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(54) Title: COMPOSITION COMPRISING HYALURONIC ACID AND/OR A DERIVATIVE THEREOF, A (BI)CARBONATE, A
FATTY ACID AND A DYE

(57) Abstract: The invention relates to a composition comprising at least one compound chosen from hyaluronic acid and/or a derivative
thereof, and mixtures thereof, at least one (bi)carbonate, at least one fatty acid and at least one dye.



WO 2025/003363 A1

Description

Title of Invention: Composition comprising hyaluronic acid and/or a derivative thereof, a (bi)carbonate, a fatty acid and a dye.

- [0001] The invention relates to a composition comprising hyaluronic acid and/or a derivative thereof, at least one (bi)carbonate, at least one fatty acid and at least one dye.
- [0002] The invention also relates to a process for dyeing keratin fibres, notably the hair, using this composition.
- [0003] Finally, the invention relates to the use of such a composition for dyeing keratin fibres, and notably the hair.
- [0004] Many people have sought for a long time to modify the colour of their hair and in particular to mask their grey hair.
- [0005] In the field of dyeing hair keratin fibres, in particular human keratin fibres, it is already known practice to dye hair keratin fibres via various techniques using direct dyes or pigments for non-permanent dyeing, or dye precursors for permanent dyeing.
- [0006] There are essentially three types of process for dyeing the hair:
- [0007] a) “permanent” dyeing, the function of which is to afford a substantial modification to the natural colour and which uses oxidation dyes which penetrate into the hair fibre and form the dye via an oxidative condensation process;
- [0008] b) non-permanent, semi-permanent or direct dyeing, which does not use the oxidative condensation process and withstands four or five shampoo washes; it consists in dyeing keratin fibres with dye compositions containing direct dyes;
- [0009] c) temporary dyeing, which gives rise to a modification of the natural colour of the hair that remains from one shampoo wash to the next, and which serves to enhance or correct a shade that has already been obtained. It may also be likened to a “makeup” process.
- [0010] It is thus known practice to dye keratin fibres, in particular human keratin fibres such as the hair, to obtain “permanent” dyeing with dye compositions containing oxidation dye precursors, notably oxidation bases, such as ortho- or para-phenylenediamines, ortho- or para-aminophenols, or heterocyclic compounds such as pyrazoles, pyrazolinones or pyrazolopyridines. These oxidation bases are colourless or weakly coloured compounds which, when combined with oxidizing products, can give rise to coloured compounds via a process of oxidative condensation.
- [0011] It is also possible to vary the shades obtained with these oxidation bases by combining them with couplers or colour modifiers. The variety of molecules used as oxidation bases and couplers allows a wide range of colours to be obtained.

- [0012] However, the use of these dye compositions may entail a certain number of drawbacks.
- [0013] Specifically, after application to keratin fibres, the dyeing power obtained may not be entirely satisfactory, or may even be weak, and lead to a limited range of colours.
- [0014] The colourings may also be insufficiently fast with respect to external agents such as light, shampoo washing or perspiration, and may also be too selective, i.e. the difference in colouring is too great along the same keratin fibre that is differently sensitized between its end and its root.
- [0015] Thus, there is a real need to provide a composition for dyeing keratin fibres, in particular human keratin fibres such as the hair, which is capable of producing good colour build-up, intensity and chromaticity, while at the same time having low selectivity and good fastness, notably good resistance to shampoo washing, and which is capable of delivering good dyeing performance, even after a period of storage, while at the same time having good application qualities and retaining good sensory performance notably in terms of sheen, smoothness, suppleness, straightening and disentangling of keratin fibres such as the hair.
- [0016] These aims and others are achieved by the present invention, one subject of which is thus a composition comprising:
- [0017] - at least one compound chosen from hyaluronic acid and/or a derivative thereof, and mixtures thereof;
- [0018] - at least one (bi)carbonate;
- [0019] - at least one fatty acid;
- [0020] - at least one dye
- in which the total content of the compound(s) chosen from fatty acids ranges from 0.1% to 10% by weight, relative to the total weight of the composition, and
- in which the dye(s) are chosen from oxidation dyes, direct dyes and mixtures thereof.
- [0021] According to a preferred embodiment, the composition according to the invention is a composition for dyeing keratin fibres, notably the hair.
- [0022] The composition according to the invention may notably lead to chromatic, powerful, intense and sparingly selective colourings, i.e. colourings that are uniform along the length of the fibre.
- [0023] The composition according to the invention has improved resistance to shampoo washing and also good stability over time, notably little or no change in its viscosity during storage.
- [0024] The composition according to the invention has good application qualities, notably in terms of texture, ease of application, adhesion to the hair and lengthening.
- [0025] The composition according to the invention can also afford good cosmetic qualities, notably in terms of sheen, smoothness and suppleness, and a more natural feel, while at

the same time preserving the integrity of the fibre.

[0026] The composition according to the invention can also provide keratin fibres with cosmetic compositions which do not have a strong ammonia odour.

[0027] A subject of the invention is also a process for dyeing the hair using the composition of the invention.

[0028] A subject of the invention is also a kit comprising, in a first compartment, a composition as defined previously and, in a second compartment, an oxidizing composition comprising at least one chemical oxidizing agent.

[0029] According to the invention, the term “*chemical oxidizing agent*” means an oxidizing agent other than atmospheric oxygen.

[0030] Other subjects, features, aspects and advantages of the invention will emerge even more clearly on reading the description and the examples that follow.

[0031] In the text hereinbelow, unless otherwise indicated, the limits of a range of values are included in that range, notably in the expressions “between” and “ranging from ... to ...”.

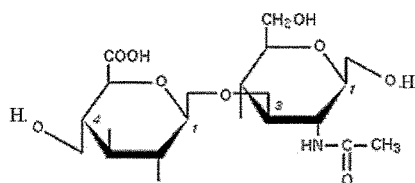
[0032] Moreover, the expression “*at least one*” used in the present description is equivalent to the expression “*one or more*”.

Hyaluronic acid and/or a derivative thereof

[0033] The composition according to the invention comprises hyaluronic acid and/or a derivative thereof.

[0034] In the context of the present invention, the term “hyaluronic acid or a derivative thereof” notably covers the hyaluronic acid basic unit having the formula:

[0035] [Chem.1]



[0036] Hyaluronic acid belongs to the glycosaminoglycan (GAG) family.

[0037] GAGs are linear chains composed of a repetition of a basic diholoside always containing a hexosamine (glucosamine or galactosamine) and another saccharide (glucuronic acid, iduronic acid or galactose). Glucosamine is either N-sulfated or N-acetylated. On the other hand, galactosamine is always N-acetylated. In addition, there may be O-linked sulfates on hexosamine, uronic acid and galactose.

[0038] It is a polysaccharide of disaccharides which are themselves composed of D-glucuronic acid and N-acetylglucosamine.

[0039] According to a particular embodiment, in the context of the present invention, the term “hyaluronic acid or a derivative thereof” comprises the linear polymer comprising

the polymeric unit described above, according to a sequence with alternating $\beta(1,4)$ and $\beta(1,3)$ glycosidic bonds, having a molecular weight (MW) which may range between 380 and 13 000 000 daltons. This molecular weight mainly depends on the source from which the hyaluronic acid is obtained and/or on the preparation methods.

- [0040] Thus, the term “hyaluronic acid or a derivative thereof” comprises all of the hyaluronic acid fractions or subunits having a molecular weight notably within the molecular weight range recalled above.
- [0041] As hyaluronic acid derivatives, mention may be made in particular of hyaluronic acid salts, hyaluronic acid hydrolysates, quaternized hyaluronic acid derivatives and salts thereof and acetylated hyaluronic acid derivatives and mixtures thereof.
- [0042] Hyaluronic acid salts that may notably be mentioned include potassium hyaluronate and sodium hyaluronate.
- [0043] The term "quaternized hyaluronic acid derivatives" means cationic hyaluronic acid comprising at least one quaternary ammonium and/or a salt thereof.
- [0044] As a quaternized hyaluronic acid derivative, the compound having the INCI name hydroxypropyltrimonium hyaluronate is preferably used.
- [0045] As acetylated hyaluronic acid derivatives, mention may notably be made of the compound having the INCI name Sodium Acetylated Hyaluronate.
- [0046] The hyaluronic acid or a derivative thereof is preferably chosen from hyaluronic acid salts and mixtures thereof, and more preferentially sodium hyaluronate.
- [0047] Hyaluronic acid or a derivative thereof may be present in the composition according to the present invention in a total content ranging from 0.001% to 10% by weight, preferentially from 0.003% to 5% by weight, more preferentially from 0.008% to 1% by weight, better still from 0.01% to 0.5% by weight, even better still from 0.02% to 0.1% relative to the total weight of the composition.
- [0048] According to a particular embodiment, the total content of hyaluronic acid salts, preferably sodium hyaluronate, ranges from 0.001% to 10% by weight, preferentially from 0.003% to 5% by weight, more preferentially from 0.008% to 1% by weight, better still from 0.01% to 0.5% by weight, even better still from 0.02% to 0.1% by weight relative to the total weight of the composition.

(Bi)carbonate

- [0049] The composition according to the invention comprises one (or more) compound(s) chosen from (bi)carbonates.
- [0050] The term "(bi)carbonate " means carbonate, a carbonate-generating system, bicarbonate, a bicarbonate-generating system, and mixtures thereof.
- [0051] The term “carbonate-generating system” means a system which generates carbonate *in situ*, for instance carbon dioxide in water or percarbonate in water.
- [0052] The term “bicarbonate-generating system” means a system which generates

bicarbonate *in situ*, for instance carbon dioxide in water or by buffering a carbonate with a mineral or organic acid.

[0053] The (bi)carbonate(s) are preferably chosen from:

[0054] - carbonate(s) preferably chosen from:

[0055] a) carbonates of alkali metals (Met^{2+} , CO_3^{2-}), of alkaline-earth metals (Met'^{2+} , CO_3^{2-}) of ammonium NH_4^+ or of phosphonium ($\text{R}''^4\text{P}^+$) $_2$, CO_3^{2-} with Met' representing an alkaline-earth metal and Met representing an alkali metal, and R'', which may be identical or different, represent a hydrogen atom or an optionally substituted (C_1 - C_6) alkyl group such as hydroxyethyl; and mixtures thereof;

[0056] - bicarbonate(s) preferably chosen from:

[0057] b) the compounds of the following formulae:

[0058] ♦ R'^+ , HCO_3^- , with R' representing a hydrogen atom, an alkali metal, an ammonium group NH_4^+ or a phosphonium group $\text{R}''^4\text{P}^+$, where R'', which may be identical or different, represent a hydrogen atom or an optionally substituted (C_1 - C_6) alkyl group, such as hydroxyethyl, and, when R' represents a hydrogen atom, the hydrogen carbonate is then known as dihydrogen carbonate (CO_2 , H_2O); and

[0059] ♦ $\text{Met}'^{2+}(\text{HCO}_3^-)_2$ with Met' representing an alkaline-earth metal;

[0060] and mixtures thereof.

[0061] More particularly, the (bi)carbonate(s) are chosen from alkali metal, alkaline-earth metal and ammonium (bi)carbonates; preferentially alkali metal (bi)carbonates, ammonium (bi)carbonates and mixtures thereof, more preferentially alkali metal bicarbonates, ammonium bicarbonate and mixtures thereof.

[0062] By way of example, they are chosen from Na, K, Mg and Ca (bi)carbonates, ammonium (bi)carbonates and mixtures thereof. Preferably, the (bi)carbonate(s) are chosen from Na (bi)carbonate, K (bi)carbonate, ammonium (bi)carbonate and mixtures thereof, preferentially Na bicarbonate, K bicarbonate, ammonium bicarbonate and mixtures thereof, better still ammonium bicarbonate.

[0063] According to one embodiment, the compound(s) are chosen from bicarbonates, bicarbonate-generating systems and mixtures thereof, preferably from bicarbonates.

[0064] According to a preferred embodiment, the (bi)carbonate is ammonium bicarbonate.

[0065] These bicarbonates may be derived from natural water, for example spring water from the Vichy basin, from La Roche Posay or from Badoit, which are known for their content of bicarbonate of soda or sodium bicarbonate [$144-55-8$] = NaHCO_3 and of calcium bicarbonate = $\text{Ca}(\text{HCO}_3)_2$.

[0066] The (bi)carbonate(s) may be present in a total content ranging from 0.01% to 20% by weight, preferably from 0.05% to 15% by weight, preferentially from 0.1% to 10% by weight, more preferentially from 0.4% to 5% by weight, better still from 0.5% to 4% by weight, even better still from 1 to 3% by weight relative to the total weight of the

composition.

[0067] According to a preferred embodiment, the (bi)carbonate is ammonium bicarbonate, which may be present in a content ranging from 0.01% to 20% by weight, preferably from 0.05% to 15% by weight, preferentially from 0.1% to 10% by weight, more preferentially from 0.4% to 5% by weight, better still from 0.5% to 4% by weight, even better still from 1% to 3% by weight relative to the total weight of the composition.

Fatty acid

[0068] The composition according to the invention comprises one or more fatty acids.

[0069] The term "fatty acid" means a long-chain carboxylic acid, notably a linear or branched, saturated or unsaturated alkyl chain, comprising from 6 to 40 carbon atoms, preferably from 8 to 30 carbon atoms, more preferentially from 10 to 30 carbon atoms and better still from 14 to 22 carbon atoms.

[0070] Preferably, the fatty acids include at least one carboxylic acid group and a linear or branched, saturated or unsaturated, in particular saturated, alkyl chain comprising from 10 to 30 carbon atoms, in particular from 14 to 22 carbon atoms.

[0071] More preferentially, the fatty acids according to the invention are chosen from compounds having the structure $R-C(O)OH$ in which R represents a linear or branched, saturated or unsaturated, in particular saturated, alkyl group comprising from 6 to 40 carbon atoms, preferably from 8 to 30 carbon atoms, preferentially from 12 to 24 carbon atoms, better still from 14 to 20 carbon atoms.

[0072] For the purposes of the present invention, the fatty acids present in the composition are neither oxyalkylenated nor glycerolated.

[0073] The fatty acids may be chosen from solid fatty acids and liquid fatty acids, and mixtures thereof.

[0074] For the purposes of the present invention, the term "solid fatty acid" means a fatty acid with a melting point of greater than 25°C, preferably greater than or equal to 28°C, more preferentially greater than or equal to 30°C at atmospheric pressure (1.013×10⁵Pa).

[0075] The solid fatty acids used in the present invention are notably chosen from myristic acid, cetylic acid, stearyllic acid, palmitic acid, arachidic acid, stearic acid, lauric acid, behenic acid, 12-hydroxystearic acid, and mixtures thereof, preferably chosen from palmitic acid, lauric acid, myristic acid, stearic acid, and mixtures thereof, better still from palmitic acid, myristic acid, stearic acid, and mixtures thereof.

[0076] For the purposes of the present invention, the term "liquid fatty acid" means a fatty acid with a melting point of less than or equal to 25°C, preferably less than or equal to 20°C at atmospheric pressure (1.013×10⁵Pa).

[0077] The liquid fatty acid(s) according to the invention may be chosen from oleic acid,

linoleic acid, arachidonic acid, and mixtures thereof, preferentially oleic acid.

[0078] Preferably, the fatty acid(s) present in the composition according to the invention are chosen from fatty acids including at least one carboxylic acid group and a linear or branched, saturated or unsaturated alkyl chain comprising from 10 to 30 carbon atoms, in particular from 14 to 22 carbon atoms.

[0079] According to a preferred embodiment, the fatty acid(s) present in the composition according to the invention are chosen from solid fatty acids, preferably chosen from palmitic acid, lauric acid, myristic acid, stearic acid and mixtures thereof, preferentially from palmitic acid, lauric acid, myristic acid, stearic acid and mixtures thereof.

[0080] Preferably, the fatty acid(s) are chosen from myristic acid, palmitic acid, stearic acid, and mixtures thereof.

[0081] The fatty acid(s), which are preferably solid, are generally present in a total content ranging from 0.1% to 5%, preferentially from 0.1% to 1% by weight, better still from 0.2% to 0.5% by weight relative to the total weight of the composition.

Dye

[0082] The composition according to the invention comprises one or more dyes chosen from oxidation dyes, direct dyes and mixtures thereof.

[0083] Preferably, the composition comprises one (or more) oxidation dye(s).

[0084] The oxidation dyes are generally chosen from one or more oxidation bases, optionally in combination with one or more couplers.

[0085] Oxidation base

[0086] The oxidation bases may be present in the form of salts, solvates and/or solvates of salts.

[0087] The addition salts of the oxidation bases present in the composition according to the invention are notably chosen from the addition salts with an acid, such as the hydrochlorides, hydrobromides, sulfates, citrates, succinates, tartrates, lactates, tosylates, benzenesulfonates, methanesulfonates, phosphates and acetates, and the addition salts with a base such as sodium hydroxide, potassium hydroxide, aqueous ammonia, amines or alkanolamines.

[0088] Moreover, the solvates of the oxidation bases more particularly represent the hydrates of said oxidation bases and/or the combination of said oxidation bases with a linear or branched C₁ to C₄ alcohol such as methanol, ethanol, isopropanol or n-propanol. Preferably, the solvates are hydrates.

[0089] By way of example, the oxidation bases are chosen from para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols ortho-aminophenols and heterocyclic bases, and the corresponding addition salts.

[0090] Among the para-phenylenediamines that may be mentioned are, for example, para-phenylenediamine, para-toluenediamine, 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-methoxymethyl-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-ethyl-N-(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 -acetylaminomethyloxy-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 corresponding addition salts with an acid.

- [0091] Among the para-phenylenediamines mentioned above, para-phenylenediamine, para-toluenediamine, 2-isopropyl-para-phenylenediamine, 2- β -hydroxyethyl-para-phenylenediamine, 2- β -hydroxyethyloxy-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 -acetylaminomethyloxy-para-phenylenediamine, and the corresponding addition salts with an acid, are particularly preferred.
- [0092] Among the bis(phenyl)alkylenediamines that may be mentioned, for example, are 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 and 1,8-bis(2,5-diaminophenoxy)-3,6-dioxaoctane, and the corresponding addition salts.
- [0093] Among the para-aminophenols that are mentioned are, for example, 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 -hydroxyethylaminomethyl)phenol and 4-amino-2-fluorophenol, and the corresponding addition salts with an acid.

- [0094] Among the ortho-aminophenols that may be mentioned, for example, are 2-aminophenol, 2-amino-5-methylphenol, 2-amino-6-methylphenol and 5-acetamido-2-aminophenol, and the corresponding addition salts.
- [0095] Among the heterocyclic bases that may be mentioned, for example, are pyridine, pyrimidine and pyrazole derivatives.
- [0096] 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 example 2,5-diaminopyridine, 2-(4-methoxyphenyl)amino-3-aminopyridine and 3,4-diaminopyridine, and the corresponding addition salts.
- [0097] Other pyridine oxidation bases that are useful in the present invention are the 3-aminopyrazolo[1,5-a]pyridine oxidation bases or the corresponding addition salts described, for example, in patent application FR 2 801 308. Examples that may be mentioned include pyrazolo[1,5-a]pyrid-3-ylamine, 2-acetylaminopyrazolo[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, 2-β-hydroxyethoxy-3-aminopyrazolo[1,5-a]pyridine and 2-(4-dimethylpiperazinium-1-yl)-3-aminopyrazolo[1,5-a]pyridine; and the corresponding addition salts.
- [0098] More particularly, the oxidation bases that are useful in the present invention are chosen from 3-aminopyrazolo[1,5-a]pyridines preferably substituted on carbon atom 2 with:
- [0099] a) a (di)(C₁-C₆)(alkyl)amino group, said alkyl group possibly being substituted with at least one hydroxyl, amino or imidazolium group;
- [0100] b) an optionally cationic 5- to 7-membered heterocycloalkyl group comprising from 1 to 3 heteroatoms, optionally substituted with one or more (C₁-C₆)alkyl groups such as a di(C₁-C₄)alkylpiperazinium group; or
- [0101] c) a (C₁-C₆)alkoxy group optionally substituted with one or more hydroxyl groups, such as a β-hydroxyalkoxy group, and the corresponding addition salts.
- [0102] Among the pyrimidine derivatives that may be mentioned are the compounds

described, for example, in 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.

[0103] 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 corresponding addition salts. Use may also be made of 4,5-diamino-1-(β -methoxyethyl)pyrazole.

[0104] A 4,5-diaminopyrazole will preferably be used and even more preferentially 4,5-diamino-1-(β -hydroxyethyl)pyrazole and/or a corresponding salt.

[0105] The pyrazole derivatives that may also be mentioned comprise diamino-N,N-dihydropyrazolopyrazolones and in particular those described in patent application FR-A-2 886 136, such as the following compounds and the corresponding addition salts: 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

and 2,3-diamino-6-hydroxy-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one.

[0106] Use will preferably be made of 2,3-diamino-6,7-dihydro-1H,5H-pyrazolo[1,2-a]pyrazol-1-one and/or a corresponding salt.

[0107] Heterocyclic bases that will preferably be used are 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 corresponding salt.

[0108] Preferably, the oxidation base(s) are chosen from para-phenylenediamines, bis(phenyl)alkylenediamines, para-aminophenols, ortho-aminophenols, heterocyclic bases, and the corresponding addition salts, the solvates thereof and/or the solvates of the salts thereof, and mixtures thereof; more preferentially from 2-methoxymethyl-para-phenylenediamine, 2- β -hydroxyethyl-para-phenylenediamine, 2- γ -hydroxypropyl-para-phenylenediamine, and the addition salts thereof, the solvates thereof and/or the solvates of the salts thereof, and mixtures thereof.

[0109] When the composition comprises at least one oxidation base, the oxidation base(s) are preferably present in a total content ranging from 0.001% to 20% by weight, preferably from 0.005% to 15% by weight, more preferentially from 0.01% to 10% by weight, better still from 0.05% to 5%, even better still from 0.1% to 3% by weight, relative to the weight of the composition.

[0110] Oxidation coupler

[0111] The composition according to the invention may comprise one or more couplers advantageously chosen from those conventionally used in the dyeing of keratin fibres.

[0112] Preferably, the composition according to the invention comprises one or more couplers.

[0113] Among these couplers, mention may be made in particular of meta-phenylenediamines, meta-aminophenols, meta-diphenols, naphthalene-based coupling agents and heterocyclic coupling agents, and also the corresponding addition salts.

[0114] Mention may be made, for example, of 6-hydroxybenzomorpholine, hydroxyethyl-3,4-methylenedioxyaniline, 2-amino-5-ethylphenol, 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, 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-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, 2-methyl-5-aminophenol, 5-N-(β -hydroxyethyl)amino-2-methylphenol, 3-aminophenol and 3-amino-2-chloro-6-methylphenol, the corresponding addition salts with an acid and the corresponding mixtures.

- [0115] In general, the addition salts of the couplers that may be used in the context of the invention are chosen in particular from addition salts with an acid, such as hydrochlorides, hydrobromides, sulfates, citrates, succinates, tartrates, lactates, tosylates, benzenesulfonates, phosphates and acetates, and the addition salts with a base such as sodium hydroxide, potassium hydroxide, aqueous ammonia, amines or alkanolamines.
- [0116] Moreover, the solvates more particularly represent the hydrates of these couplers and/or the combination of these couplers with a linear or branched C1 to C4 alcohol such as methanol, ethanol, isopropanol or n-propanol. Preferably, the solvates are hydrates.
- [0117] In a particular embodiment, the composition according to the invention is free of oxidation couplers chosen from resorcinol, 2-methylresorcinol, 4-chlororesorcinol, addition salts thereof, solvates thereof and the solvates of the salts thereof.
- [0118] When the composition comprises one or more oxidation couplers, the total content of the coupler(s) present in the composition according to the invention ranges from 0.001% to 20% by weight, more preferentially from 0.005% to 15% by weight, better still from 0.01% to 10% by weight, even better still from 0.05% to 5% by weight, and even better still from 0.1% to 3% by weight, relative to the total weight of the composition.
- [0119] When they are present, the total content of the oxidation dyes preferably ranges from 0.001% to 20% by weight, more preferentially from 0.005% to 15% by weight, better still from 0.01% to 10% by weight, even better still from 0.05% to 5% by weight, and even better still from 0.1% to 3% by weight, relative to the total weight of the composition.
- [0120] The composition according to the invention may optionally comprise one or more synthetic or natural direct dyes, chosen from anionic and nonionic species, preferably cationic or nonionic species, either as sole dyes or in addition to the oxidation dye(s).
- [0121] Examples of suitable direct dyes that may be mentioned include azo direct dyes; (poly)methine dyes such as cyanines, hemicyanines and styryls; carbonyl dyes; azine dyes; nitro(hetero)aryl dyes; tri(hetero)arylmethane dyes; porphyrin dyes; phthalocyanine dyes and natural direct dyes, alone or in the form of mixtures.
- [0122] When they are present, the direct dye(s) more particularly represent from 0.001% to

10% by weight and preferably from 0.005% to 5% by weight relative to the total weight of the composition.

[0123] According to a preferred embodiment of the invention, the composition and similarly the ready-to-use composition contain at least one dye and preferably at least one oxidation dye as defined previously.

Surfactants other than fatty acids

[0124] The composition according to the present invention may comprise one (or more) surfactant(s) other than fatty acids.

[0125] According to a preferred embodiment, the composition comprises one (or more) surfactant(s) other than fatty acids.

[0126] These may be chosen from anionic surfactants other than fatty acids, nonionic surfactants, cationic surfactants, amphoteric surfactants and/or mixtures thereof.

[0127] According to a preferred embodiment, the surfactants other than fatty acids are nonionic surfactants.

[0128] Examples of nonionic surfactants that may be mentioned include the following nonionic surfactants:

[0129] - oxyalkylenated (C8-C24)alkylphenols;

[0130] - saturated or unsaturated, linear or branched, oxyalkylenated or glycerolated, preferably oxyalkylenated, C8 to C40 alcohols, preferably including one or two fatty chains;

[0131] - saturated or unsaturated, linear or branched, oxyalkylenated C8 to C30 fatty acid amides;

[0132] - esters of saturated or unsaturated, linear or branched, C8 to C30 acids and of polyethylene glycols;

[0133] - preferably oxyethylenated esters of saturated or unsaturated, linear or branched, C8 to C30 acids and of sorbitol;

[0134] - fatty acid esters of sucrose;

[0135] - (C8-C30)alkyl(poly)glucosides and (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;

[0136] - saturated or unsaturated oxyethylenated plant oils;

[0137] - condensates of ethylene oxide and/or of propylene oxide;

[0138] - N-(C8-C30)alkylglucamine and N-(C8-C30)acylmethylglucamine derivatives;

[0139] - aldobionamides;

[0140] - amine oxides;

[0141] - oxyethylenated and/or oxypropylenated silicones;

[0142] - and mixtures thereof.

[0143] The oxyalkylene units are more particularly oxyethylene or oxypropylene units, or a

combination thereof, preferably oxyethylene units.

[0144] The number of moles of ethylene oxide and/or propylene oxide preferably ranges from 1 to 250, more particularly from 2 to 100, better still from 2 to 50 and even better still from 2 to 40; the number of moles of glycerol ranges notably from 1 to 50 and better still from 1 to 10.

[0145] As examples of glycerolated nonionic surfactants, use is preferably made of monoglycerolated or polyglycerolated C8 to C40 alcohols, comprising from 1 to 50 mol of glycerol and preferably from 1 to 10 mol of glycerol.

[0146] Examples of compounds of this type that may be mentioned include 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, oleocetyl alcohol containing 6 mol of glycerol, and octadecanol containing 6 mol of glycerol.

[0147] Among the glycerolated alcohols, it is more particularly preferred to use a C8 to C10 alcohol containing 1 mol of glycerol, a C10 to C12 alcohol containing 1 mol of glycerol, and a C12 alcohol containing 1.5 mol of glycerol.

[0148] More preferentially, the nonionic surfactant(s) used in the composition according to the invention are chosen from:

[0149] - saturated or unsaturated, linear or branched, oxyethylenated or oxypropylenated or glycerolated, preferably oxyethylenated or oxypropylenated, C8-C40, preferably C10-C32, more preferentially C12-C28 alcohols;

[0150] - (C8-C30)alkyl(poly)glucosides, optionally oxyalkylenated and comprising from 1 to 15 glucose units;

[0151] - and a mixture thereof.

[0152] According to a preferred embodiment, the surfactants other than fatty acids are chosen from nonionic surfactants, more preferentially chosen from saturated or unsaturated, linear or branched, oxyethylenated or oxypropylenated, C8 to C40 alcohols comprising from 1 to 100 mol of ethylene or propylene oxide, preferably from 2 to 50, more particularly from 2 to 40 mol, and including at least one C8-C20 alkyl chain.

[0153] Preferably, the surfactant(s) other than fatty acids represent from 0.01% to 20% by weight, preferably from 0.1% to 15% by weight, more preferentially from 0.5% to 10% by weight, better still from 0.8% to 6% by weight and even better still from 1% to 5% relative to the total weight of the composition.

Fatty substances other than fatty acids

[0154] The composition according to the invention may also comprise one or more fatty

substances other than fatty acids.

[0155] Preferably, the composition according to the present invention comprises one or more fatty substances other than fatty acids.

[0156] The term “*fatty substance*” means an organic compound that is insoluble in water at 25°C and at atmospheric pressure (1.013×10⁵Pa) (solubility of less than 5% by weight, preferably less than 1% by weight, even more preferentially less than 0.1% by weight). They bear in their structure at least one hydrocarbon-based chain including at least 6 carbon atoms and/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, toluene, tetrahydrofuran (THF), liquid petroleum jelly or decamethylcyclopentasiloxane.

[0157] The fatty substances that may be used in the present invention are neither (poly)oxyalkylenated nor (poly)glycerolated.

[0158] Preferably, the fatty substances that are useful according to the invention are non-silicone fatty substances.

[0159] The term “non-silicone fatty substance” refers to a fatty substance not containing any Si-O bonds and the term “silicone fatty substance” refers to a fatty substance containing at least one Si-O bond.

[0160] The fatty substances that are useful according to the invention may be liquid fatty substances (or oils) and/or solid fatty substances. The term “liquid fatty substance” means a fatty substance with a melting point of less than or equal to 25°C at atmospheric pressure (1.013×10⁵Pa) and the term “solid fatty substance” means a fatty substance with a melting point of greater than 25°C at atmospheric pressure (1.013×10⁵ Pa).

[0161] For the purposes of the present invention, the melting point corresponds to the temperature of the most endothermic peak observed on thermal analysis (differential scanning calorimetry or DSC) as described in the standard ISO 11357-3; 1999. The melting point may be measured using a differential scanning calorimeter (DSC), for example the calorimeter sold under the name MDSC 2920 by the company TA Instruments. In the present patent application, all the melting points are determined at atmospheric pressure (1.013×10⁵Pa).

[0162] More particularly, the liquid fatty substance(s) may be chosen from liquid hydrocarbons comprising more than 6 carbon atoms, non-silicone oils of animal origin, oils of triglyceride type of plant or synthetic origin, fluoro oils, liquid fatty alcohols, liquid esters of fatty acid and/or of fatty alcohol other than triglycerides, and mixtures thereof.

[0163] It is recalled that the fatty alcohols and esters more particularly contain at least one

saturated or unsaturated, linear or branched hydrocarbon-based group comprising from 6 to 40 and better still from 8 to 30 carbon atoms, which is optionally substituted, in particular with one or more hydroxyl groups (in particular 1 to 4). If they are unsaturated, these compounds may comprise one to three conjugated or unconjugated carbon-carbon double bonds.

- [0164] By way of example, the liquid hydrocarbons comprising more than 6 carbon atoms may be chosen from C₆ to C₁₆ liquid hydrocarbons, which may be linear, branched, optionally cyclic, and preferably saturated. Examples that may be mentioned include hexane, cyclohexane, undecane, dodecane, isododecane, tridecane or isoparaffins, such as isohexadecane or isodecane, and mixtures thereof.
- [0165] The liquid hydrocarbons comprising more than 6 carbon atoms may also be chosen from linear or branched liquid hydrocarbons comprising more than 16 carbon atoms, which may be of mineral or synthetic origin, and are preferably chosen from liquid paraffins or liquid petroleum jelly (or mineral oil), polydecenes, hydrogenated polyisobutene such as Parleam®, and mixtures thereof.
- [0166] The liquid hydrocarbons comprising more than 6 carbon atoms may also be chosen from mixtures of alkanes containing from 8 to 28 carbon atoms, more particularly from 15 to 28 carbon atoms; mention may be made of mixtures having, for example, the following INCI names: C15-19 Alkane, C18-C21 Alkane, C21-C28 Alkane, for instance the products Gemseal 40, Gemseal 60 and Gemseal 120 sold by Total, Emogreen L19 sold by SEPPIC and Emogreen L15 sold by SEPPIC, more particularly Emogreen L19 sold by SEPPIC.
- [0167] A hydrocarbon-based oil of animal origin that may be mentioned is perhydrosqualene.
- [0168] The triglyceride oils of plant or synthetic origin are preferably chosen from liquid fatty acid triglycerides including from 6 to 30 carbon atoms, for instance heptanoic or octanoic acid triglycerides, or alternatively, for example, sunflower oil, corn oil, soybean oil, marrow oil, grapeseed oil, sesame seed oil, hazelnut oil, apricot oil, macadamia oil, arara oil, castor oil, avocado oil, caprylic/capric acid triglycerides, for instance those sold by the company Stéarinerie Dubois or those sold under the names Miglyol® 810, 812 and 818 by the company Dynamit Nobel, jojoba oil and shea butter oil, and mixtures thereof.
- [0169] The liquid fatty alcohols that are suitable for use in the invention are more particularly chosen from linear or branched, saturated or unsaturated alcohols, preferably unsaturated or branched alcohols, including from 6 to 40 carbon atoms and preferably from 8 to 30 carbon atoms. These fatty alcohols are neither oxyalkylenated nor glycerolated. Examples that may be mentioned include octyldodecanol, 2-butyloctanol, 2-hexyldecanol, 2-undecylpentadecanol, isostearyl alcohol, oleyl

alcohol, linolenyl alcohol, ricinoleyl alcohol, undecylenyl alcohol and linoleyl alcohol, and mixtures thereof. Preferably, oleyl alcohol will be used.

[0170] As regards the liquid fatty acid and/or fatty alcohol esters, other than the triglycerides mentioned previously, mention may be made notably of esters of saturated or unsaturated, linear C1 to C26 or branched C3 to C26 aliphatic mono- or polyacids and of saturated or unsaturated, linear C1 to C26 or branched C3 to C26 aliphatic mono- or polyalcohols, the total carbon number of the esters being greater than or equal to 6 and more advantageously greater than or equal to 10.

[0171] Preferably, for the esters of monoalcohols, at least one from among the alcohol and the acid is branched.

[0172] Among the monoesters, mention may be made of dihydroabietyl behenate; octyldodecyl behenate; isocetyl behenate; isostearyl lactate; lauryl lactate; linoleyl lactate; oleyl lactate; isostearyl octanoate; isocetyl octanoate; octyl octanoate; decyl oleate; isocetyl isostearate; isocetyl laurate; isocetyl stearate; isodecyl octanoate; isodecyl oleate; isononyl isononanoate; isostearyl palmitate; methyl acetyl ricinoleate; octyl isononanoate; 2-ethylhexyl isononate; octyldodecyl erucate; oleyl erucate; ethyl palmitate, isopropyl palmitate, 2-ethylhexyl palmitate, 2-octyldecyl palmitate; alkyl myristates such as isopropyl 2-octyldodecyl myristate, isobutyl stearate; 2-hexyldecyl laurate, and mixtures thereof.

[0173] Esters of C4 to C22 dicarboxylic or tricarboxylic acids and of C1 to C22 alcohols and esters of monocarboxylic, dicarboxylic or tricarboxylic acids and of C2 to C26 dihydroxy, trihydroxy, tetrahydroxy or pentahydroxy alcohols may also be used.

[0174] Mention may notably 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; pentaerythrityl tetraisononanoate; pentaerythrityl tetrapelargonate; pentaerythrityl tetraisostearate; pentaerythrityl tetraoctanoate; propylene glycol dicaprylate; propylene glycol dicaprate; tridecyl erucate; triisopropyl citrate; triisostearyl citrate; glyceryl trilactate; glyceryl trioctanoate; trioctyldodecyl citrate; trioyleyl citrate; propylene glycol dioctanoate; neopentyl glycol diheptanoate; diethylene glycol diisononanoate; and polyethylene glycol distearates, and mixtures thereof.

[0175] The composition may also comprise, as fatty ester, sugar esters and diesters of C6 to C30 and preferably C12 to C22 fatty acids. It is recalled that the term "sugar" refers to oxygen-bearing hydrocarbon-based compounds bearing several alcohol functions, with or without aldehyde or ketone functions, and which include at least 4 carbon atoms. These sugars may be monosaccharides, oligosaccharides or polysaccharides other than the anionic polysaccharides described previously.

[0176] Examples of suitable sugars that may be mentioned include sucrose, glucose,

galactose, ribose, fucose, maltose, fructose, mannose, arabinose, xylose and lactose, and derivatives thereof, notably alkyl derivatives, such as methyl derivatives, for instance methylglucose.

- [0177] The sugar esters of fatty acids may be chosen notably from the group comprising the esters or mixtures of esters of sugars described above and of linear or branched, saturated or unsaturated C6 to C30 and preferably C12 to C22 fatty acids. If they are unsaturated, these compounds may comprise one to three conjugated or unconjugated carbon-carbon double bonds.
- [0178] The esters may also be chosen from monoesters, diesters, triesters, tetraesters and polyesters, and mixtures thereof.
- [0179] These esters may be, for example, oleates, laurates, palmitates, myristates, behenates, cocoates, stearates, linoleates, linolenates, caprates, arachidonates or mixtures thereof notably such as the mixed oleo-palmitate, oleo-stearate and palmito-stearate esters.
- [0180] More particularly, use is made of monoesters and diesters and notably sucrose, glucose or methylglucose mono- or di-oleates, -stearates, -behenates, -oleopalmitates, -linoleates, -linolenates and -oleostearates, and mixtures thereof.
- [0181] An example that may be mentioned is the product sold under the name Glucate® DO by the company Amerchol, which is a methylglucose dioleate.
- [0182] Preferably, use will be made of a liquid ester of a monoacid and of a monoalcohol.
- [0183] According to one embodiment, the fatty substances other than fatty acids are chosen from liquid fatty substances, preferably from liquid hydrocarbons comprising more than 6 carbon atoms, plant oils, liquid fatty alcohols and liquid fatty esters, and mixtures thereof, more preferentially from hydrocarbons comprising more than 6 carbon atoms.
- [0184] Preferentially, the liquid fatty substance(s) other than fatty acids are chosen from mixtures of alkanes containing from 8 to 28 carbon atoms, more preferentially from 15 to 28 carbon atoms, better still mixtures having the INCI name C15-C19 Alkane.
- [0185] The solid fatty substances preferably have a viscosity of greater than 2 Pa.s, measured at 25°C and at a shear rate of 1 s⁻¹.
- [0186] The solid fatty substance(s) are preferably chosen from solid fatty alcohols, solid fatty acid and/or fatty alcohol esters, waxes, ceramides and mixtures thereof.
- [0187] The term “fatty alcohol” means a long-chain aliphatic alcohol comprising from 6 to 40 carbon atoms, preferably from 8 to 30 carbon atoms, and comprising at least one hydroxyl group OH. These fatty alcohols are neither oxyalkylenated nor glycerolated.
- [0188] The solid fatty alcohols that may be used may be chosen, alone or as a mixture, from: myristyl alcohol (or 1-tetradecanol); cetyl alcohol (or 1-hexadecanol); stearyl alcohol (or 1-octadecanol); arachidyl alcohol (or 1-eicosanol); behenyl alcohol (or 1-docosanol); lignoceryl alcohol (or 1-tetracosanol); ceryl alcohol (or 1-hexacosanol);

montanyl alcohol (or 1-octacosanol); myricyl alcohol (or 1-triacontanol).

- [0189] Preferentially, the solid fatty alcohol is chosen from cetyl alcohol, stearyl alcohol, behenyl alcohol, myristyl alcohol, arachidyl alcohol, and mixtures thereof, such as cetylstearyl alcohol or cetearyl alcohol. Particularly preferably, the solid fatty alcohol is chosen from cetyl alcohol, stearyl alcohol and mixtures thereof such as cetylstearyl alcohol or cetearyl alcohol.
- [0190] The solid esters of a fatty acid and/or of a fatty alcohol that may be used are preferably chosen from esters derived from a C9-C26 carboxylic fatty acid and/or from a C9-C26 fatty alcohol.
- [0191] Mention may notably be made of octyldodecyl behenate, isocetyl behenate, cetyl lactate, stearyl octanoate, octyl octanoate, cetyl octanoate, decyl oleate, hexyl stearate, octyl stearate, myristyl stearate, cetyl stearate, stearyl stearate, octyl pelargonate, cetyl myristate, myristyl myristate, stearyl myristate, diethyl sebacate, diisopropyl sebacate, diisopropyl adipate, di-n-propyl adipate, dioctyl adipate, dioctyl maleate, octyl palmitate, myristyl palmitate, cetyl palmitate, stearyl palmitate, and mixtures thereof.
- [0192] The solid fatty substances are preferably chosen from solid fatty alcohols and mixtures thereof, in particular from cetyl alcohol, stearyl alcohol and mixtures thereof such as cetylstearyl or cetearyl alcohol.
- [0193] According to a preferred embodiment, the fatty substance(s), other than fatty acids, are chosen from liquid hydrocarbons comprising more than 6 carbon atoms, plant oils, fatty alcohols, liquid fatty esters, waxes and mixtures thereof, more preferentially from solid fatty alcohols, mixtures of alkanes containing from 8 to 28 carbon atoms, more particularly from 15 to 28 carbon atoms, and mineral oil, better still from cetearyl alcohol, C15-19 Alkane (INCI name), mineral oil and mixtures thereof, even better still cetearyl alcohol, mineral oil and mixtures thereof.
- [0194] The total content of the fatty substance(s) other than fatty acids preferably ranges from 5% to 35% by weight, more preferentially from 7% to 30% by weight and better still from 8% to 25% by weight relative to the total weight of the composition.
- [0195] In a particular embodiment, when the composition according to the invention comprises one or more solid fatty substances other than fatty acids, the total content of the solid fatty substance(s) other than fatty acids preferably ranges from 5% to 30% by weight, more preferentially from 6% to 25% by weight and better still from 7% to 20% by weight, relative to the total weight of the composition.
- [0196] In another particular embodiment, the composition according to the invention comprises one or more hydrocarbons comprising more than 6 carbon atoms, the total content of the hydrocarbon(s) comprising more than 6 carbon atoms preferably ranging from 0.01% to 15% by weight, more preferentially from 0.05% to 10% by weight, better still from 0.1% to 5% by weight, and even better still from 0.5% to 4% relative

to the total weight of the composition.

Sequestrants

[0197] The composition according to the invention may comprise at least one sequestrant (or chelating agent).

[0198] The definition of a “sequestrant” (or “chelating agent”) is well known to those skilled in the art and refers to a compound or a mixture of compounds that are capable of forming a chelate with a metal ion. A chelate is an inorganic complex in which a compound (the sequestrant or chelating agent) is coordinated to a metal ion, i.e. it forms one or more bonds with the metal ion (formation of a ring including the metal ion).

[0199] A sequestrant (or chelating agent) generally comprises at least two electron-donating atoms which enable the formation of bonds with the metal ion.

[0200] In the context of the present invention, the sequestrant(s) may be chosen from carboxylic acids, preferably aminocarboxylic acids, phosphonic acids, preferably aminophosphonic acids, polyphosphoric acids, preferably linear polyphosphoric acids, salts thereof, and derivatives thereof.

[0201] The salts are notably alkali metal, alkaline-earth metal, ammonium and substituted ammonium salts.

[0202] The following compounds may be mentioned as examples of chelating agents based on carboxylic acids: diethylenetriaminepentaacetic acid (DTPA), ethylenediaminedisuccinic acid (EDDS) and trisodium ethylenediaminedisuccinate such as Octaquest E30 from Octel, ethylenediaminetetraacetic acid (EDTA) and salts thereof such as disodium EDTA, tetrasodium EDTA, ethylenediamine-N,N'-diglutaric acid (EDDG), glycineamide-N,N'-disuccinic acid (GADS), 2-hydroxypropylenediamine-N,N'-disuccinic acid (HPDDS), ethylenediamine-N,N'-bis(ortho-hydroxyphenylacetic acid) (EDDHA), N,N'-bis(2-hydroxybenzyl)ethylenediamine-N,N'-diacetic acid (HBED), nitrilotriacetic acid (NTA), methylglycinediacetic acid (MGDA), N-2-hydroxyethyl-N,N'-diacetic acid and glyceryliminodiacetic acid (as described in EP-A-317 542 and EP-A-399 133), iminodiacetic acid-N-2-hydroxypropylsulfonic acid and aspartic acid-N-carboxymethyl-N-2-hydroxypropyl-3-sulfonic acid (as described in EP-A-516 102), beta-alanine-N,N'-diacetic acid, aspartic acid-N,N'-diacetic acid, and aspartic acid-N-monoacetic acid (described in EP-A-509 382), chelating agents based on iminodisuccinic acid (IDSA) (as described in EP-A-509 382), ethanoldiglycine acid, phosphonobutanetricarboxylic acid such as the compound sold by Bayer under the reference Bayhibit AM, N,N-dicarboxymethylglutamic acid and salts thereof such as tetrasodium glutamate diacetate (GLDA) such as Dissolvine GL38 or 45S from AkzoNobel.

- [0203] The following compounds may be mentioned as examples of chelating agents based on mono- or polyphosphonic acid: diethylenetriaminepenta(methylenephosphonic acid) (DTPMP), ethane-1-hydroxy-1,1,2-triphosphonic acid (E1HTP), ethane-2-hydroxy-1,1,2-triphosphonic acid (E2HTP), ethane-1-hydroxy-1,1-triphosphonic acid (EHDP), ethane-1,1,2-triphosphonic acid (ETP), ethylenediaminetetra(methylenephosphonic acid) (EDTMP), hydroxyethane-1,1-diphosphonic acid (HEDP, or etidronic acid), and salts such as disodium etidronate, tetrasodium etidronate.
- [0204] The following compounds may be mentioned as examples of chelating agents based on polyphosphoric acid: sodium tripolyphosphate (STP), tetrasodium diphosphate, hexametaphosphoric acid, sodium metaphosphate, phytic acid.
- [0205] According to one embodiment, the sequestrant(s) that are useful according to the invention are phosphorus-based sequestrants, i.e. sequestrants which comprise one or more phosphorus atoms, preferably at least two phosphorus atoms.
- [0206] According to the present invention, the sequestrants are preferably chosen from diethylenetriaminepentaacetic acid (DTPA) and salts thereof, diethylenediaminetetraacetic acid (EDTA) and salts thereof, ethylenediaminedisuccinic acid (EDDS) and salts thereof, etidronic acid and salts thereof, N,N-dicarboxymethylglutamic acid (GLDA) and salts thereof, and mixtures thereof.
- [0207] More preferentially, the sequestrant(s) are chosen from N,N-dicarboxymethylglutamic acid (GLDA) and salts thereof, and mixtures thereof.
- [0208] Among the salts of these compounds, the alkali metal salts and notably the sodium or potassium salts are preferred.
- [0209] When the composition comprises one or more sequestrants, the total content of the sequestrant(s) preferably ranges from 0.001% to 15% by weight, preferentially from 0.005% to 10% by weight, more preferentially from 0.01% to 8% by weight, better still from 0.05% to 5% by weight, even better still from 0.1% to 2% by weight relative to the total weight of the composition.

Additional alkaline agent

- [0210] The composition according to the invention may comprise one (or more) alkaline agent(s) other than (bi)carbonates.
- [0211] Preferably, the alkaline agent(s) other than (bi)carbonates may be chosen from organic alkaline agents and inorganic alkaline agents.
- [0212] Preferably, the organic alkaline agent(s) are chosen from organic amines, the pK_b of which at 25°C is less than 12, more preferentially less than 10 and even more advantageously less than 6. It should be noted that it is the pK_b corresponding to the function which has the highest basicity. In addition, the organic amines do not comprise any alkyl or alkenyl fatty chains comprising more than ten carbon atoms.
- [0213] The organic alkaline agent(s) are preferably chosen from alkanolamines, in particular

mono-, di- or tri-hydroxy(C1-C6)alkylamines, such as 2-amino-2-methylpropanol, monoethanolamine, oxyethylenated and/or oxypropylenated ethylenediamines, amino acids, polyamines, and mixtures thereof.

[0214] The term “alkanolamine” means an organic amine 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.

[0215] Organic amines chosen from alkanolamines such as monoalkanolamines, dialkanolamines or trialkanolamines comprising one to three identical or different C1 to C4 hydroxyalkyl radicals are in particular suitable for performing the invention.

[0216] Among the compounds of this type, mention may be made of monoethanolamine (MEA), diethanolamine, triethanolamine, monoisopropanolamine, diisopropanolamine, N,N-dimethylethanolamine, 2-amino-2-methyl-1-propanol, triisopropanolamine, 2-amino-2-methyl-1,3-propanediol, 3-amino-1,2-propanediol, 3-dimethylamino-1,2-propanediol and tris(hydroxymethylamino)methane.

[0217] More particularly, the amino acids that may be used are of natural or synthetic origin, in their L, D or racemic form, and include at least one acid function chosen more particularly from carboxylic acid, sulfonic acid, phosphonic acid and phosphoric acid functions. The amino acids may be in neutral or ionic form.

[0218] As amino acids that may be used in the present invention, mention may notably be made of aspartic acid, glutamic acid, alanine, arginine, ornithine, citrulline, asparagine, carnitine, cysteine, glutamine, glycine, histidine, lysine, isoleucine, leucine, methionine, N-phenylalanine, proline, serine, taurine, threonine, tryptophan, tyrosine and valine.

[0219] Advantageously, the amino acids are basic amino acids comprising an additional amine function optionally included in a ring or in a ureido function.

[0220] The organic amine may also be chosen from organic amines of heterocyclic type. Besides histidine that has already been mentioned in the amino acids, mention may in particular be made of pyridine, piperidine, imidazole, triazole, tetrazole and benzimidazole.

[0221] The organic amine may also be chosen from amino acid dipeptides.

[0222] Among the inorganic alkaline agents that may be used in the composition according to the invention, mention may be made of ammonium hydroxide (also known as aqueous ammonia), mineral hydroxides, silicates, metasilicates, phosphates or hydrogen phosphates, and in particular alkali metal silicates or metasilicates, notably sodium silicate and sodium metasilicate.

[0223] Among the mineral hydroxides, sodium hydroxide is preferred.

[0224] Preferably, the alkaline agent(s) other than (bi)carbonates are chosen from ammonium hydroxide, alkanolamines, alkali metal silicates and metasilicates, mineral

hydroxides and mixtures thereof, more preferentially chosen from ammonium hydroxide, alkanolamines and mixtures thereof, better still from ammonium hydroxide, monoethanolamine and mixtures thereof.

[0225] Even more preferentially, the alkaline agent other than (bi)carbonates is ammonium hydroxide.

[0226] Advantageously, the total content of the alkaline agent(s) other than (bi)carbonates ranges from 0.01% to 20% by weight, preferably from 0.1% to 15% by weight, more preferentially from 0.5% to 10% by weight and even more preferentially from 1% to 7% by weight, relative to the total weight of the composition.

Glycoprotein

[0227] The composition according to the invention may comprise one (or more) glycoprotein(s).

[0228] Preferably, the composition according to the invention comprises a glycoprotein.

[0229] The term "*glycoprotein*" means one or more oligosaccharides covalently bonded to a polypeptide chain via the -OH function of serine and threonine residues (O-linked) or via the amide function of an asparagine residue (N-linked).

[0230] The term "*oligosaccharides*" means short polymers consisting of several identical or different monosaccharide units linked together by glycosidic bonds.

[0231] Preferentially, the glycoproteins of the invention comprise from 1% to 70% by weight of oligosaccharides, more preferentially from 2% to 50% by weight, even more preferentially from 5% to 30% by weight relative to the total weight of the glycoprotein.

[0232] According to a preferred embodiment, the glycoprotein(s) according to the invention are produced from microorganisms, more preferentially extracted from bacteria, even more preferentially from gram-negative bacteria.

[0233] Preferably, the glycoprotein according to the invention is obtained by culturing the bacterial strain *Pseudoalteromonas antarctica* NF3.

[0234] Mention may be made, for example, of the compound known under the INCI name Pseudoalteromonas Ferment Extract, sold under the trade name Antarcticine® by the company Lipotec.

[0235] When the composition comprises one or more glycoproteins, the total content of the glycoprotein(s) preferably ranges from 0.001% to 1% by weight, more preferentially from 0.005% to 0.5% by weight, better still from 0.01% to 0.1% by weight, relative to the total weight of the composition.

[0236] The composition according to the invention may also comprise one or more nonionic polyoxyalkylenated fatty alcohol ethers of formula (i) below:

[0237] $R-(O-Alk)_n-OR'$ (I),

[0238] in which:

- [0239] R denotes a linear or branched, saturated or unsaturated C10-C30 hydrocarbon-based radical,
- [0240] R' denotes a linear or branched, saturated or unsaturated C10-C30 hydrocarbon-based radical, which may be substituted with a hydroxyl radical, said hydroxyl preferably being beta to the ether function,
- [0241] n is an integer between 1 and 100 inclusive, and
- [0242] Alk represents a linear or branched, preferably linear, (C1-C6)alkylene group such as ethylene or propylene, preferably ethylene.
- [0243] According to a particularly advantageous embodiment of the invention, the radical Alk of formula (i) represents a -CH₂-CH₂- group.
- [0244] More particularly, the nonionic ether of a polyoxyalkylenated fatty alcohol of formula (I) is such that R and R', independently of each other, denote a linear or branched, preferably linear, saturated or unsaturated, preferably saturated, C12-C20 and preferably C14-C18 hydrocarbon-based radical; R' possibly being substituted with at least one hydroxyl radical, said hydroxyl radical preferably being beta to the ether function, and n denotes an integer greater than or equal to 20, for example ranging from 20 to 100 and preferably from 40 to 80.
- [0245] Preferably, R and R' denote an alkyl radical.
- [0246] According to a more preferred embodiment, the nonionic ether of a polyoxyalkylenated fatty alcohol of formula (I) is such that: R denotes a C16-C18 alkyl radical, which is preferably linear, and R' denotes a C14 alkyl radical, which is preferably linear, substituted with an OH group, said hydroxyl radical preferably being beta to the ether function, and n is equal to 60.
- [0247] Preferably, the nonionic compound of formula (I) has the following formula
- $$\begin{array}{c} \text{R}(\text{OCH}_2\text{CH}_2)_n\text{OCH}_2\text{CHOH} \cdots \\ | \\ (\text{CH}_2)_{11}\text{CH}_3 \end{array}$$
- [0248] with R being a cetyl or stearyl group with n = 60.
- [0249] Such a compound is known, for example, in the CTFA dictionary under the name Cetareth 60 myristyl glycol or Hydrogenated talloweth 60 myristyl glycol. A cetareth 60 myristyl glycol is sold, for example, by the company Akzo under the trade name Elfacos GT 282 S.
- [0250] When present, the nonionic polyoxyalkylenated fatty alcohol ether(s) (I) are preferably present in a content ranging from 0.001% to 10% by weight, preferably from 0.005% to 5% by weight, preferentially from 0.075% to 2% by weight, better still from 0.01% to 1% by weight relative to the total weight of the composition.
- [0251] According to a particular embodiment, the composition according to the invention comprises:

- [0252] - at least one compound chosen from hyaluronic acid and/or a derivative thereof, and mixtures thereof;
- [0253] - at least one (bi)carbonate;
- [0254] - at least one fatty acid;
- [0255] - at least one dye;
- [0256] - at least one surfactant other than fatty acids, preferably chosen from nonionic surfactants, more preferentially chosen from saturated or unsaturated, linear or branched, oxyethylenated or oxypropylenated, C8 to C40 alcohols comprising from 1 to 100 mol of ethylene or propylene oxide, preferably from 2 to 50, more particularly from 2 to 40 mol, and including at least one C8-C20 alkyl chain;
- [0257] - at least one fatty substance other than fatty acids, preferably chosen from liquid hydrocarbons containing more than 6 carbon atoms, plant oils, liquid fatty alcohols, liquid fatty esters, and mixtures thereof,
 in which the total content of the compound(s) chosen from fatty acids ranges from 0.1% to 10% by weight, relative to the total weight of the composition, and
 in which the dye(s) are chosen from oxidation dyes, direct dyes and mixtures thereof.

Solvents

- [0258] The composition according to the invention may also comprise at least one organic solvent.
- [0259] Examples of organic solvents that may be mentioned include linear or branched C₂-C₄alkanols, such as ethanol, propanol and isopropanol; polyols and polyol ethers, for instance 2-butoxyethanol, propylene glycol, glycerol, 1,3-propanediol, dipropylene glycol, propylene glycol monomethyl ether, diethylene glycol monomethyl ether and monoethyl ether, and also aromatic alcohols or ethers, for instance benzyl alcohol or phenoxyethanol, and mixtures thereof.
- [0260] Preferably, the organic solvent(s) are chosen from polyols, more preferentially chosen from propylene glycol, glycerol, propane-1,3-diol, and mixtures thereof.
- [0261] The organic solvent(s) may be present in an amount ranging from 0.01% to 30% by weight, preferably from 0.1% to 25% by weight, better still from 0.5% to 20% by weight, even better still from 1% to 15% by weight relative to the total weight of the composition.
- [0262] In addition, the composition according to the invention is preferably an aqueous composition. The composition preferably comprises water in an amount of greater than or equal to 5% by weight, preferably greater than or equal to 10% by weight, and better still greater than or equal to 15% by weight, relative to the total weight of the composition.

Additives

- [0263] The composition according to the invention may optionally comprise one or more additives, other than the compounds described previously, and among which mention may be made of cationic, anionic, nonionic or amphoteric polymers or mixtures thereof, vitamins and provitamins including panthenol, sunscreens, mineral or organic pigments, plasticizers, solubilizers, opacifiers or nacreous agents, antioxidants, hydroxy acids, and fragrances.
- [0264] The above additives may generally be present in an amount, for each of them, of between 0 and 20% by weight relative to the total weight of the ready-to-use composition.
- [0265] Preferably, the composition according to the invention does not comprise any chemical oxidizing agents.
- [0266] The composition may be intended to be mixed with an oxidizing composition.
- [0267] Preferably, the composition according to the invention does not comprise any cationic polymers.
- [0268] According to one embodiment, the composition according to the invention also comprises one or more chemical oxidizing agents as described below. According to this embodiment, the composition is a ready-to-use composition.
- [0269] Preferably, the pH of the ready-to-use composition is between 8 and 11 and preferentially between 9 and 10.5.
- [0270] According to another embodiment, the composition according to the invention does not comprise any chemical oxidizing agents. According to this embodiment, the composition is preferably intended for mixing with one or more chemical oxidizing agents.
- [0271] Preferably, the pH of the composition not containing any chemical oxidizing agents is between 8 and 13, preferentially between 9 and 12.
- [0272] According to another particular embodiment, the pH of the composition not containing any chemical oxidizing agents is between 7 and 10 and the pH of the ready-to-use composition is between 6 and 9.

Process

- [0273] The present invention also relates to a process for dyeing keratin fibres, preferably the hair, which comprises the application to said keratin fibres of an effective amount of a composition as defined previously, in the presence of an oxidizing agent.
- [0274] The composition may be applied to wet or dry keratin fibres. On conclusion of the treatment, the keratin fibres are optionally rinsed with water, optionally washed with a shampoo and then rinsed with water, before being dried or left to dry.
- [0275] Preferably, the process according to the invention comprises a step of mixing the previously described composition, which does not comprise any chemical oxidizing agents, with an oxidizing composition comprising at least one chemical oxidizing

agent. This mixing step is preferably performed at the time of use, just before applying to the hair the composition resulting from the mixing.

[0276] According to this embodiment, at the time of use, the composition according to the invention results from the mixing of at least two compositions:

[0277] a composition comprising:

[0278] - at least one compound chosen from hyaluronic acid and/or a derivative thereof, and mixtures thereof;

[0279] - at least one (bi)carbonate;

[0280] - at least one fatty acid;

[0281] - at least one dye,

in which the total content of the compound(s) chosen from fatty acids ranges from 0.1% to 10% by weight, relative to the total weight of the composition, and

in which the dye(s) are chosen from oxidation dyes, direct dyes and mixtures thereof preferably from oxidation dyes and

[0282] an oxidizing composition comprising one or more chemical oxidizing agents, preferably hydrogen peroxide.

[0283] In a preferred embodiment, the process for dyeing keratin fibres, preferably the hair, according to the invention, comprises the step of applying to the keratin fibres a composition resulting from the mixing, at the time of use, of at least two compositions:

[0284] **a)** a composition comprising:

[0285] - at least one compound chosen from hyaluronic acid and/or a derivative thereof, and mixtures thereof;

[0286] - at least one (bi)carbonate;

[0287] - at least one fatty acid;

[0288] - at least one dye;

[0289] - at least one surfactant other than fatty acids;

[0290] - at least one fatty substance other than fatty acids;

in which the total content of the compound(s) chosen from fatty acids ranges from 0.1% to 10% by weight, relative to the total weight of the composition, and

in which the dye(s) are chosen from oxidation dyes, direct dyes and mixtures thereof, preferably from oxidation dyes.

[0291] **b)** an oxidizing composition comprising one or more chemical oxidizing agents.

[0292] More particularly, the chemical oxidizing agent(s) are chosen from hydrogen peroxide, urea peroxide, alkali metal bromates or ferricyanides, peroxygenated salts, for instance persulfates, perborates, peracids and precursors thereof and percarbonates of alkali metals or alkaline-earth metals, and mixtures thereof. The oxidizing agent is preferably chosen from hydrogen peroxide.

[0293] The oxidizing composition is preferably an aqueous composition. In particular, it

comprises more than 5% by weight of water, preferably more than 10% by weight of water and even more advantageously more than 20% by weight of water relative to the total weight of the oxidizing composition.

[0294] The oxidizing composition may also comprise one or more organic solvents chosen from those listed previously; these solvents more particularly representing, when they are present, from 1% to 40% by weight and preferably from 5% to 30% by weight relative to the weight of the oxidizing composition. The oxidizing composition also preferably comprises one or more acidifying agents. Among the acidifying agents, examples that may be mentioned include mineral or organic acids, for instance hydrochloric acid, orthophosphoric acid, sulfuric acid, carboxylic acids, for instance acetic acid, tartaric acid, citric acid or lactic acid, and sulfonic acids.

[0295] In addition, the oxidizing composition may comprise fatty substances such as those described previously, preferably chosen from fatty alcohols, liquid hydrocarbons comprising more than 6 carbon atoms and mixtures thereof, surfactants and polymers.

[0296] Usually, the pH of the oxidizing composition, when it is aqueous, is less than 7, preferably ranging from 1.5 to 4.

[0297] Preferably, the oxidizing composition comprises hydrogen peroxide as oxidizing agent, in aqueous solution, the concentration of which ranges, more particularly, from 0.1% to 50%, more particularly between 0.5% and 20% and even more preferentially between 1% and 15% by weight, relative to the weight of the oxidizing composition.

Kit

[0298] Another subject of the invention is a multi-compartment device, preferably comprising two compartments, for dyeing keratin fibres, preferably the hair, comprising at least a first compartment containing the dye composition according to the invention and at least a second compartment containing an oxidizing composition as described above.

[0299] The compositions of the device according to the invention are packaged in separate compartments, optionally accompanied by suitable application means, which may be identical or different, such as fine brushes, coarse brushes or sponges.

[0300] The device mentioned above may also be equipped with a means for dispensing the desired mixture onto the hair, for instance the devices described in patent FR 2 586 913.

[0301] Finally, the present invention relates to the use of a composition as described above, for dyeing keratin fibres, and in particular the hair.

[0302] The examples that follow serve to illustrate the invention without, however, being limiting in nature.

Examples

[0303] In the examples that follow, all the amounts are given as mass percentages of active material (AM) relative to the total weight of the composition (unless otherwise mentioned).

Compositions

[0304] Example 1

[0305] The dye compositions **A**, **B** and **C** were prepared from the ingredients whose contents are indicated in the table below (% active material):

[0306] Dye compositions

[0307] [Table 1]

INCINAME	A(invention)	B(comparative)	C(comparative)
Ammoniumb carbonate	2.50	2.50	2.50
Resorcinol	0.40	0.40	0.40
Ammoniumhydroxide	2.88	2.88	2.88
Nonionicsurfactant	4.45	4.45	4.45
Antioxidant	0.50	0.50	0.50
Solvent	2.00	2.00	2.00
Tetrasodiumglutamatediacetate	0.24	0.24	0.24
Fattyacid(s)*	0.3	-	0.3
m-Aminophenol	0.04	0.04	0.04
2,4-DiaminophenoxyethanolHCl	0.004	0.004	0.004
Cetearylalcohol	16.00	16.00	16.00
Preservingagent	1.00	1.00	1.00
Mineraloil	2.00	2.00	2.00
Sodiumhyaluronate	0.05	0.05	-
Toluene-2,5-diamine	0.44	0.44	0.44
Water	qs100	qs100	qs100

[0308] * INCI Name: Stearic acid

[0309] At the time of use, each of the dye compositions **A**, **B** and **C** is mixed with 1.5 times its weight of oxidizing agent **O**. Each of the mixtures is then applied to locks of permanent-waved grey hair (PWG) and natural grey hair (NG) containing 90% white hairs, in a proportion of 5 g of mixture/g of hair.

[0310] After a leave-on time of 35 minutes at 27°C, the hair is rinsed, washed with a

standard shampoo and dried.

Results

[0311] The colorimetric measurements were performed using a Konica Minolta 3600 spectrophotometer (illuminant D65, angle 10°, specular component included) in the CIELab system.

[0312] Selectivity

[0313] The dyeing selectivity is the variation of the colour between natural hair (NG) and permanent-waved hair (PWG). The natural hair is representative of the nature of the hair at the root, whereas the permanent-waved hair is representative of the nature of the hair at the end. The selectivity enables evaluation of the colour homogeneity along the entire length of the hair fibre.

[0314] The selectivity is measured by:

[0315] ΔE , which is the variation in colour between the natural hair and the permanent-waved hair, is obtained from the formula:

$$\Delta E = \sqrt{(L^* - L_o^*)^2 + (a^* - a_o^*)^2 + (b^* - b_o^*)^2}$$

[0316] in which L^* represents the intensity and a^* and b^* represent the chromaticity of the dyed natural hair, and L_o^* represents the intensity and a_o^* and b_o^* represent the chromaticity of the dyed permanent-waved hair. The lower the value of ΔE , the lower the selectivity and the more uniform the colouring along the hair strands.

[0317] [Table 2]

	Type of hair	L^*	a^*	b^*	ΔE
A+O(invention)	NG	28.4	4.1	10.0	0.8
	PWG	27.7	3.7	9.9	
B+O(comparative)	NG	31.7	3.2	9.9	4.1
	PWG	27.7	3.1	9.0	
C+O(comparative)	NG	29.0	3.5	9.5	3.1
	PWG	25.9	3.6	8.8	

[0318] The locks of hair treated with the mixture A+O according to the invention have a much lower ΔE value than those treated with the comparative mixtures B+O and C+O. In other words, the mixture A+O according to the invention affords locks of hair with improved selectivity relative to those treated with the comparative mixtures B+O and C+O, and consequently improved colour homogeneity from the root to the tip of the hair.

[0319] Fastness

[0320] The persistence of the colouring is evaluated in the same manner. This is the colour difference ΔE (according to the above formula) between dyed locks before shampoo washing, and then after undergoing five shampoo washes. The lower the ΔE value, the more persistent the colour with respect to shampoo washing.

[0321] [Table 3]

	Numberofshampoow ashes	L*	a*	b*	ΔE
A+O(invention)	0	24.8	4.4	8.0	0.9
	5	24.9	4.7	8.8	
B+O(comparative)	0	24.4	4.4	9.4	3.6
	5	28.0	4.5	9.7	
C+O(comparative)	0	24.4	4.1	7.5	5.1
	5	27.7	5.6	11.1	

[0322] The locks of hair treated with the mixture A+O according to the invention have a much lower ΔE value than those treated with the comparative mixtures B+O and C+O.

[0323] In other words, the mixture A+O according to the invention affords a homogeneous coloured coating on hair which shows improved resistance to shampoo washing relative to hair treated with the comparative mixtures B+O and C+O.

[0324] In addition, the mixture A+O according to the invention affords good sensory performance.

[0325] Example 2

[0326] The compositions **A**, **B** and **O** were prepared from the ingredients whose contents are indicated in the table below (% active material):

Dye compositions

[0327] [Table 1]

	Ainvention	Bcomparative
AMMONIUMBICARBONATE	2.50	2.50
RESORCINOL	0.40	0.40
AMMONIUMHYDROXIDE	2.88	2.88
SOLVENT	2.00	2.00
NONIONIQUESURFACTANT	2.45	2.45
TETRASODIUMGLUTAMATEDIACETATE	0.24	0.24
FATTYACID(S)*	0.4	0.05

m-AMINOPHENOL	0.04	0.04
2,4-DIAMINOPHENOXYETHANOLHCL	0.004	0.004
CETEARYLALCOHOL	16.00	16.00
ANTIOXYDANT	0.50	0.50
MINERALOIL	2.00	2.00
SODIUMHYALURONATE	0.05	0.05
TOLUENE-2,5-DIAMINE	0.44	0.44
PRESERVINGAGENT,FRAGRANCE	1.2	1.2
WATER	QS100	QS100

[0328] * INCI Name : STEARIC ACID

Oxidizing composition

[0329]		O
	CETEARYLALCOHOL(and)CETEARETH-25	2.85
	TRIDECETH-2CARBOXAMIDEMEA	0.82
	GLYCERIN	0.5
	TETRASODIUMPYROPHOSPHATE	0.04
	SODIUMSALICYLATE	0.035
	TETRASODIUMETIDRONATE	0.2
	HYDROGENPEROXIDE	6
	PHOSPHORICACID	QspH2.2
	WATER	QS100

[0330] At the time of use, each of the dye compositions **A** and **B** is mixed with 1.5 times its weight of oxidizing composition **O**.

[0331] Each of the mixtures is then applied to locks of natural grey hair (NG) containing 90% white hairs and moderately sensitized hair (AS20), in a proportion of 5 g of mixture/g of hair.

[0332] After a leave-on time of 35 minutes at 27°C, the hair is rinsed, washed with a standard shampoo and dried.

[0333] The mixture **A+O** according to the invention affords locks of hair with improved selectivity relative to those treated with the comparative mixture **B+O**, and consequently improved colour homogeneity from the root to the tip of the hair.

Claims

[Claim 1]

Composition comprising:

- a) at least one compound chosen from hyaluronic acid and/or a derivative thereof, and mixtures thereof;
- b) at least one (bi)carbonate;
- c) at least one fatty acid;
- d) at least one dye

in which the total content of the compound(s) chosen from fatty acids ranges from 0.1% to 10% by weight, relative to the total weight of the composition, and

in which the dye(s) are chosen from oxidation dyes, direct dyes and mixtures thereof.

[Claim 2]

Composition according to Claim 1, in which the compound(s) chosen from hyaluronic acid and/or a derivative thereof and mixtures thereof are chosen from hyaluronic acid salts, hyaluronic acid hydrolysates, quaternized hyaluronic acid derivatives and salts thereof and acetylated hyaluronic acid derivatives and mixtures thereof, preferably chosen from hyaluronic acid salts and mixtures thereof, more preferentially sodium hyaluronate.

[Claim 3]

Composition according to either of the preceding claims, in which the total content of the compound(s) chosen from hyaluronic acid and/or a derivative thereof and mixtures thereof ranges from 0.001% to 10% by weight, preferentially from 0.003% to 5% by weight, more preferentially from 0.008% to 1% by weight, better still from 0.01% to 0.5% by weight, even better still from 0.02% to 0.1% by weight relative to the total weight of the composition.

[Claim 4]

Composition according to any one of the preceding claims, in which the (bi)carbonate(s) are chosen from alkali metal (bi)carbonates, alkaline-earth metal (bi)carbonates and ammonium (bi)carbonates, preferentially alkali metal (bi)carbonates, ammonium (bi)carbonates and mixtures thereof, more preferentially chosen from Na, K, Mg and Ca (bi)carbonates, ammonium (bi)carbonates and mixtures thereof, better still chosen from Na (bi)carbonate, K (bi)carbonate, ammonium (bi)carbonates and mixtures thereof, preferentially Na bicarbonate, K bicarbonate, ammonium bicarbonate and mixtures thereof, even better still ammonium bicarbonate.

- [Claim 5] Composition according to any one of the preceding claims, in which the total content of the (bi)carbonate(s) ranges from 0.01% to 20% by weight, preferably from 0.05% to 15% by weight, preferentially from 0.1% to 10% by weight, more preferentially from 0.4% to 5% by weight, better still from 0.5% to 4% by weight, and even better still from 1% to 3% by weight, relative to the total weight of the composition.
- [Claim 6] Composition according to any one of the preceding claims, in which the compound(s) chosen from fatty acids are chosen from fatty acids including at least one carboxylic acid group and a linear or branched, saturated or unsaturated alkyl chain comprising from 10 to 30 carbon atoms, in particular from 14 to 22 carbon atoms, preferably chosen from solid fatty acids, even more preferentially chosen from palmitic acid, lauric acid, myristic acid, stearic acid and mixtures thereof, better still from myristic acid, palmitic acid, stearic acid and mixtures thereof.
- [Claim 7] Composition according to any one of the preceding claims, in which the total content of the compound(s) chosen from fatty acids ranges from 0.1% to 5% by weight, preferentially from 0.1% to 1% by weight and better still from 0.2% to 0.5% by weight, relative to the total weight of the composition.
- [Claim 8] Composition according to any one of the preceding claims, in which the dye(s) are chosen from oxidation dyes, preferentially from oxidation bases optionally associated with one or more couplers.
- [Claim 9] Composition according to any one of the preceding claims, comprising at least one surfactant other than fatty acids, the surfactant(s) other than fatty acids preferably being chosen from nonionic surfactants, more preferentially chosen from saturated or unsaturated, linear or branched, oxyethylenated or oxypropylenated, C8 to C40 alcohols comprising from 1 to 100 mol of ethylene or propylene oxide, preferably from 2 to 50, more particularly from 2 to 40 mol, and including at least one C8-C20 alkyl chain.
- [Claim 10] Composition according to any one of the preceding claims, comprising at least one fatty substance other than fatty acids, preferably chosen from liquid hydrocarbons comprising more than 6 carbon atoms, plant oils, fatty alcohols, liquid fatty esters,

waxes, and mixtures thereof, more preferentially from solid fatty alcohols, mixtures of alkanes containing from 8 to 28 carbon atoms, more particularly from 15 to 28 carbon atoms, mineral oil, and mixtures thereof, better still from cetearyl alcohol, C15-19 Alkane (INCI name), mineral oil and mixtures thereof, better still cetearyl alcohol, mineral oil, and mixtures thereof.

- [Claim 11] Composition according to any one of the preceding claims, comprising at least one sequestrant, preferably chosen from diethylenetriaminepentaacetic acid (DTPA) and salts thereof, diethylenediaminetetraacetic acid (EDTA) and salts thereof, ethylenediaminedisuccinic acid (EDDS) and salts thereof, etidronic acid and salts thereof, N,N-dicarboxymethylglutamic acid (GLDA) and salts thereof, and mixtures thereof, more preferentially from N,N-dicarboxymethylglutamic acid (GLDA) and salts thereof, and mixtures thereof.
- [Claim 12] Composition according to any one of the preceding claims, comprising at least one alkaline agent other than (bi)carbonates, chosen from ammonium hydroxide, alkanolamines, alkali metal silicates and metasilicates, mineral hydroxides and mixtures thereof, more preferentially chosen from ammonium hydroxide, alkanolamines and mixtures thereof, better still chosen from ammonium hydroxide, monoethanolamine and mixtures thereof.
- [Claim 13] Composition according to any one of the preceding claims, not comprising any chemical oxidizing agent.
- [Claim 14] Composition according to any one of Claims 1 to 12, comprising at least one chemical oxidizing agent, preferably hydrogen peroxide.
- [Claim 15] Process for dyeing keratin fibres, preferably the hair, comprising the application to the keratin fibres of the composition as defined according to Claim 14.
- [Claim 16] Process according to Claim 15, comprising the application to the fibres of a mixture of:
- a) a composition according to any one of Claims 1 to 13,
 - b) an oxidizing composition comprising one or more chemical oxidizing agents, preferably hydrogen peroxide.
- [Claim 17] Multi-compartment device, preferably a two-compartment device, for dyeing keratin fibres, preferably the hair, comprising at least a first compartment containing a composition as defined according

to any one of Claims 1 to 13 and at least a second compartment containing an oxidizing composition comprising one or more chemical oxidizing agents, preferably hydrogen peroxide.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER INV. A61K8/19 A61K8/36 A61K8/73 A61Q5/10 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A61K A61Q Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
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X	DATABASE GNPD [Online] MINTEL; 28 January 2015 (2015-01-28), anonymous: "Hair Color Conditioner", XP093112293, Database accession no. 2941851	1-7,9, 10,13,15
Y	abstract Ingrédients; pages 1,2 ----- -/-	1-17
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 1 October 2024		Date of mailing of the international search report 16/10/2024
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Tullberg, Erik

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