanoate; isodecyl oleate; isononyl isononanoate; isostearyl palmitate; methyl acetyl ricinoleate; myristyl stearate; octyl isononanoate; 2-ethylhexyl isononate; octyl palmitate; 5 octyl pelargonate; octyl stearate; octyldodecyl erucate; oleyl erucate; ethyl and isopropyl palmitates, 2-ethylhexyl palmitate, 2-octyldecyl palmitate, alkyl myristates such as isopropyl, butyl, cetyl, 2-octyldodecyl, myristyl or stearyl myristate, hexyl stearate, butyl 10 stearate, isobutyl stearate; dioctyl malate, hexyl laurate, 2-hexyldecyl laurate.

Still within the context of this variant, esters of C_4 - C_{22} dicarboxylic or tricarboxylic acids and of C_1 - C_{22} alcohols and esters of mono-, di- or tricarboxylic acids and of C_2 - C_{26} di-, tri-, tetra- or 15 pentahydroxy alcohols may also be used.

Mention may in particular be made of: diethyl sebacate; diisopropyl sebacate; diisopropyl adipate; di(n-propyl) adipate; dioctyl adipate; diisostearyl adipate; dioctyl maleate; glyceryl undecylenate; octyldodecyl stearyl stearate; pentaerythrityl monoricinoleate; 20 pentaerythrityl tetraisononanoate; pentaerythrityl tetrapelargonate; pentaerythrityl tetraisostearate; pentaerythrityl tetraoctanoate; propylene glycol dicaprylate; propylene glycol dicaprinate; tridecyl erucate; triisopropyl citrate; triisostearyl citrate; glyceryl trilactate; glyceryl trioctanoate; trioctyldodecyl citrate; trioleyl citrate; 25 propylene glycol dioctanoate; neopentyl glycol diheptanoate; diethylene glycol diisononate; and polyethylene glycol distearates.

Among the esters mentioned above, use is preferably made of ethyl, isopropyl, myristyl, cetyl or stearyl palmitate, 2-ethylhexyl palmitate, 2-octyldecyl palmitate, alkyl myristates, such as isopropyl, 30 butyl, cetyl or 2-octyldodecyl myristate, hexyl stearate, butyl stearate, isobutyl stearate, dioctyl malate, hexyl laurate, 2-hexyldecyl laurate, isononyl isononanoate or cetyl octanoate.

The compositions may also comprise, as fatty ester, sugar esters and diesters of C_6 - C_{30} and preferably C_{12} - C_{22} fatty acids. It is

recalled that the term "sugar" means oxygen-bearing hydrocarbon-based compounds containing several alcohol functions, with or without aldehyde or ketone functions, and which comprise at least 4 carbon atoms. These sugars may be monosaccharides, oligosaccharides or polysaccharides.

5 Examples of suitable sugars that may be mentioned include sucrose (or saccharose), glucose, galactose, ribose, fucose, maltose, fructose, mannose, arabinose, xylose and lactose, and derivatives thereof, especially alkyl derivatives, such as methyl derivatives, for instance methylglucose.

10 The sugar esters of fatty acids may be chosen especially from the group comprising the esters or mixtures of esters of sugars described previously and of linear or branched, saturated or unsaturated C₆-C₃₀ and preferably C₁₂-C₂₂ fatty acids. If they are unsaturated, these compounds may comprise one to three conjugated or unconjugated carbon-carbon double bonds.

15 The esters according to this variant may also be chosen from monoesters, diesters, triesters, tetraesters and polyesters, and mixtures thereof.

20 These esters may be, for example, oleates, laurates, palmitates, myristates, behenates, cocoates, stearates, linoleates, linolenates, caprates and arachidonates, or mixtures thereof such as, especially, oleopalmitate, oleostearate and palmitostearate mixed esters.

25 More particularly, use is made of monoesters and diesters and in particular mono- or di-oleate, -stearate, -behenate, -oleate/palmitate, -linoleate, -linolenate or -oleate/stearate of sucrose, glucose or methylglucose.

30 Mention may be made, by way of example, of the product sold under the name Glucate[®] DO by the company Amerchol, which is a methylglucose dioleate.

Examples of esters or mixtures of esters of sugar and of fatty acid that may also be mentioned include:

- the products sold under the names F160, F140, F110, F90, F70 and SL40 by the company Crodesta, respectively denoting sucrose

palmitate/stearates formed from 73% monoester and 27% diester and triester, from 61% monoester and 39% diester, triester and tetraester, from 52% monoester and 48% diester, triester and tetraester, from 45% monoester and 55% diester, triester and tetraester, from 39%
5 monoester and 61% diester, triester and tetraester, and sucrose monolaurate;

- the products sold under the name Ryoto Sugar Esters, for example referenced B370 and corresponding to sucrose behenate formed from 20% monoester and 80% diester-triester-polyester;

10 - the sucrose mono-dipalmitate/stearate sold by the company Goldschmidt under the name Tegosoft[®] PSE.

The non-silicone wax(es) other than fatty alcohols are chosen especially from carnauba wax, candelilla wax, esparto wax, paraffin wax, ozokerite, plant waxes, such as olive tree wax, rice wax,
15 hydrogenated jojoba wax or absolute flower waxes, such as the blackcurrant blossom essential wax sold by the company Bertin (France), or animal waxes, such as beeswaxes or modified beeswaxes (cerabellina); other waxes or waxy raw materials that can be used according to the invention are in particular marine waxes, such as the
20 product sold by the company Sophim under the reference M82, polyethylene waxes or polyolefin waxes in general.

The fatty substance(s) according to the invention may be chosen from silicones.

25 The silicones that can be used in accordance with the invention may be in the form of oils, waxes, resins or gums.

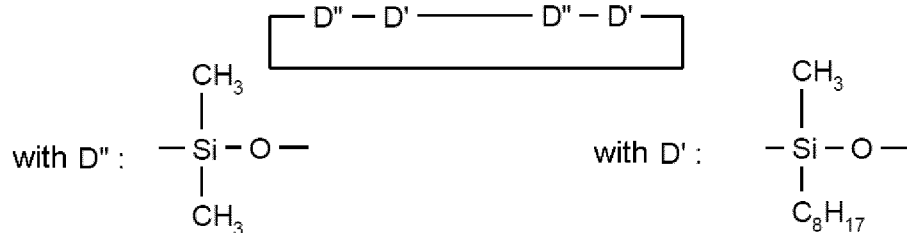
Preferably, the silicone(s) are chosen from polydialkylsiloxanes, in particular polydimethylsiloxanes (PDMSs), and organomodified polysiloxanes comprising at least one functional group chosen from amino groups, aryl groups and alkoxy groups.

30 Organopolysiloxanes are defined in greater detail in Walter Noll's *Chemistry and Technology of Silicones* (1968), Academic Press. They may be volatile or non-volatile.

The volatile silicones are more particularly chosen from silicones with a boiling point of between 60°C and 260°C, and even more particularly silicones chosen from:

(i) cyclic polydialkylsiloxanes comprising from 3 to 7 and preferably from 4 to 5 silicon atoms. These are, for example, 5
octamethylcyclotetrasiloxane sold in particular under the name Volatile Silicone[®] 7207 by Union Carbide or Silbione[®] 70045 V2 by Rhodia, decamethylcyclopentasiloxane sold under the name Volatile Silicone[®] 7158 by Union Carbide, and Silbione[®] 70045 V5 by Rhodia, 10
and mixtures thereof.

Mention may also be made of cyclocopolymers of the dimethylsiloxane/methylalkylsiloxane type, such as Volatile Silicone[®] FZ 3109 sold by the company Union Carbide, of formula:



Mention may also be made of mixtures of cyclic polydialkylsiloxanes with organosilicon compounds, such as the mixture of octamethylcyclotetrasiloxane and tetra(trimethylsilyl)pentaerythritol (50/50) and the mixture of octamethylcyclotetrasiloxane and oxy-1,1'-bis(2,2,2',2',3,3'-hexatrimethylsilyloxy)neopentane; 20

(ii) linear volatile polydialkylsiloxanes containing 2 to 9 silicon atoms and having a viscosity of less than or equal to 5×10^{-6} m²/s at 25°C. An example is decamethyltetrasiloxane sold in particular under the name SH 200 by the company Toray Silicone. Silicones 25
belonging to this category are also described in the article published in *Cosmetics and Toiletries*, Vol. 91, Jan. 76, pp. 27-32, Todd & Byers, *Volatile Silicone Fluids for Cosmetics*.

The non-volatile silicones that may be used according to the invention may preferably be non-volatile polydialkylsiloxanes, polydialkylsiloxane gums and resins, polyorganosiloxanes modified 30

with organic functional groups chosen from amine groups, aryl groups and alkoxy groups, and also mixtures thereof.

The organomodified silicones that may be used in accordance with the invention are silicones as defined above and comprising in
5 their structure one or more organofunctional groups attached via a hydrocarbon-based group.

The organomodified silicones may be polydiarylsiloxanes, in particular polydiphenylsiloxanes, and polyalkylarylsiloxanes functionalized with the organofunctional groups mentioned previously.

10 The polyalkylarylsiloxanes are particularly chosen from linear and/or branched polydimethyl/methylphenylsiloxanes and polydimethyl/diphenylsiloxanes with a viscosity ranging from 1×10^{-5} to 5×10^{-2} m²/s at 25°C.

15 Among these polyalkylarylsiloxanes, examples that may be mentioned include the products sold under the following names:

- the Silbione® oils of the 70 641 series from Rhodia;
- the oils of the Rhodorsil® 70 633 and 763 series from Rhodia;
- the oil Dow Corning 556 Cosmetic Grade Fluid from Dow Corning;
- 20 - the silicones of the PK series from Bayer, such as the product PK20;
- the silicones of the PN and PH series from Bayer, such as the products PN1000 and PH1000;
- certain oils of the SF series from General Electric, such as SF
25 1023, SF 1154, SF 1250 and SF 1265.

Mention may also be made, among the organomodified silicones, of polyorganosiloxanes comprising:

- substituted or unsubstituted amine groups, such as the products sold under the names GP 4 Silicone Fluid and GP 7100 by the
30 company Genesee or the products sold under the names Q2 8220 and Dow Corning 929 or 939 by the company Dow Corning. The substituted amine groups are, in particular, C₁-C₄ aminoalkyl groups;

- alkoxyated groups, such as the product sold under the name Silicone Copolymer F-755 by SWS Silicones and Abil Wax® 2428, 2434 and 2440 by the company Goldschmidt.

5 More particularly, the fatty substances are chosen from compounds that are liquid or pasty at room temperature (25°C) and at atmospheric pressure.

Preferably, the fatty substance(s) are chosen from compounds that are liquid at a temperature of 25°C and at atmospheric pressure.

10 The fatty substances are advantageously chosen from C₆-C₁₆ alkanes, linear or branched hydrocarbons, of mineral or synthetic origin, containing more than 16 carbon atoms, non-silicone oils of plant, mineral or synthetic origin, fatty alcohols, and fatty acid and/or fatty alcohol esters, or mixtures thereof.

15 Preferably, the fatty substance(s) are chosen from linear or branched liquid hydrocarbons, of mineral or synthetic origin, containing more than 16 carbon atoms, and especially liquid petroleum jelly and hydrogenated polyisobutene, C₆-C₁₆ alkanes, liquid fatty acid and/or fatty alcohol esters, and liquid fatty alcohols, or mixtures thereof.

20 In general, the fatty substances may represent from 1% to 60%, preferably from 2% to 50%, better still from 5% to 40% by weight, even better still from 7% to 30% by weight and very preferentially from 12% to 25% by weight relative to the total weight of composition (A).

25 When the oxidizing composition (B) contains one or more fatty substances, they preferably represent from 1% to 60%, more preferentially from 2% to 50%, better still from 5% to 40% by weight, even better still from 7% to 30% by weight and very preferentially from 12% to 25% by weight relative to the total weight of composition (B).

30 Composition (A) according to the invention comprises water, in a content of greater than or equal to 40% by weight relative to the total weight of composition (A).

Preferably, the oxidizing composition (B) also comprises water, in a content more preferentially greater than or equal to 40% by weight relative to the total weight of the oxidizing composition (B).

5 The water content in compositions (A) and/or (B) preferably ranges from 40% to 95% by weight, more preferentially from 40% to 80% by weight and in particular from 40% to 70% by weight, relative to the total weight of composition (A) and/or (B), respectively.

10 Composition (A) according to the invention and/or the oxidizing composition (B) may also comprise one or more water-soluble organic solvents (solubility of greater than or equal to 5% in water at 25°C and at atmospheric pressure).

15 Examples of water-soluble organic solvents that may be mentioned include linear or branched and preferably saturated monoalcohols or diols, comprising 2 to 10 carbon atoms, such as ethyl alcohol, isopropyl alcohol, hexylene glycol (2-methyl-2,4-pentanediol), neopentyl glycol and 3-methyl-1,5-pentanediol, butylene glycol, dipropylene glycol and propylene glycol; aromatic alcohols such as phenylethyl alcohol; polyols containing more than two hydroxyl functions, such as glycerol; polyol ethers, for instance
20 ethylene glycol monomethyl, monoethyl and monobutyl ether, propylene glycol or ethers thereof, for instance propylene glycol monomethyl ether; and also diethylene glycol alkyl ethers, especially C₁-C₄ alkyl ethers, for instance diethylene glycol monoethyl ether or monobutyl ether, alone or as a mixture.

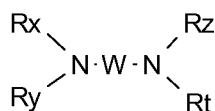
25 The water-soluble organic solvents, when they are present, generally represent between 1% and 20% by weight relative to the total weight of the composition according to the invention, and preferably between 5% and 10% by weight relative to the total weight of each composition containing them.

30 Composition (A) according to the invention and/or the oxidizing composition (B) may also comprise one or more alkaline agents.

The alkaline agent(s) are especially chosen from aqueous ammonia, alkali metal carbonates or bicarbonates, organic amines with

a pK_b at 25°C of less than 12, in particular less than 10 and even more advantageously less than 6; from the salts of the amines mentioned previously with acids such as carbonic acid or hydrochloric acid: it should be noted that it is the pK_b corresponding to the function of highest basicity.

Preferably, the amines are chosen from alkanolamines, in particular comprising a primary, secondary or tertiary amine function, and one or more linear or branched C₁-C₈ alkyl groups bearing one or more hydroxyl radicals; from oxyethylenated and/or oxypropylenated ethylenediamines, and from amino acids and compounds having the following formula:



in which W is a C₁-C₆ alkylene residue optionally substituted with a hydroxyl group or a C₁-C₆ alkyl radical; Rx, Ry, Rz and Rt, which may be identical or different, represent a hydrogen atom or a C₁-C₆ alkyl, C₁-C₆ hydroxyalkyl or C₁-C₆ aminoalkyl radical.

According to one embodiment of the invention, composition (A) according to the invention and/or the oxidizing composition (B) comprise aqueous ammonia and/or at least one alkanolamine and/or at least one basic amino acid, more advantageously aqueous ammonia and/or at least one alkanolamine, such as monoethanolamine, or mixtures thereof.

Advantageously, the content of alkaline agent(s) ranges from 0.01% to 30% by weight, preferably from 0.1% to 20% by weight and better still from 1% to 10% by weight relative to the weight of each composition containing them. It should be noted that this content is expressed as NH₃ when the alkaline agent is aqueous ammonia.

The pH of composition (A) of the invention preferably ranges from 1.5 to 12, better still from 6 to 11 and even better still from 8 to 11.

The pH of the oxidizing composition (B) preferably ranges from 1.5 to 9, better still from 1.5 to 7 and even better still from 2 to 4.

It can be adjusted by adding acidifying agents, such as hydrochloric acid, (ortho)phosphoric acid, sulfuric acid, boric acid, and also carboxylic acids, for instance acetic acid, lactic acid or citric acid, or sulfonic acids. Alkaline agents such as those previously mentioned may also be used.

Composition (A) according to the invention and/or the oxidizing composition (B) may also comprise one or more direct dyes.

Examples of particularly suitable direct dyes that may be mentioned include nitrobenzene dyes; azo direct dyes; azomethine direct dyes; methine direct dyes; azacarbo-cyanin direct dyes, for instance tetraazacarbo-cyanines (tetraazapentamethines); quinone and in particular anthraquinone, naphthoquinone or benzoquinone direct dyes; azine direct dyes; xanthene direct dyes; triarylmethane direct dyes; indoamine direct dyes; indigoid direct dyes; phthalocyanine direct dyes, porphyrin direct dyes and natural direct dyes, alone or as mixtures. In particular, mention may be made of direct dyes from among: azo; methine; carbonyl; azine; nitro (hetero)aryl; tri(hetero)arylmethane; porphyrin; phthalocyanine and natural direct dyes, alone or as mixtures.

The direct dye(s) may represent from 0.0001% to 10% by weight and preferably from 0.005% to 5% by weight relative to the weight of composition (A) and/or (B) containing them.

Preferably, the oxidizing composition (B) does not comprise any direct dye(s).

Composition (A) according to the invention and/or the oxidizing composition (B) may also comprise one or more cosmetic adjuvants.

For example, they may comprise one or more standard additives that are well known in the art, such as anionic, cationic, nonionic or amphoteric polymers or mixtures thereof, agents for preventing hair loss, solid fatty substances other than those mentioned previously, vitamins and provitamins including panthenol, sunscreens, mineral or organic pigments, sequestrants, plasticizers, solubilizers, acidifying agents, mineral or organic thickeners, especially polymeric thickeners,

opacifiers, antioxidants, hydroxy acids, nacreous agents, fragrances and preserving agents.

Needless to say, a person skilled in the art will take care to select this or these optional additional compound(s) such that the advantageous properties intrinsically associated with the invention are not, or are not substantially, adversely affected by the envisaged addition(s).

The above adjuvants may generally be present in an amount, for each of them, of between 0 and 20% by weight relative to the total weight of each composition containing them.

According to one embodiment, composition (A) according to the invention may also comprise one or more oxidizing agents. The composition is then said to be "ready to use" in the sense that it does not require the use of the oxidizing composition (B).

Advantageously, the oxidizing agent(s) used in the context of the invention are chemical oxidizing agents other than atmospheric oxygen.

The said oxidizing agent(s) are preferably chosen from the group formed by hydrogen peroxide, urea peroxide, alkali metal bromates or ferricyanides, peroxygenated salts, for instance persulfates, perborates, peracids and precursors thereof and alkali metal or alkaline-earth metal percarbonates, and most particularly hydrogen peroxide.

The oxidizing agent(s) may represent from 0.01% to 20%, preferably from 0.1% to 10% and better still from 2% to 8% by weight, relative to the total weight of composition (A).

The oxidizing composition (B) that may be used in the process according to the invention comprises one or more oxidizing agents.

The oxidizing agent(s) of the oxidizing composition (B) are as defined above.

The oxidizing agent(s) may represent from 0.01% to 20%, preferably from 0.1% to 10% and better still from 2% to 8% by weight, relative to the total weight of the oxidizing composition (B).

As outlined above, the oxidizing composition (B) is preferably in the form of a nanoemulsion. In this case, particularly preferably, composition (A) and the oxidizing composition (B) are such that the mixture of these two compositions is also in the form of a nanoemulsion.

Compositions (A) and/or (B) according to the invention may especially be in the form of fluid or thickened liquids, gels or creams.

The nanoemulsions according to the invention may be prepared by mixing water, the fatty substance(s) and the surfactant(s), with vigorous stirring, at a temperature preferably between a temperature close to 20°C and 45°C, followed by one or more steps of homogenization at high pressure, i.e. at a pressure preferably greater than or equal to 5×10^7 Pa and preferably ranging from 6×10^7 to 18×10^7 Pa. The shear will preferably be from 2×10^6 s⁻¹ to 5×10^8 s⁻¹, and more preferentially from 1×10^8 s⁻¹ to 3×10^8 s⁻¹.

According to a preferred embodiment of the nanoemulsions according to the invention, several successive high-pressure homogenization steps as described above are performed.

The nanoemulsions according to the invention may also be prepared with the aid of a ternary phase diagram (fatty substance/surfactant/water), established beforehand, according to the following process:

(i) mixing with stirring of one or more fatty substances and of one or more surfactants, at a temperature T_m and at normal atmospheric pressure;

(ii) addition of water with stirring, so as to reach the nanoemulsion zone, detected beforehand by means of the ternary phase diagram;

(iii) cooling of the composition to room temperature.

The addition of the water-soluble ingredients such as the oxidation dyes, the couplers or the optional oxidizing agents takes place at the end of step (ii) or after step (iii).

The temperature T_m is preferably between 20 and 100°C and better still between 20 and 85°C.

It should be noted that the particle size of the nanoemulsion is conserved during and after this cooling.

The invention also relates to the use of composition (A) as described above for dyeing keratin fibres, in particular the hair.

5 Another subject of the invention is a process for dyeing human keratin fibres, in particular the hair, using composition (A) as defined according to the invention.

10 According to a first preferred embodiment of the invention, composition (A) is "ready to use", i.e. it already contains at least one oxidizing agent.

In this case, the keratin fibre dyeing process consists in applying the "ready-to-use" composition to the keratin fibres.

15 According to a second preferred embodiment, the keratin fibre dyeing process consists in applying composition (A) according to the invention to the keratin fibres, the said composition being applied sequentially to or simultaneously with the oxidizing composition (B).

In a first variant of the second embodiment above, composition (A) according to the invention is mixed at the time of use with the oxidizing composition (B) as described above.

20 In a second variant of the second embodiment above, composition (A) according to the invention is applied to the keratin fibres before or after the oxidizing composition (B) as described above.

25 The process may be repeated several times in order to obtain the desired coloration.

Irrespective of the process used and the number of compositions used, the composition(s) described previously, optionally mixed beforehand, are applied to wet or dry keratin fibres.

30 The composition(s) are usually left in place on the fibres for a time generally ranging from 1 minute to 1 hour and preferably from 5 minutes to 30 minutes.

The temperature during the process is conventionally between 20 and 80°C and preferably between 20 and 60°C. After the treatment, the human keratin fibres are advantageously rinsed with water. They

may optionally be washed with a shampoo, followed by rinsing with water, before being dried or left to dry.

Another subject of the invention concerns a multi-compartment device, or a kit for dyeing keratin fibres, comprising at least two compartments:

- a first compartment containing a dye composition (A) as described above; and
- a second compartment containing an oxidizing composition (B) as described above.

According to one variant of the invention, the kit also comprises an additional compartment containing an additional composition comprising one or more treating agents.

The compositions of the kit are packaged in separate compartments, which may be optionally accompanied by suitable identical or different application means, such as fine brushes, coarse brushes or sponges.

The abovementioned kit may also be equipped with means allowing the delivery to the hair of the desired mixture, such as, for example, the device described in patent FR 2 586 913.

The examples that follow are given purely as illustrations of the present invention.

EXAMPLES:

25

Example 1

A cosmetic composition A in the form of a nanoemulsion was prepared, in accordance with the invention, from the ingredients indicated in the table below (in which the contents are indicated in grams of active material):

30

Composition A	amount (in g)
Resorcinol	0.67

Hydroxybenzomorpholine	0.033
m-Aminophenol	0.12
2,4-Diaminophenoxyethanol hydrochloride	0.02
2,5-Toluenediamine	0.7623
PEG-8 isostearate	13.5
Ceteareth-60 myristyl glycol	3
Hydrogenated polyisobutene	15
PEG-8	1.5
Ethanolamine	4
Reducing agent/antioxidants	qs
Water	qs 100 g

5 The nanoemulsion of composition A above was obtained from the knowledge of the surfactants/hydrogenated polyisobutene/water ternary phase diagram. The mixture of surfactants and of hydrogenated polyisobutene of the above composition according to the invention was brought to a temperature of 60°C and the mixture was then diluted with the water of the formula at the same temperature. The composition was finally cooled to room temperature (20 to 25°C). The water-soluble compounds including the oxidation dyes and the couplers are added either after addition of the water or after cooling to room temperature. A nanoemulsion in which the size of the oil globules, measured by quasi-elastic light scattering, is less than 100 nm is obtained. This composition is stable on storage for at least 2 months at room temperature and at 45°C.

15 Composition A is mixed at the time of use with an oxidizing composition B in the following proportions: 10 g of composition A according to the invention and 10 g of oxidizing composition B.

Composition B	amount (in g)
Tocopherol	0.1
Sodium stannate	0.04

Pentasodium pentetate	0.06
Polyquaternium-6	0.2
Cetearyl alcohol	6
Hexamethrine chloride	0.15
Glycerol	0.5
Hydrogen peroxide	6
Tetrasodium pyrophosphate	0.03
Mineral oil	20
PEG-4 rapeseed amide	1.19
Steareth-20	5
Phosphoric acid	qs pH 2.2
Water	qs 100g

The mixture obtained is applied to locks at a rate of 10 g of mixture per 1 g of hair.

5 The Applicant finds that the above composition according to the above example has very good working qualities, and especially a particularly pleasant texture. The Applicant finds that the mixture derived from the composition according to the invention is easy to apply and to spread onto the locks of hair. It spreads easily from the roots to the ends.

10 The composition is left in place for 30 minutes. The hair is then rinsed, washed with a standard shampoo and dried.

The said composition gives the hair a light chestnut coloration, which is judged to be visually very satisfactory.

15 Example 2

The oxidizing composition C in the form of a nanoemulsion was prepared, in accordance with the invention, from the ingredients indicated in the table below (in which the contents are indicated in grams of active material):

20

Oxidizing composition (C):

Composition	amount (in g)
Hydrogen peroxide	6
Cetyltrimethylammonium chloride	1.6
Caprylyl/capryl glucoside	1.8
Ceteareth-60 myristyl glycol	1
PEG-8	1.5
PEG-8 isostearate	13.5
Hydrogenated polyisobutene	15
Sodium stannate	0.04
EDTA	0.2
Tetrasodium pyrophosphate	0.03
Phosphoric acid	qs pH 2.2
Water	qs 100g

The oxidizing nanoemulsion C above was obtained from the knowledge of the surfactants/hydrogenated polyisobutene/water ternary phase diagram. The mixture of surfactants and of hydrogenated polyisobutene of composition C above was brought to a temperature of 60°C and the mixture was then diluted with the water of the formula at the same temperature. The composition was finally cooled to room temperature (20 to 25°C). The water-soluble compounds including the oxidizing agents are added either after addition of the water or after cooling to room temperature. After this cooling to room temperature, the pH is then optionally adjusted to the desired value to obtain the desired composition. A nanoemulsion in which the size of the oil globules, measured by quasi-elastic light scattering, is less than 100 nm is obtained. This composition is stable on storage for at least 2 months at room temperature and at 45°C.

The two compositions (A) according to Example 1 and (C) as described above are mixed at the time of use in the following proportions: 10 g of dye composition (A) according to the invention and 10 g of oxidizing composition (C).

The Applicant finds that the mixture thus formed conserves the nanoemulsion form.

The mixture is applied to locks at a rate of 10 g of mixture per 1 g of hair.

5 The Applicant finds that the composition obtained after mixing has very good working qualities, and especially a particularly pleasant texture.

The Applicant finds that this composition is easy to apply and to spread onto the locks of hair.

10 In addition, the said composition spreads easily from the roots to the ends.

The composition is left in place for 30 minutes. The hair is then rinsed, washed with a standard shampoo and dried.

15 The said composition gives the hair a light chestnut coloration, which is judged to be visually very satisfactory.

CLAIMS

1. Cosmetic composition in the form of an oil-in-water nanoemulsion comprising one or more oxidation dyes, one or more surfactants, one or more fatty substances and at least 40% by weight of water, relative to the total weight of the composition; the number-average size of the oil droplets in the said nanoemulsion being less than or equal to 100 nm.

2. Composition according to Claim 1, characterized in that the oxidation dye(s) comprise one or more oxidation bases preferably chosen from para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols, ortho-aminophenols and heterocyclic bases, and the addition salts thereof.

3. Composition according to the preceding claim, characterized in that the said oxidation base(s) represent from 0.0001% to 10% by weight relative to the total weight of the composition, preferably from 0.005% to 5% by weight and better still from 0.1% to 2% by weight relative to the total weight of the composition.

4. Composition according to any one of the preceding claims, characterized in that the oxidation dye(s) comprise one or more couplers preferably chosen from meta-phenylenediamines, meta-aminophenols, meta-diphenols, naphthalene-based couplers and heterocyclic couplers, and also the addition salts thereof.

5. Composition according to the preceding claim, characterized in that the said coupler(s) represent from 0.0001% to 10% by weight relative to the total weight of the composition, preferably from 0.005% to 5% by weight relative to the total weight of the composition.

6. Composition according to any one of the preceding claims, characterized in that the said surfactant(s) comprise one or more nonionic surfactants preferably chosen from:

- oxyalkylenated (C₈-C₂₄)alkylphenols;
- saturated or unsaturated, linear or branched, oxyalkylenated or glycerolated C₈-C₄₀ alcohols, comprising one or two fatty chains;

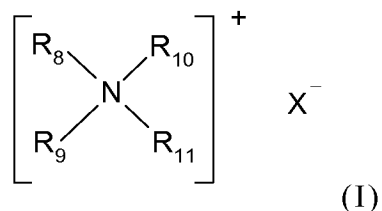
- saturated or unsaturated, linear or branched, oxyalkylenated C₈-C₃₀ fatty acid amides;
- esters of saturated or unsaturated, linear or branched, C₈-C₃₀ acids and of polyethylene glycols;
- 5 - esters of saturated or unsaturated, linear or branched, C₈-C₃₀ acids and of sorbitol, preferably oxyethylenated;
- fatty acid esters of sucrose;
- (C₈-C₃₀)alkyl(poly)glucosides, (C₈-C₃₀)alkenyl(poly)glucosides, which are optionally oxyalkylenated (0 to 10 oxyalkylene units) and comprising from 1 to 15 glucose units, (C₈-C₃₀)alkyl (poly)glucoside esters;
- 10 - saturated or unsaturated, oxyethylenated plant oils;
- condensates of ethylene oxide and/or of propylene oxide, *inter alia*, alone or as mixtures;
- 15 - N-(C₈-C₃₀)alkylglucamine and N-(C₈-C₃₀)acylmethylglucamine derivatives;
- aldobionamides;
- amine oxides;
- oxyethylenated and/or oxypropylenated silicones;
- 20 - and mixtures thereof.

7. Composition according to the preceding claim, characterized in that the said nonionic surfactant(s) are chosen from:

- saturated or unsaturated, linear or branched, oxyalkylenated C₈-C₄₀ alcohols, comprising one or two fatty chains;
- 25 - (C₈-C₃₀)alkyl(poly)glucosides;
- esters of saturated or unsaturated, linear or branched, C₈-C₃₀ acids and of polyethylene glycols;
- and mixtures thereof.

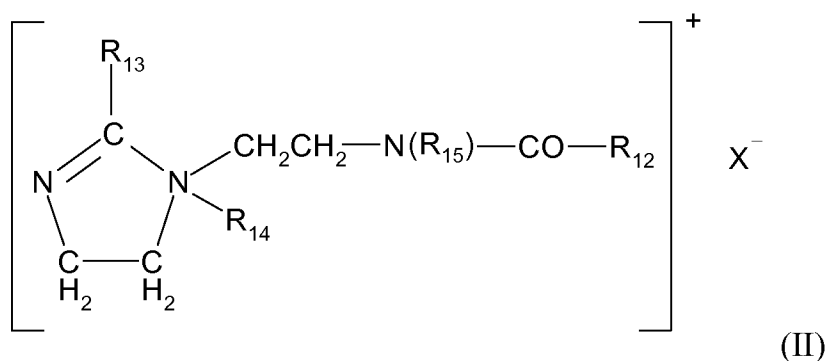
8. Composition according to any one of the preceding claims, characterized in that it contains one or more cationic surfactants, preferably chosen from those corresponding to the following formulae:

- those corresponding to the following general formula (I):



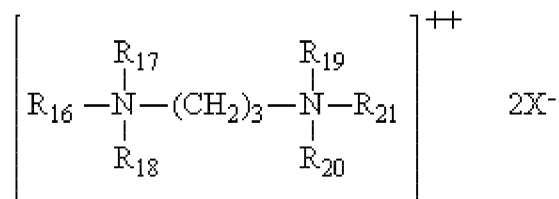
in which the groups R_8 to R_{11} , which may be identical or different, represent a linear or branched aliphatic group comprising from 1 to 30 carbon atoms, or an aromatic group such as aryl or alkylaryl, at least one of the groups R_8 to R_{11} denoting a group comprising from 8 to 30 carbon atoms and preferably from 12 to 24 carbon atoms; X^- is an anion chosen from the group of halides, phosphates, acetates, lactates, (C_1-C_4) alkyl sulfates, and (C_1-C_4) alkylsulfonates or (C_1-C_4) alkylarylsulfonates;

- quaternary ammonium salts of imidazoline, for instance those of formula (II) below:



in which R_{12} represents an alkenyl or alkyl group containing from 8 to 30 carbon atoms, R_{13} represents a hydrogen atom, a C_1-C_4 alkyl group or an alkenyl or alkyl group containing from 8 to 30 carbon atoms, R_{14} represents a C_1-C_4 alkyl group, R_{15} represents a hydrogen atom or a C_1-C_4 alkyl group; X^- is an anion chosen from the group consisting of halides, phosphates, acetates, lactates, alkyl sulfates, alkylsulfonates or alkylarylsulfonates in which the alkyl and aryl groups respectively preferably comprise from 1 to 20 carbon atoms and from 6 to 30 carbon atoms;

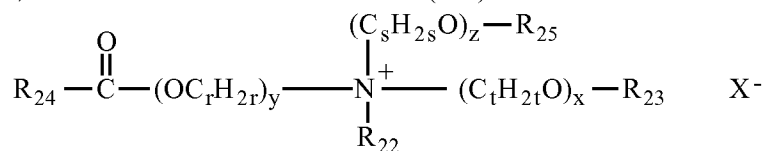
- di- or triquaternary ammonium salts, in particular of formula (III):



(III)

in which R₁₆ denotes an alkyl radical comprising approximately
 5 from 16 to 30 carbon atoms which is optionally hydroxylated and/or
 interrupted by one or more oxygen atoms, R₁₇ is chosen from hydrogen
 or an alkyl radical comprising from 1 to 4 carbon atoms or an
 (R_{16a})(R_{17a})(R_{18a})N-(CH₂)₃ group, R_{16a}, R_{17a}, R_{18a}, R₁₈, R₁₉, R₂₀ and
 10 R₂₁, which may be identical or different, are chosen from hydrogen or
 an alkyl radical comprising from 1 to 4 carbon atoms and X⁻ is an
 anion chosen from the group of halides, acetates, phosphates, nitrates
 and methyl sulfates;

- quaternary ammonium salts containing at least one ester
 function, such as those of formula (IV) below:



(IV)

in which:

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

R₂₃ is chosen from:

20 - the group $\text{R}_{26} - \overset{\text{O}}{\parallel}{\text{C}} -$

- groups R₂₇, which are linear or branched, saturated or
 unsaturated C₁-C₂₂ hydrocarbon-based groups,

- a hydrogen atom,

R₂₅ is chosen from:

25 - the group $\text{R}_{28} - \overset{\text{O}}{\parallel}{\text{C}} -$

- groups R_{29} , which are linear or branched, saturated or unsaturated C_1 - C_6 hydrocarbon-based groups,

- a hydrogen atom,

5 R_{24} , R_{26} and R_{28} , which may be identical or different, are chosen from linear or branched, saturated or unsaturated C_7 - C_{21} hydrocarbon-based groups;

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

y is an integer ranging from 1 to 10;

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

X^- is a simple or complex, organic or mineral anion;

15 with the proviso that the sum $x + y + z$ is from 1 to 15, that when x is 0 then R_{23} denotes R_{27} , and that when z is 0 then R_{25} denotes R_{29} .

9. Composition according to the preceding claim, characterized in that the said cationic surfactant(s) are chosen from those of formula (I) and those of formula (IV), preferably from those of formula (I).

20 10. Composition according to any one of the preceding claims, characterized in that the said surfactant(s) represent from 1% to 50%, preferably from 5% to 40% and better still from 10% to 20% by weight relative to the total weight of the composition.

25 11. Composition according to any one of the preceding claims, characterized in that the fatty substance(s) are chosen from C_6 - C_{16} hydrocarbons, hydrocarbons containing more than 16 carbon atoms, non-silicone oils of animal origin, plant or synthetic oils of triglyceride type, fluoro oils, fatty alcohols, fatty acid and/or fatty alcohol esters other than triglycerides and plant waxes, non-silicone waxes other than fatty alcohols, and silicones, and mixtures thereof.

30 12. Composition according to any one of the preceding claims, characterized in that the fatty substance(s) are chosen from compounds that are liquid at a temperature of 25°C and at atmospheric pressure.

13. Composition according to the preceding claim, characterized in that the fatty substance(s) are chosen from linear or

5 branched liquid hydrocarbons, of mineral or synthetic origin, containing more than 16 carbon atoms, and especially liquid petroleum jelly and hydrogenated polyisobutene, C₆-C₁₆ alkanes, liquid fatty acid and/or fatty alcohol esters, and liquid fatty alcohols, or mixtures thereof.

10 14. Composition according to any one of the preceding claims, characterized in that the said fatty substance(s) represent from 1% to 60%, preferably from 2% to 50%, better still from 5% to 40% by weight, even better still from 7% to 30% by weight and very preferentially from 12% to 25% by weight, relative to the total weight of the composition.

15 15. Composition according to any one of the preceding claims, characterized in that its water content ranges from 40% to 95% by weight, more particularly from 40% to 80% by weight and in particular from 40% to 70% by weight relative to the total weight of the composition.

16 16. Composition according to any one of the preceding claims, characterized in that it also comprises one or more oxidizing agents.

20 17. Composition according to the preceding claim, characterized in that the said oxidizing agent(s) are chosen from hydrogen peroxide, urea peroxide, alkali metal bromates or ferricyanides and peroxygenated salts, and is preferably hydrogen peroxide.

25 18. Composition according to Claim 16 or 17, characterized in that the oxidizing agent(s) represent from 0.01% to 20%, preferably from 0.1% to 10% and better still from 2% to 8% by weight relative to the total weight of the composition.

19. Process for dyeing keratin fibres, which consists in applying to the keratin fibres:

30 - a composition (A) as defined in any one of Claims 16 to 18;
or

- a composition (A) as defined in any one of Claims 1 to 15, the said composition being applied sequentially to or simultaneously

with an oxidizing composition (B) comprising one or more oxidizing agents.

20. Process according to Claim 19, characterized in that composition (A) is mixed at the time of use with the oxidizing composition (B), and the resulting mixture is then applied to the keratin fibres.

21. Process according to either of Claims 19 and 20, characterized in that the oxidizing agent(s) present in the oxidizing composition (B) are as defined in either of Claims 17 and 18.

22. Process according to any one of Claims 19 to 21, characterized in that the oxidizing composition (B) is in the form of a nanoemulsion and also comprises one or more surfactants, one or more fatty substances and water; the number-average size of the oil droplets in the said nanoemulsion being less than or equal to 100 nm.

23. Process according to Claim 22, characterized in that the said surfactant(s) of the oxidizing composition (B) are as defined in any one of Claims 6 to 10.

24. Process according to either of Claims 22 and 23, characterized in that the said fatty substance(s) of the oxidizing composition (B) are as defined in any one of Claims 11 to 14.

25. Process according to any one of Claims 22 to 24, characterized in that the water content of the oxidizing composition (B) is greater than or equal to 40% by weight, preferably ranging from 40% to 95% by weight, more particularly from 40% to 80% by weight and in particular from 40% to 70% by weight relative to the total weight of composition (B).

26. Process according to any one of Claims 22 to 25, characterized in that composition (A) and the oxidizing composition (B) are such that the mixture of these two compositions is also in the form of a nanoemulsion.

27. Kit for the oxidation dyeing of keratin fibres, comprising at least two compartments:

- a first compartment containing a composition (A) as defined in any one of Claims 1 to 15;

- a second compartment containing an oxidizing composition (B) as defined in any one of Claims 19 to 25.