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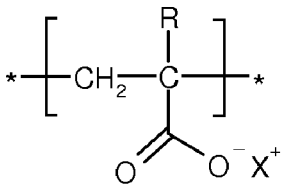
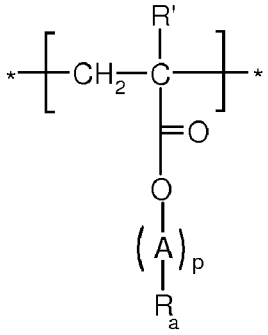


(T1)



(T2)

(57) Abstract: The present invention relates to a cosmetic composition comprising, in a physiologically acceptable medium: - a water content less than or equal to 63% by weight based on the total weight of the composition; - at least one particle chosen from coloring materials, non-coloring fillers, and mixtures thereof, and - at least one dispersant polymer consisting of two recurrent units (T_1) and (T_2).

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NOVEL COSMETIC USES OF DISPERSANT POLYMERS ASSOCIATED WITH AT LEAST ONE PARTICLE CHOSEN FROM COLORING MATERIALS AND NON-COLORING FILLERS

The present invention relates to novel cosmetic uses of dispersant polymers, associated with at least one particle chosen from coloring materials and non-coloring fillers. The present invention also relates to novel cosmetic compositions, notably make up and optionally care cosmetic compositions and in particular for eyelashes.

Many grafted copolymers are used as dispersants or stabilizers of suspensions or emulsions. The main function of the backbone for this type of copolymer may be to be adsorbed on the surface in order to stabilize the particle or the substrate to be dispersed. And the grafts in a good solvent extend in the continuous phase so as to provide steric stabilization of the emulsion or of the suspension. This type of scheme prevails when in the case of emulsions, the copolymers used are amphiphilic copolymers with a hydrophobic backbone and hydrophilic grafts in order to meet the desired stabilization. For suspensions, the copolymers used may be amphiphilic copolymers or dual hydrophilic copolymers like super plasticizers used in cement.

In a first phase, the polymers were introduced into the cement in order to improve the application and handling properties. And in a second phase, they were also used for reducing the amount of water introduced into the cement slurries in order to improve the mechanical properties. This improvement corresponds to a decrease in the porosity of the cement in the solid state due to water introduced in excess.

Polymers of the polycarboxylate type are usually used in the fields of cement and for example they provide dispersant properties which are superior to those of sulfonates. For example, their complexing properties towards divalent and trivalent cations are clearly greater and by means of this phenomenon, they provide greater fluidity to cement and this for a longer period. The results obtained on the properties of the concrete encourage the use of polycarboxylates as superplasticizers.

These dispersant polymers to this day are used in the field of cements and have never been used for cosmetic applications.

Thus, an object of the present invention consists of providing novel cosmetic compositions comprising dispersant polymers.

Another object of the present invention consists of providing novel cosmetic compositions, free of wax, which may be formulated under cold conditions.

Another object of the present invention consists of providing cosmetic compositions which do not change over time, allowing a smooth deposit.

An object of the present invention is more particularly to obtain a cosmetic composition having good application properties in terms of glidant and playtime (redeposition, retouching).

An object of the present invention is further to obtain a cosmetic composition having good resistance to water.

An object of the present invention is further to obtain a cosmetic composition having good resistance to friction.

An object of the present invention is further to obtain a cosmetic composition having good color properties.

An object of the present invention is further to obtain a composition for coating keratin fibers, preferably a mascara, giving rise to a volume effect on the eyelashes.

An object of the present invention is further to obtain a composition for coating keratin fibers, preferably a mascara, giving rise to a loading or covering deposit.

An object of the present invention is further to obtain a composition for coating keratin fibers, preferably a mascara, having good elongation properties for the eyelashes coated with such a composition.

An object of the present invention is further to obtain a composition for coating keratin fibers, preferably a mascara, having good bending properties for the eyelashes coated with such a composition.

An object of the present invention is further to obtain a composition for coating keratin fibers, preferably a mascara, having a good black intensity from a colorimetric and chromatic point of view.

An object of the present invention is further to obtain a composition for coating keratin fibers, preferably a mascara, having good adhesion on the eyelashes.

The present invention therefore relates to a cosmetic composition comprising, in a physiologically acceptable medium:

- a water content less than or equal to 63% by weight based on the total weight of the composition;
- at least one coloring material, and

- at least one dispersant polymer comprising a main chain and at least one grafted side chain on the main chain,

said main chain stemming from at least one monomer comprising at least one α,β-monoethylenic unsaturation and at least one function selected from the group consisting of the functions: carboxylic acid, carboxylic acid ester, carboxylic salt and mixtures thereof;

said side chain including at least one linear or branched C_2-C_8 alkyleneoxy radical or a mixture of alkyleneoxy radicals; said side chain being optionally substituted with a linear or branched alkyl chain comprising from 1 to 6 carbon atoms.

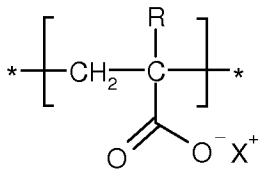
According to an embodiment, the present invention relates to a cosmetic composition comprising, in a physiologically acceptable medium:

- a water content less than or equal to 63% by weight based on the total weight of the composition;

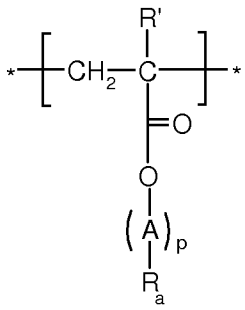
- at least one particle chosen from coloring materials, non-coloring fillers, and mixtures thereof, and

- at least one dispersant polymer;

wherein said dispersant polymer consists of two recurrent units (T_1) and (T_2), said recurrent units having the following respective formulae:



(T_1)



(T_2)

wherein:

- p is an integer ranging from 1 to 200;
- X is an alkaline or earth alkaline metal; or X^+ represents a quaternary ammonium;
- R_a represents H or a linear or branched alkyl group, comprising from 1 to 6 carbon atoms;

- R and R', either identical or different, represent independently of each other, H or a linear or branched alkyl group comprising from 1 to 10 carbon atoms; and
- A represents a linear or branched C_2-C_8 alkyleneoxy radical or their mixture.

Preferably, said particle is a coloring material.

According to an embodiment, the present invention relates to a cosmetic composition comprising, in a physiologically acceptable medium:

- a water content less than or equal to 63% by weight based on the total weight of the composition;
- at least one coloring material, and
- at least one dispersant polymer;

wherein said dispersant polymer consists of two recurrent units (T_1) and (T_2) as defined above.

According to an embodiment, the present invention relates to a cosmetic composition comprising, in a physiologically acceptable medium:

- a water content less than or equal to 63% by weight based on the total weight of the composition;
- at least one non-coloring filler, and
- at least one dispersant polymer;

wherein said dispersant polymer consists of two recurrent units (T_1) and (T_2) as defined above.

The present invention also relates to a cosmetic composition comprising, in a physiologically acceptable medium:

- at least one non-coloring filler, and
- at least one dispersant polymer;

wherein said dispersant polymer consists of two recurrent units (T_1) and (T_2) as defined above.

The present invention therefore relates to novel cosmetic compositions comprising a specific dispersant polymer.

The compositions according to the invention are cosmetic compositions intended for make-up and/or for the care of keratin materials, in particular keratin fibers, and notably eyelashes and eyebrows, in particular a mascara.

The compositions according to the invention are notably intended for make-up of the skin, lips, nails, eyelashes and eyebrows, but also for a use in the care of skin.

Preferably, the compositions according to the invention are compositions for the make-up of lips, nails, eyelashes and eyebrows, or foundation compositions. They may also be sunscreen compositions, anti-transpirant compositions or further anti-ageing compositions.

According to an embodiment, the water content of the compositions according to the invention is comprised between 5% and 60%, preferably between 8% and 50% and preferentially between 10% and 40%, still more preferentially between 20% and 35%, by weight based on the total weight of the composition.

Dispersant polymer

The dispersant polymers according to the invention consist of a main chain and of one or several grafted side chain(s) optionally substituted at its(their) end with an alkyl group comprising less than 6 carbon atoms.

According to a particular embodiment, the dispersant polymers consist of a main chain and of several grafted side chains optionally substituted at their end with an alkyl group comprising less than 6 carbon atoms.

Within the scope of the invention, and unless mentioned otherwise, the term of « main chain » encompasses the terms of « backbone chain » or « backbone » of the polymer. The main chain, comprising the greatest number of carbon atoms, differs from the side chains.

Within the scope of the present invention, the expression « chain (...) stemming from at least one monomer » means that said chain corresponds to the polymer obtained by polymerization of said monomer.

The dispersant polymers according to the invention are therefore also designated as « comb copolymers », the branches of the comb corresponding to the side chains (or pendant chains) consisting of grafts.

The main chain of the dispersant polymers according to the invention comprises at least one carboxylic acid function or of an ester or salt of the latter. It may also comprise mixtures of these ester and salt functions.

The main chain may therefore comprise pendant functions COOH, COOAlk or COO^-X^+, or mixtures thereof, wherein Alk represents an alkyl group comprising from

1 to 6 carbon atoms and X represents an alkaline or earth alkaline metal, or X^+ represents a quaternary ammonium.

By « alkyl group », is meant here a saturated, linear or branched aliphatic hydrocarbon group comprising, unless indicated otherwise, from 1 to 6 carbon atoms. As examples, mention may be made of the methyl, ethyl, n-propyl, isopropyl, butyl, isobutyl, tertbutyl or pentyl groups.

Within the scope of the present invention the term of « quaternary ammonium » designates a cation obtained, notably by alkylation from an amine of formula $NR_1R_2R_3$, each of the groups R_1, R_2 and R_3, being identical or different, representing H or an alkyl group comprising from 1 to 6 carbon atoms. In particular the quaternary ammoniums according to the invention encompass the ammonium cation NH_4^+.

According to a particular embodiment, the dispersant polymers consist of a main chain and of several side chains grafted, substituted at their end with an alkyl group comprising less than 6 carbon atoms, and preferably with a methyl group.

Within the scope of the invention, the expression « grafted side chain on the main chain » means that the side chain is connected to the main chain through a covalent bond.

For example mention may be made of chains of poly(ethylene oxide) and/or of poly(propylene oxide) grafted by means of an ester function to the main chain, the ester function may result from the reaction between a carboxylic acid function of the monomer of the main chain and a hydroxyl function of the poly(ethylene oxide) and/or of the poly(propylene oxide).

Within the scope of the invention, by « alkyleneoxy radical » is meant a radical -A'-O- wherein A' represents an alkylene radical. An « alkylene radical » is meant to designate a divalent radical derived from an alkyl group as defined earlier, lacking two hydrogen atoms. The alkyleneoxy radical may be linear or branched, A' therefore may represent a linear or branched alkylene radical, notably comprising from 2 to 8 carbon atoms. Preferably the alkyleneoxy radicals comprise 2 or 3 carbon atoms.

For example mention may be made of the groups $-CH_2-CH_2-O-$ (ethyleneoxy), $-CH_2-CH(CH_3)-O-$ or $-CH_2-CH_2-CH_2-O-$ (propyleneoxy).

Within the scope of the present invention, the side chains of the dispersant polymers may comprise mixtures of alkyleneoxy radicals of different sizes. According to this embodiment, the side chain may comprise a mixture of radicals $-(A'_1-O)$ and $(A'_2-O)-$, A'_1 and A'_2 representing different linear or branched alkylene

radicals. In particular, the side chain may comprise a mixture of ethyleneoxy and propyleneoxy radicals.

The side chain (or the side chains) of the dispersant polymer may be substituted with a linear or branched alkyl chain comprising from 1 to 6 carbon atoms, preferably from 1 to 4 carbon atoms, and preferentially 1 to 2 carbon atoms.

According to an embodiment, the main chain of the dispersant polymer stems from at least one monomer selected from (meth)acrylic acids, their esters, their salts and mixtures thereof.

According to this embodiment, the main chain of the polymer is selected from poly(meth)acrylic acids, esters of poly(meth)acrylic acids, poly(meth)acrylates and mixtures thereof.

According to an embodiment, the main chain of the dispersant polymer stems from a salt of methacrylic acid, notably sodium methacrylate. According to this embodiment, the main chain of the dispersant polymer is sodium polymethacrylate.

The dispersant polymers in addition to the main chain comprise one or several side chains, grafted on said main chain. In other words, the polymers according to the invention consist of a main polymeric chain comprising a given function (carboxylic acid, or a salt or ester thereof) via which the side chains are bound.

The dispersant polymers may be represented as consisting of a given number of recurrent units comprising recurrent units derived from (meth)acrylic acids from their esters, from their salts and from mixtures thereof, and grafted units, derived from the previous ones, comprising a graft including at least one alkyleneoxy radical as defined above, if necessary substituted with an alkyl chain as defined above.

According to an embodiment, the dispersant polymer comprises at least one non-substituted side chain. Preferably, all the side chains of the dispersant polymer are non-substituted. By « non-substituted side chain », is meant a side chain as defined including at least one linear or branched C_2-C_8 alkyleneoxy radical or a mixture of alkyleneoxy radicals and comprising a terminal hydrogen atom.

According to an embodiment, the dispersant polymer comprises at least one side chain substituted with a methyl or ethyl, notably methyl chain. Preferably, the side chains of the dispersant polymer are substituted with a methyl chain.

According to an embodiment, the dispersant polymer comprises at least one side chain consisting of ethyleneoxy, propyleneoxy radicals or mixtures thereof. Preferably the side chains of the dispersant polymer consist of ethyleneoxy, propylenoxy radicals or mixtures thereof.

According to an embodiment, the side chains of the polymer may be randomly, statistically distributed or in the form of sequences (block or sequenced copolymers).

The dispersant polymers according to the invention may be block copolymers corresponding to the assembling of blocks with side chains on the one hand and of blocks without side chains on the other hand.

Preferably, the side chains of the dispersant polymer are randomly or statistically distributed. Preferentially they are statistically distributed.

According to an embodiment, the dispersant polymer according to the invention is linear. In particular this is not a cross-linked polymer.

According to a preferred embodiment, the dispersant polymer is a comb copolymer comprising a main chain of polymethacrylic acid (or one of its salts) grafted with polyethylene oxide and/or polypropylene oxide side chains.

According to an embodiment, the side chains comprises from 20 to 200, preferably from 50 to 150, and preferentially from 50 to 100 alkyleneoxy groups.

According to an embodiment, the side chain exclusively comprises ethyleneoxy groups.

According to an embodiment, the side chain exclusively comprises propyleneoxy groups.

According to an embodiment, the side chain comprises a mixture of ethyleneoxy and propyleneoxy groups, the latter being randomly or statistically distributed.

According to an embodiment, the weight average molecular mass (Mw) of the aforementioned dispersant polymer ranges from 10,000 to 4,000,000 g/mol, preferably from 20,000 to 2,000,000 g/mol and even more preferentially from 30,000 to 1,900,000 g/mol.

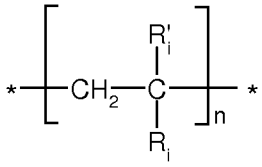
Preferably, the weight average molecular mass (Mw) of the aforementioned dispersant polymer ranges from 40,000 to 1,500,000, preferably from 42,000 to 1,000,000, preferably from 45,000 to 500,000 and still preferentially from 50,000 to 100,000 g/mol.

According to a preferred embodiment, the weight average molecular mass (Mw) of the aforementioned dispersant polymer ranges from 20,000 to 300,000 g/mol, preferably from 20,000 to 200,000 g/mol and preferentially from 30,000 g/mol to 120,000 g/mol. Preferably, the weight average molecular mass (Mw) of the aforementioned dispersant polymer ranges from 40,000 to 80,000 g/mol.

According to a more preferred embodiment, the weight average molecular mass (Mw) of the aforementioned dispersant polymer ranges from 50,000 to 90,000 g/mol, preferably from 70,000 to 80,000 g/mol. Preferentially, the weight average molecular mass (Mw) of the aforementioned dispersant polymer is equal to about 75,000 g/mol.

By selecting this suitable range of molecular masses it is possible to have a good compromise as regards a limitation of the depletion phenomena on the one hand and efficiency not sensitive to the concentration on the other hand.

According to an embodiment, the dispersant polymer according to the invention fits the following formula (I):



(I)

wherein:

- n is an integer ranging from 50 to 4,000, preferably from 60 to 2,500;
- i is an integer ranging from 1 to n;
- the groups R'_i, either identical or different represent independently of each other, H or a linear or branched alkyl group comprising from 1 to 10, preferably from 1 to 5, and preferentially 1 or 2 carbon atoms; and
- the groups R_i, either identical or different, are selected, independently of each other from the group consisting of: -C(=O)OH, $-C(=O)O^-X^+$ and $-C(=O)O-(A)_p-R_a$, at least one of the groups R_i representing $-C(=O)O-(A)_p-R_a$, wherein:
  - X is an alkaline or earth alkaline metal, notably Na or K; or X^+ represents a quaternary ammonium; R_a represents H or a linear or branched alkyl group, comprising from 1 to 6, preferably from 1 to 4 and preferentially 1 or 2 carbon atoms;
  - A represents a linear or branched C_2-C_8 alkyleneoxy radical or a mixture thereof; and
  - p is an integer ranging from 1 to 200, preferably from 50 to 150.

The dispersant polymer according to the invention may therefore consist in the repetition of n units $-CH_2-CH(R'_i)(R_i)-$, each of these units may be identical or different, according to the nature of R_i and R'_i for each unit, and at least one of these units comprising a group $-C(=O)O-(A)_p-R_a$, corresponding to a grafted side chain.

The preferred dispersant polymers of the invention are prepared from two distinct monomer units corresponding to the recurrent units (T_1) and (T_2) as defined above. They do not comprise any other recurrent units.

Preferably, the recurring units (T_1) and (T_2) are statistically distributed.

According to an embodiment, in the recurrent unit (T_2), R_a is H, methyl or ethyl.

According to an embodiment, in the recurrent unit (T_2), R_a is methyl or ethyl.

According to an embodiment, in the recurrent unit (T_2), A is an ethyleneoxy radical, a propyleneoxy radical or mixtures thereof.

According to an embodiment, the dispersant polymer according to the invention comprises at least one recurrent unit (T_1) and at least one recurrent unit (T_2), said recurrent units being as defined above.

According to an embodiment, the dispersant polymer consists of x recurrent units (T_1) and y recurrent units (T_2), these units being randomly or statistically distributed, preferably statistically distributed, wherein:

- x is an integer ranging from 50 to 3,000, preferably from 60 to 1,500; and
- y is an integer ranging from 5 to 1,000, preferably from 5 to 600; the sum x+y corresponding to the number n defined above.

According to the invention, the recurrent units (T_1) and (T_2) may be randomly alternated in the aforementioned polymer.

According to the invention, the recurrent units (T_1) and (T_2) may be statistically alternated in the aforementioned polymer.

According to the invention, the recurrent units (T_1) and (T_2) may be distributed with blocks or sequences in the aforementioned polymer.

According to an embodiment, in the formulae (I), (T_1) and (T_2) defined above, X represents Na.

According to an embodiment, in the formula (I) and (T_2) defined above, each R_a represents H or a methyl group.

According to an embodiment, in the formula (I) and (T_2) defined above, each R_a represents H.

According to an embodiment, in the formulae (I) and (T_2) defined above, each R_a represents a methyl group.

According to an embodiment, in the formula (T_1) defined above, R is H or a methyl group.

According to an embodiment, in the formula (I) defined above, the groups R'_i are H or a methyl group.

According to an embodiment, in the formula (T_2) defined above R' is H or a methyl group.

According to an embodiment, in the formula (T_2) defined above, the radical A fits the following formula (II) or (III):

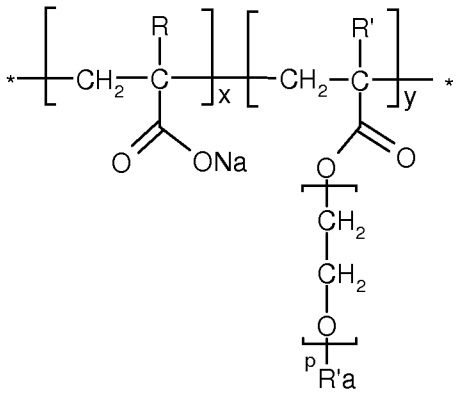
(II) or (III)

wherein:

- A_1 represents a radical $–CH_2CH_2O-$;
- A_2 represents a radical $–CH_2CH(CH_3)O-$;
- j and k, either identical or different, represent independently of each other, an integer ranging from 0 to 50, preferably from 0 to 25;

provided that the sum j + k is greater than or equal to 1, and preferably greater than or equal to 50.

According to an embodiment, the dispersant polymer fits the following formula:

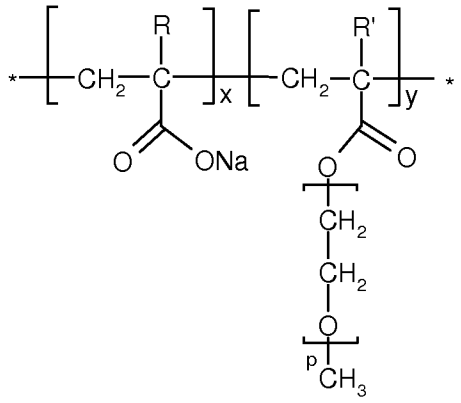


wherein:

- R'_a is H or CH_3;
- x is an integer ranging from 50 to 3,000;
- y is an integer ranging from 5 to 1,000; and
- p is an integer ranging from 20 to 200,

the units $-CH_2-C(R)(C(=O)ONa)-$ and $-CH_2-C(R')(C(=O)O-(CH_2-CH_2-O)_pR'a)-$ being randomly or statistically distributed, preferably statistically distributed.

Preferably, the dispersant polymer fits the following formula:



wherein x, y and p are as defined above

the units -CH_2-C(R)(C(=O)ONa)- and -CH_2-C(R')(C(=O)O-(CH_2-CH_2-O)$_p$$CH_3$)- being randomly or statistically distributed, preferably statistically distributed.

According to an embodiment, the dispersant polymer is a copolymer stemming from methacrylic acid and from poly(ethylene oxide) methyl ether methacrylate.

According to another embodiment, the polymer is a copolymer stemming from methacrylic acid and from poly(propylene oxide) methyl ether methacrylate.

According to an embodiment, the dispersant polymer is a copolymer stemming from methacrylic acid and from poly(ethylene oxide) (propylene oxide) methyl ether methacrylate.

The dispersant polymer according to the invention is for example described in document US 6,034,208 and is obtained by known methods, and notably by radical polymerization in a solution, in a direct or reverse emulsion, in a suspension or precipitation in solvents, in the presence of initiation systems and transfer agents, or further in a controlled radical polymerization and preferentially in polymerization controlled with nitroxides (NMP) or cobaloximes, in atom transfer radical polymerization (ATRP), in radical polymerization controlled by sulfur-containing derivatives, selected from carbamates, dithioesters or trithiocarbonates (RAFT) or xanthates.

It may be completely or partly neutralized by one or several neutralization agents having a monovalent or polyvalent cation, said agents being preferentially selected from ammonia or from calcium, magnesium hydroxides and/or oxides, or from sodium, potassium, lithium hydroxides or from aliphatic and/or cyclic primary, secondary or tertiary amines such as preferentially stearylamine, ethanolamines, (mono-, di-, tri-ethanolamine), mono and di-ethylamine, cyclohexylamine, methylcyclohexylamine amino methyl propanol, morpholine, and preferentially in

that the neutralization agent is selected from tri-ethanolamine and sodium hydroxide.

It may also be separated into several phases, according to static or dynamic methods, with one or several polar solvents preferentially belonging to the group consisting of water, methanol, ethanol, propanol, isopropanol, butanols, acetone, tetrhydrofurane or mixtures thereof.

According to an embodiment, the dispersant polymers according to the invention are present in a content ranging from 0.1% to 10% by weight based on the total weight of the composition.

Preferably, the dispersant polymers according to the invention are present in a content ranging from 0.1% to 5% by weight of active materials based on the weight of the total composition.

According to a preferred embodiment, the dispersant polymer content according to the invention is comprised between 0.2% and 2.5% by weight of active material.

These preferred amounts of dispersant polymer thus make possible the preparation of an emulsion and/or dispersion without necessarily adding any additional emulsifying and/or dispersing compound.

According to an embodiment, the dispersant polymer is water-soluble.

In the present invention, the dispersant polymer is not in the form of nanoparticles.

In the present invention, the dispersant polymer is not adsorbed on the surface in order to stabilize the particle or the substrate to be dispersed. It is not covalently bonded to particles present in the cosmetic composition. Such dispersant polymer is thus not used for treating the surface of solid particles to be dispersed.

In the present invention, the dispersant polymer is used as the main dispersant and thus allows the formation of an emulsion and/or dispersion by itself. In particular, this dispersant polymer acts as a dispersant of particles such as pigments or fillers present in the cosmetic composition.

Preferably, the dispersant polymer of the invention is used in an aqueous solution, and not in the form of a dispersion. According to the invention, the dispersant polymer of the invention is not in the form of a dispersion of particles in a non-aqueous medium.

Physiologically acceptable medium

In addition to the dispersant polymer indicated earlier, a composition according to the invention comprises a physiologically acceptable medium.

A « physiologically acceptable medium » is meant to refer to a medium particularly suitable for applying a composition of the invention on keratin materials.

The physiologically acceptable medium is generally adapted to the nature of the support on which the composition should be applied, as well as to the aspect under which the composition should be conditioned.

Coloring materials

According to an embodiment, the cosmetic compositions according to the invention comprise at least one coloring material.

Within the scope of the present invention the coloring materials used give the possibility of providing the composition with a color preferably other than white.

This (these) coloring material(s) is(are) preferably selected from powdery materials, liposoluble coloring agents, water-soluble coloring agents, and mixtures thereof.

Preferably, the compositions according to the invention include at least one powdery coloring material. Powdery coloring materials may be selected from pigments and mothers-of-pearl, preferably from pigments.

The pigments may be white or colored, mineral and/or organic, coated or not. Mention may be made among mineral pigments of metal oxides, in particular titanium dioxide, optionally surface-treated, zirconium, zinc or cerium oxide as well as iron, titanium or chromium oxides, manganese violet, ultramarine blue, chromium hydrate and ferric blue. Among organic pigments, mention may be made of carbon black, pigments of the D & C type, and lacquers based on cochineal carmine, barium, strontium, calcium, aluminum.

The mothers-of-pearl may be selected from white mother-of-pearl pigments such as mica covered with titanium or bismuth oxychloride, colored mother-of-pearl pigments such as titanium mica with iron oxides, titanium mica notably with ferric blue or chromium oxides, titanium mica with an organic pigment of the aforementioned type as well as mother-of-pearl pigments based on bismuth oxychloride.

The liposoluble coloring agents are for example Sudan red, D&C Red 17, D&C Green 6, β-carotene, soya bean oil, Sudan brown, D&C Yellow 11, D&C Violet 2, D&C Orange 5, quinoline yellow, rocou.

Preferably, the coloring materials present in the compositions according to the invention are selected from pigments, and preferably from metal oxides, and preferentially from iron oxides.

These coloring materials may be present in a content ranging from 0.01% to 60% by weight based on the total weight of the composition, in particular from 3% to 60%, preferably from 3% to 20% by weight based on the total weight of the composition.

Preferably, the coloring material(s) is(are) selected from one or several metal oxides present at a content greater than or equal to 2% by weight based on the total weight of the composition, advantageously comprised inclusively between 3% and 50%, preferably between 3% and 20% by weight based on the total weight of the composition.

According to a preferred embodiment, the coloring material is black iron oxide. Preferably, the compositions of the invention comprise from 15% to 60%, notably from 15% to 20%, by weight of black iron oxide based on total weight of the composition.

The compositions according to the invention comprising black iron oxide as a coloring material are particularly advantageous for mascaras. Indeed, they give the possibility of obtaining a color effect similar to the one obtained with mascara compositions comprising carbon black.

It was therefore seen that the use of dispersant polymers according to the invention gives the possibility of obtaining an intense black with black iron oxide, equivalent to the blacks obtained with formulations based on carbon black.

The intensity of the black is measured according to the procedure described in the experimental part hereafter.

According to an embodiment, the compositions according to the invention comprise at least one inorganic pigment.

According to an embodiment, the compositions according to the invention comprise at least 1% by weight of inorganic pigment(s) based on the total weight of the composition. These inorganic pigments are preferably selected from metal oxides as defined above.

According to a particularly preferred embodiment, the inorganic pigments present in the compositions according to the invention are different from titanium dioxide.

According to an embodiment, the compositions according to the invention comprise at least one iron oxide, and preferably with a content greater than or equal to 1% by weight based on the total weight of the composition.

According to an embodiment, the compositions according to the invention comprise at least one inorganic pigment, preferably at least one metal pigment, more preferably at least one metal oxide, and most preferably iron oxide(s).

According to an embodiment, in the compositions of the invention, the dispersant polymer content according to the invention is comprised between 0.6 and 5, and preferably between 1.2 and 3, and more preferably is of 2 by weight based on the weight of the pigments. Preferably, said pigments are chosen from the following: titanium dioxide (HOMBITAN FF PHARMA, Sachtleben), iron oxides: SUNPURO BLACK IRON OXIDE C33-7001 (SUN), SUNPURO YELLOW IRON OXIDE C33-9001 (SUN) and SUNPURO RED IRON OXIDE C33-8001 (SUN).

Non-coloring fillers

The compositions according to the invention may also comprise at least one non-coloring filler.

By « non-coloring fillers » should be understood colorless or white solid particles of all shapes, which appear in an insoluble form and dispersed in the medium of the composition. Of mineral or organic nature, they give the possibility of giving the composition softness, mattness and uniformity to the makeup.

The non-coloring fillers may be selected from those well known to one skilled in the art and currently used in cosmetic compositions. The fillers may be mineral or organic, lamellar, globular, spherical or bowl-shaped, with fibers or of any other intermediate form between these defined forms.

The fillers according to the invention may either be surface-coated or not, and in particular, they may be surface-treated with silicones, amino acids, fluorinated derivatives or any other substance promoting dispersion and compatibility of the filler in the composition.

According to an embodiment, the compositions of the invention comprise at least one non-coloring filler selected from non-coloring mineral or organic fillers.

Among the mineral fillers which may be used in the compositions according to the invention, mention may be made of talcum, mica, silica, magnesium and aluminum silicates, trimethyl siloxysilicate, kaolin, bentone, calcium carbonate and

magnesium hydrogen-carbonate, hydroxyapatite, boron nitride, hollow silica microspheres (Silica Beads from Maprecos), glass or ceramic microcapsules, fillers based on silica like Aerosil 200, Aerosil 300; Sunsphere H-33, Sunsphere H-51 marketed by Asahi Glass; Chemicelen marketed by Asahi Chemical; silica and titanium dioxide composites such as the TSG series marketed by Nippon Sheet Glass, pearlite powders, fluorphlogopite, and mixtures thereof.

Among the organic fillers which may be used in the compositions according to the invention, mention may be made of polyamide powders such as Nylon-12® microspheres marketed under the name of SP-500 by TORAY, poly-b-alanine and polyethylene microspheres, polytetrafluoroethylene (Teflon®) powders, lauroyl-lysine, starch, tetrafluoroethylene polymer powders, hollow polymer microspheres, for example comprising an (alkyl)acrylate, such as EXPANCEL® (NOBEL INDUSTRIE), metal soaps derived from organic carboxylic acids having from 8 to 22 carbon atoms, preferably from 12 to 18 carbon atoms, for example, zinc, magnesium or lithium stearate, zinc laurate, magnesium myristate, Polypore® L 200 (Chemdal Corporation), silicone resin microbeads (Tospearl® from Toshiba for example), polyurethane powders, in particular cross-linked polyurethane powders comprising a copolymer, said copolymer comprising trimethylol hexyllactone, like the hexamethylene di-isocyanate/trimethylol hexyllactone polymer, marketed under the name of PLASTIC POWDER D-400® or PLASTIC POWDER D-800® by TOSHIKI, carnauba microwaxes, such as the one marketed under the name of MicroCare 350® by MICRO POWDERS, synthetic wax microwaxes, such as the one marketed under the name of MicroEase 114S® by MICRO POWDERS, microwaxes consisting of a mixture of carnauba wax and of polyethylene wax, such as those marketed under the names of Micro Care 300® and 310® by MICRO POWDERS, microwaxes consisting of a mixture of carnauba wax and of synthetic wax, such as the one marketed under the name of Micro Care 325® by MICRO POWDERS, polyethylene microwaxes, such as those marketed under the names of Micropoly 200®, 220®, 220L® and 250S® by MICRO POWDERS; fibers of mineral or organic, natural or synthetic origin. They may be short or long, of unit length or organized for example as braids, either hollow or solid. Their shape may be any shape and notably with a circular or polygonal section (square, hexagonal or octagonal) according to the relevant specific application. In particular, their ends are blunt and/or polished in order to avoid any injury. The fibers have a length ranging from 1 µm to 10 mm, preferably from 0.1 mm to 5 mm and better from 0.3 mm to 3 mm. Their section may be comprised in a circle with a diameter ranging from 2 nm to

500 µm, preferably ranging from 100 nm to 100 µm and better from 1 µm to 50 µm. As fibers which may be used in the compositions according to the invention, mention may be made of non-rigid fibers such as polyamide fibers (Nylon®) or rigid fibers such as polyimide-amide fibers like those sold under the names of KERMEL®, KERMEL TECH® by RHODIA or poly-(p-phenylene-terephthalamide) (or aramide) fibers notably sold under the name of Kevlar® by DUPONT DE NEMOURS, and mixtures thereof.

According to a preferred embodiment, the non-coloring fillers according to the invention are selected from mineral fillers and organic fillers as defined above.

Preferably, the non-coloring fillers present in the compositions according to the invention comprise silica and are notably silica particles or silica.

Preferably, the non-coloring fillers present in the compositions according to the invention comprise polyamide fibers (Nylon®).

The fillers may represent from 0.1% to 50%, preferably from 0.1% to 25%, in particular from 0.2% to 20% by weight based on the total weight of the composition.

According to an advantageous embodiment, in the compositions according to the invention, the fillers have an index of refraction (nd) of less than 2.

According to an embodiment, the compositions according to the invention comprise at least one hard mineral filler, in particular silica, notably in the form of spheres.

More preferably, the compositions according to the invention comprise at least one hard filler, the hardness of which being preferably greater than or equal to 3, in particular greater than or equal to 4, and more preferably greater than or equal to 5, in the Mohs scale.

The following particles may be used in particular:

Name	Size	Hardness	Aspect	Form
Zinc oxide	10-30 nm	5	pale-yellow powder	irregular
Nylon-6 pown der	50-200 µm	6	white powder	spherical
Polyamide fibers	0.3 mm	5	fibrous	stretched out
Glass Micro-balls	2-20 µm	6	gray powder	spherical
Aluminum oxide	125 µm	9	white powder	irregular
Aluminum oxide	100 µm	9	white powder	irregular

Aluminum oxide	200 µm	9	white powder	irregular
Alumina micro-balls	8 µm	9	white powder	spherical
Perlite	150 µm	5.5	white powder	spherical
Diamond powder	0-3 µm	10	gray powder	spherical
Diamond powder	30-50 µm	10	gray powder	spherical
Pumice-stone powder	260-287 µm	6	gray powder	irregular
Pumice-stone powder	250 µm	6	gray powder	irregular
Pumice-stone powder	0-125 µm	6	gray powder	irregular
Pumice-stone powder	0-75 µm	6	gray powder	irregular
Sand bora bora $CaCO_3$		~4	gray powder	spherical
Amorphous silica	16 µm	7	white powder	spherical
Rose de Brignoles $CaCO_3$	700-800 µm	4	rose powder	spherical
Ground stem of bamboo		~7	white powder	spherical
Alumina micro-balls	8 µm	9	white powder	spherical
Nylon-6 micro-balls	8 µm	9	white powder	spherical

The present invention also relates to the use of mineral fillers such as those described above in mascara compositions according to the invention for improving the bending properties of eyelashes coated with such compositions.

Thus, according to an embodiment, when the compositions according to the invention comprise a hard mineral filler as defined above, and in particular selected from the group consisting of silica, mica, talcum, boron nitride, calcium sulfate, pumice stone, kaolin, bismuth oxychloride, titanium dioxide, barium sulfate and calcium carbonate, the latter having good bending properties for eyelashes coated with such compositions.

These bending properties are measured according to the procedure described hereafter in the experimental part.

The present invention also relates to the use of a dispersant polymer as defined above associated with organic particles for improving playtime properties.

According to an embodiment, the compositions according to the invention comprise at least one organic filler, in particular nylon particles or further an organic filler selected from the following fillers: lauryl lysine, PMMA, PTFE, acrylate copolymers, silicone resins, paraffin wax or polyurethanes as listed above.

In particular for compositions comprising nylon particles, it was observed that very good properties in terms of playtime (redeposition, retouching) were obtained.

These playtime properties are measured according to procedures described hereafter in the experimental part.

The present invention therefore also relates to the use of a dispersant polymer as defined above associated with nylon particles for improving the playtime properties.

According to a particular embodiment, the cosmetic compositions of the invention may comprise both coloring material(s) and non-coloring filler(s).

Thickeners

The cosmetic compositions according to the invention may further comprise at least one thickener, preferably a hydrophilic thickener, notably gums.

These thickening agents are preferably hydrophilic, i.e. soluble or dispersible in water.

In particular mention may be made of water-soluble or water-dispersible thickener polymers. The latter may notably be selected from: polysaccharide biopolymers such as xanthan gum, guar gum, carob gum, gum arabic, scleroglucans, chitin and chitosan derivatives, carrageenans, gellans, algenates, celluloses such as microcrystalline cellulose, carboxymethylcellulose, hydroxyethylcellulose, hydroxymethylcellulose, and hydroxypropylcellulose; and mixtures thereof.

According to an embodiment, the compositions of the invention comprise a thickening agent selected from polysaccharide biopolymers like gum Arabic.

The compositions of the invention may also comprise hydroxyethylcellulose.

According to an embodiment, a composition of the invention may comprise thickening agents in an active material content from 0.01% to 10% by weight, notably from 0.1% to 5% by weight, in particular from 1% to 5% by weight based on the total weight of the composition.

Film-forming polymers

The compositions according to the present application preferably include at least one hydrophilic or lipophilic, preferably hydrophilic, film-forming polymer.

The hydrophilic film-forming polymer preferably appears as dispersion in an aqueous medium.

According to an embodiment, the compositions of the invention comprise at least one film-forming polymer as particles dispersed in water.

In the present application, by « film-forming polymer » is meant a polymer capable of forming by itself or in the presence of an auxiliary film-forming agent, a macroscopically continuous deposit, and preferably a cohesive deposit, and still better a deposit for which the cohesion and mechanical properties are such that said deposit may be individually isolated and handled, for example when said deposit is made by casting on an anti-adhesive surface such as a Teflon or silicone surface.

Generally, the dry material content of a « film-forming polymer » of the compositions according to the present application ranges from 0.1% to 40%, preferably from 1% to 35%, preferably from 5% to 30% by weight, and better from 10% to 25% by weight based on the total weight of the composition.

Among the film-forming polymers which may be used in the composition of the present invention, mention may be made of synthetic polymers of the radical type or of the polycondensate type, polymers of natural origin, and mixtures thereof.

Thus, preferably, the film-forming polymer may be present in the composition as dispersed particles in an aqueous phase, generally known as latex or pseudolatex. The techniques for preparing the dispersions are well known to one skilled in the art.

As an aqueous dispersion of a film-forming polymer, it is possible to use acrylic dispersions sold under the names of Neocryl XK-90®, Neocryl A-1070®, Neocryl A-1090®, Neocryl BT-62®, Neocryl A-1079® and Neocryl A-523® by AVECIA-NEORESINS, Dow Latex 432® by DOW CHEMICAL, Daitosol 5000 AD® or Daitosol 5000 SJ® by DAITO KASEY KOGYO; Syntran 5760® by Interpolymer, Allianz Opt® by Rohm and Haas or further aqueous dispersions of polyurethane sold under the names of Neorez R-981® and Neorez R-974® by AVECIA-NEORESINS, Avalure UR-405®, Avalure UR-410®, Avalure UR-425®, Avalure UR-450®, Sancure 875®, Avalure UR-445® and Sancure 2060® by NOVEON, Impranil 85® by BAYER, Aquamere H-1511® by HYDROMER; sulfopolyesters sold under the brand name Eastman AQ® by Eastman Chemical Products, vinyl dispersions such as Mexomer PAM®, aqueous dispersions of polyvinyl acetate like « Vinylbran® » from Nisshin Chemical or those marketed by UNION CARBIDE, aqueous dispersions of vinyl pyrrolidone/ dimethylaminopropyl methacrylamide/lauryldimethylpropylmethacryl-amidoammonium chloride terpolymer such as Styleze W from ISP, aqueous dispersions of hybrid polyurethane/polyacrylics polymers such as those marketed

under the references of « Hybridur® » by AIR PRODUCTS or « "Duromer® » from NATIONAL STARCH, core/shell type dispersions: for example those marketed by ATOFINA under reference Kynar (fluorinated core, acrylic shell) or further those described in document US 5,188,899 (silica core, silicone shell) and mixtures thereof.

Preferably, the cosmetic compositions according to the invention comprise an aqueous dispersion Syntran 5760® marketed by Interpolymer.

The compositions of the invention may further comprise an aqueous phase.

A water suitable for the invention may be a floral water such as cornflower water and/or a mineral water such as VITTEL water, LUCAS water or LA ROCHE POSAY water and/or thermal water.

The aqueous phase may also comprise organic solvents miscible with water (at room temperature 25°C) such as for example monoalcohols having from 2 to 6 carbon atoms such as ethanol, isopropanol; polyols notably having from 2 to 20 carbon atoms, preferably from 2 to 10 carbon atoms, and preferentially having from 2 to 6 carbon atoms, such as glycerol, propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, caprylylglycol, dipropylene glycol, diethylene glycol; glycol ethers (notably having from 3 to 16 carbon atoms) such as mono-, di- or tri-propylene glycol (C_1-C_4)alkyl ethers, mono-, di- or tri-ethylene glycol (C_1-C_4) alkyl ethers and mixtures thereof.

According to an embodiment, the aqueous phase of the compositions of the invention comprises a polyol notably pentylene glycol, and a monoalcohol, notably ethanol.

In particular, the aqueous phase of the compositions of the invention may comprise ethanol and pentylene glycol.

Waxes

The compositions according to the invention may further comprise at least one wax.

The wax(es) generally is(are) a lipophilic compound, solid at room temperature (25°C), with a solid/liquid state reversible transition, having a melting point greater than or equal to 30°C which may range up to 200°C and notably up to 120°C.

In the sense of the invention, the melting temperature corresponds to the most endothermic peak temperature observed in thermal analysis (DSC) as described in

the ISO 11357-3 1999 standard. The melting point of the wax may be measured with a differential scanning calorimeter (DSC), for example the calorimeter sold under the name of « "DSC Q2000 » by TA Instruments.

Preferably, the waxes have a melting enthalpy ΔHf greater than or equal to 70 J/g.

Preferably, the waxes include at least one crystallizable portion, visible with X-ray observations.

The measurement procedure is the following:

A sample of 5 mg of wax positioned in a crucible is subject to a first rise in temperature from -20°C to 120°C, at the heating rate of 10°C /minute, and then is cooled from 120°C to -20°C at a cooling rate of 10°C/minute and finally subject to a second rise in temperature from -20°C to 120°C at a heating rate of 5°C/minute. During the second temperature rise, the following parameters are measured:

- the melting point (T_f) of the wax, as mentioned earlier corresponding to the temperature of the most endothermic peak of the observed melting curve, representing the change in the absorbed power difference versus temperature,
- ΔHf: the melting enthalpy of the wax corresponding to the integral of the whole of the obtained melting curve. This melting enthalpy of the wax is the amount of energy required for having the compound pass from the solid state to the liquid state. It is expressed in J/g.

The wax(es) may be hydrocarbon, fluorinated and/or silicone wax(es) and be of plant, mineral, animal and/or synthetic origin.

The compositions according to the invention may also comprise a pre-fabricated wax microdispersion, notably as described in application FR 2 687 569.

According to an embodiment, the compositions of the invention comprise less than 15% by weight of wax(es) based on the total weight of the composition, and preferably from 0 to 12%, and preferentially from 0 to 5%. According to an embodiment, the compositions according to the invention are wax-free.

Non-volatile oils

The composition according to the invention may comprise at least one non-volatile oil.

By « non-volatile oil », is meant an oil remaining on the skin or on the keratin fiber at room temperature and pressure. More specifically, a non-volatile oil has an evaporation rate strictly less than 0.01 mg/cm^2/min.

Said at least one non-volatile oil suitable for the present invention may be selected from hydrocarbon oils and silicone oils.

The non-volatile hydrocarbon oils suitable for the present invention may in particular be selected from:

- hydrocarbon oils of plant origin, such as triglycerides consisting of fatty acid and glycerol esters, the fatty acids of which may have various chain lengths from C_4 to C_{28}, the latter may be linear or branched, saturated or unsaturated; these oils are notably wheat germ, sunflower, grape pip, sesame, corn, apricot, castor, shea, avocado, olive, soyabean oils, sweet almond, palm, rapeseed, cotton, hazelnut, macadamia, jojoba, alfalfa, poppyseed, squash, sesame, pumpkin, rapeseed, blackcurrant, evening primrose, millet, barley, quinoa, rye, safflower, candlenut tree, passiflora, rose hip oil; or further triglycerides of caprylic/capric acids like those sold by Stéarineries Dubois or those sold under the names of Miglyol 810®, 812® and 818® by Sasol;
- synthetic ethers having from 10 to 40 carbon atoms;
- linear or branched hydrocarbons of mineral or synthetic origin such as vaseline, polydecenes, hydrogenated polyisobutene, such as parleam, squalane and mixtures thereof;
- synthetic esters such as the oils of formula R1COOR2 wherein R1 represents the remainder of a linear or branched fatty acid including from 1 to 40 carbon atoms and R2 represents a notably branched hydrocarbon chain containing from 1 to 40 carbon atoms provided that R1 + R2 is ≥ 10, such as for example Purcellin oil (cetostearyl octanoate), isopropyl myristate, isopropyl palmitate, C_{12}-C_{15} alcohol benzoates, hexyl laurate, diisopropyl adipate, isononyl isononanoate, 2-ethyl-hexyl palmitate, isostearate, octanoates, decanoates or ricinoleates of alcohols or polyalcohols such as propylene glycol dioctanoates; hydroxylated esters such as isostearyl lactate, di-isostearyl malates; and esters of pentaerythritol;
- liquid fatty alcohols at room temperature with a branched and/or unsaturated carbon chain having from 12 to 26 carbon atoms such as octyl dodecanol, isostearyl alcohol, oleyl alcohol, 2-hexyldecanol, 2-butyloctanol, 2-undecylpentadecanol;
- higher fatty acids such as oleic acid, linoleic acid, linoleic acid and mixtures thereof.

Non-volatile silicone oils suitable for present invention may in particular be selected from:

- non-volatile silicone oils which may be used in the composition according to the invention may be non-volatile polydimethylsiloxanes (PDMS),

polydimethylsiloxanes including alkyl or alkoxy groups, either pendant and/or at the end of the silicone chain each having from 2 to 24 carbon atoms, phenyl silicones such as phenyl trimethicones, phenyl dimethicones, phenyl trimethylsiloxy diphenylsiloxanes, diphenyl dimethicones, diphenyl methyldiphenyl trisiloxanes, 2-phenylethyl trimethylsiloxysilicates.

The non-volatile oil content in the composition according to the invention may range from 0.01 to 20% by weight, in particular from 0.1 to 25% by weight and better from 0.1 to 20% by weight based on the total weight of the composition.

According to a particular embodiment, a composition according to the invention comprises less than 5% by weight of non-volatile oil(s), or even is free of non-volatile oil(s).

Additional dispersant agent

According to an embodiment, the composition according to the invention comprises an additional dispersant agent (in addition to the dispersant polymer according to the invention).

This additional dispersant agent is selected from non-ionic, ionic surfactants and mixture(s) thereof, preferably from non-ionic surfactants.

According to an embodiment, this(these) dispersant agent(s) is(are) suitable for facilitating the removal of the applied composition on keratin materials.

Cosmetic actives

The compositions according to the invention may also comprise at least one cosmetic active.

As cosmetic actives, which may used in the compositions according to the invention, mention may notably be made of antioxidants, preservatives, perfumes, neutralization agents, emollients, coalescence agents, plasticizers, moisturizers, vitamins and filters, in particular sunscreens and mixtures thereof.

Of course, one skilled in the art will ensure selection of the optional additional additives and/or their amount so that the advantageous properties of the composition according to the invention are not altered or substantially not altered by the contemplated addition.

Preferably, the composition according to the invention is not rinsed. Advantageously, the composition is a make-up composition and in particular a mascara.

According to an embodiment, the compositions of the invention do not comprise any wax which requires being liquefied under hot conditions. The invention then allows cold preparation of mascara compositions and optionally without any wax.

According to an embodiment, the compositions according to the invention have a high content of dispersed solid particles. In particular, the volume fraction occupied by these solid particles is greater than 50%.

According to an embodiment, the solid particles used in the compositions of the invention have a particle size of less than 50 µm.

Thus, according to this embodiment, the compositions according to the invention give the possibility of obtaining a smoother and filling deposit than with compositions known to this day. No roughness is then perceived with the naked eye.

Uses

According to an embodiment, the cosmetic compositions are used for the make-up of keratin materials, notably of the skin, lips, nails, eyelashes or eyebrows. More particularly they are used for coating keratin fibers.

The present invention also relates to a non-therapeutic make-up and/or care method for keratin materials comprising a step for applying on said keratin materials at least one layer of a cosmetic composition as defined above.

The present invention also relates to a method for coating keratin materials, preferably keratin fibers, in particular eyelashes, comprising a step for applying on said keratin materials, preferably keratin fibers, in particular eyelashes, a cosmetic composition as defined above.

The present invention also relates to a cosmetic treatment method comprising the application on the skin, on the nails, eyelashes, eyebrows or lips of a composition as defined above.

The present invention also relates to the use of the composition as defined above, for the make-up of keratin materials, preferably keratin fibers, and in particular eyelashes.

The present invention also relates to the use of the composition as defined above as a mascara.

The present invention also relates to the use of the composition as defined above for the make-up of eyelashes, for improving the bending properties of eyelashes coated with said composition.

The present invention also relates to the use of the composition as defined above for the make-up of eyelashes, for improving the playtime properties.

In the whole application, the wording « comprising one » or « including one » means « comprising at least one » or « including at least one » unless specified otherwise.

EXAMPLES

Preparation of compositions

Examples of compositions according to invention (Examples 1 and 2) were prepared with the ingredients and proportions indicated hereafter in the tables hereafter:

Example 1 of a mascara composition

Raw materials	Commercial reference	% used
Acrylic and styrene/acrylic copolymers in a 40% aqueous emulsion in a water/butylene/glycol/protected sodium lauryl ether sulfate mixture	SYNTRAN 5760 CG (INTERLIMER)	53.0
pentylene glycol	616751 HYDROLITE-5 (SYMRISE)	3.0
Dispersant Coatex MW 75000 (polyether polycarboxylate, sodium salt in an aqueous solution)	RSY 15007 (COATEX)	1.5
Solid silica spheres (20 microns)	MSS-500/20N (KOBO)	19.0
Black iron oxide	SUNPURO BLACK IRON OXIDE C33-7001 (SUN)	19.0
hydroxyethylcellulose	CELLOSIZE QP 4400 H (AMERCOL, DOW Chemical)	0.5
Acacia Senegal Gum	Atomized gum arabic 396A (ALLAND & ROBERT)	1.0
Water	Microbiologically clean deionized water (L'OREAL)	1.5
Ethanol	96% ethyl alcohol SURFIN MINI. 96% (RYSSEN ALCOOLS)	1.5
		100.0

Example 2 of a mascara composition

Raw materials	Commercial reference	% used
Acrylic and styrene/acrylic copolymers in a 40% aqueous emulsion in a water/butylene glycol/protected sodium lauryl ether sulfate mixture	SYNTRAN 5760 CG (INTERLIMER)	53.0
pentylene glycol	616751 HYDROLITE-5 (SYMRISE)	3.0
Dispersant Coatex MW 75000 (polyether polycarboxylate, sodium salt in an aqueous solution)	RSY 15007 (COATEX)	1.5
NYLON-12 microspheres (grain size: 5 µ)	SP – 500 (TORAY)	19.0
Black iron oxide	SUNPURO BLACK IRON OXIDE C33-7001 (SUN)	19.0
hydroxyethylcellulose	CELLOSIZE QP 4400 H (AMERCOL, DOW Chemical)	0.5
Acacia Senegal Gum	Atomized arabic gum 396A (ALLAND & ROBERT)	1.0
Water	Microbiologically clean deionized water (L'OREAL)	1.5
Ethanol	96% ethyl alcohol SURFIN MINI. 96% (RYSSEN ALCOOLS)	1.5
		100.0

These compositions according to the invention are compositions prepared according to the following procedure:

For a volume of 100 ml: The copolymer SYNTRAN 5760 CG was introduced into a 200 ml container, and then was then stirred with a Rayneri device provided with a vane of the deflocculating type. Next pentylene glycol was added followed by the dispersant agent. After weighing silica powder (or Nylon® powder) in a stainless steel container, the latter was added slowly and gradually into the formulation (the stirring rate was able to be increased gradually, when necessary, in order to homogenize the formulation without generating any too significant vortex, the whole in order to avoid incorporation of air into the formulation). Next, black iron oxide was weighed in a stainless steel container, and added slowly and gradually. Finally the

following constituents were added slowly and successively to the formulation: hydroxyethylcellulose, gum Arabic, water and ethanol.

Resistance of the deposits

Resistance to water (smudge): DMA with immersion

Elasticimetry or DMA (Dynamic Mechanical Analysis)

The mechanical properties of films of polymers or formulations of mascaras are evaluated with the DMQ Q800 from TA Instruments equipped with the traction mobile with immersion.

This mobile gives the possibility of making tensile measurements in the presence of water via a small vessel where the film to be tested will be accommodated.

The mascara (or latex) formulation is spread out beforehand on a Teflon plate of 300µm, the edges of which are covered with Millipore tape in order to facilitate detachment of the film. Drying is accomplished in a glove box at 30°C and with 50% of relative humidity for 1 night.

A rectangular piece of dry film (24 hour drying) is die-cut.

The thickness of the film is measured with a Palmer micrometer and the length between the jaws is set by the immersed mobile. The width of the specimens is of 6 mm (set by the cutter).

The selected measurement procedure is the following:

Isotherm at room temperature 23°C +- 2°C

Oscillation amplitudes of 8 mm

Oscillation frequency 1 Hz

Immersion after 5 minutes of dry measurement and for about 5 minutes by adding 10 ml of demineralized water in the vessel.

The time dependent change of the storage modulus E' is followed over time notably after adding water in the immersion vessel.

The sensitivity to water of the formulation (or of the polymer) is evaluated by comparing the storage modulus E' before and after immersion.

3 types of behaviors may be noted:

Poor resistance to water: the modulus drops very rapidly from the immersion, the film may break or dissolve in water; the drop of the modulus is greater than 2 decades.

Medium resistance to water: the modulus E' decreases more moderately and is less than 2 decades after 5 minutes of immersion; the film remains cohesive but may elongate.

Very good resistance to water: the modulus E' is unchanged or is only slightly lowered (a drop always less than 1 decade even after 5 minutes of immersion); the film remains cohesive.

The compositions of the Examples 1 and 2 were subject to this water-resistance test. The moduli E' obtained for both of these compositions have a drop which is always less than 1 decade even after 5 minutes of immersion.

Thus, these compositions have very good resistance to water.

Resistance to flaking (flake): fragmentation test

The goal of this test is to determine the balance between the cohesiveness of the deposit and its adhesion on the elastomeric support FP40.

The tests are carried out by means of the texturometer Rhéo TAXT2i used in a tensile mode at a rate of 0.1 mm/s.

The composition of the example is deposited in the center of an elastomeric part of the FP40 type with a length 0f 60 mm, a width of 10 mm and a thickness of 2 mm, over a total surface of 20x10 mm^2 by means of stencils. The stencils are selected according to the dry extract of the mascara in order to obtain a dry film with a thickness of 50 µm.

The drying of the films is carried out in a glove box at 30°C and with 50% humidity for 1h or 24h.

The thereby prepared specimens are subject to traction at a controlled rate (0.1 mm/s). The observation is carried out by means of a digital or video camera, in order to be able to quantify the damages (detachment, cracking) undergone by the film during the formation.

The type of possibly ascertained damage and the deformation percentage at which it occurred are noted.

The composition of Example 2 was subject to this test. It was then seen that no crack or detachment occurs after 100% of elongation.

Thus, the resistance to flaking of the composition of Example 2 is very good.

Intensity of the black

*Colorimetric results: L**

The coloration obtained with said compositions is visually evaluated and read with the Minolta Spectrocolorimeter (CM3700d, D65 illumination, angle 10°, SCI values) for colorimetric measurements L*.

In an L* a* b* system, the lower the value of L*, the darker is the color.

*Chromaticity results:: C**

Chromaticity in the CIE system L*, a*, b* is calculated according to the following equation:

$$C^* = \sqrt{a^{*2} + b^{*2}}$$

The higher the value of *C*,* the more the obtained coloration is saturated.

The compositions according to the invention give the possibility of obtaining very good black intensity results.

In particular, the composition of Example 2 gives the possibility of obtaining the following values: C* = 0,6906 and L*= 24,521.

Bending

Specimens of caucasien hair were used comprising 15 hairs with a length of 15 mm having a curvature arc having a radius of curvature comprised between about 6 and 7 mm. These test specimens are attached on a support so that the top of the specimens corresponds to the internal size of the arch formed by the specimen, the bottom of the specimen corresponding to the external side of the arc formed by the specimen.

Before applying the mascara, the curvature of the hair specimen was measured by taking a digital profile photo by means of the Macrozoom Navitar.

Then, the mascara was applied on each specimen by means of a brush on the bottom of the specimen. 3 series of 10 passages of the brush were carried out with a waiting period of 2 minutes between each series of 10 passages.

20 minutes after the last passage of the brush on the specimen, the made up hair specimen was photographed.

The images are processed with the image analysis system Microvision and the average radius of curvature of the hairs is determined before making them up (Rc i) and the average radius of curvature of the hairs after making them up (Rcf), the radius of curvature being measured in millimeters.

The bending R is calculated according to the formula:

$R = 1/ Rci – 1 / Rcf$

The larger the value of R, the more significant is the measured bending of the eyelashes.

The following results are obtained:

Example 1 (invention): $R = 0.030\ mm^{-1}$

XFinity (not the invention) : $R = 0.010\ mm^{-1}$

It was thus seen that the bending properties of Example 1 according to the invention are very good.

Example 3 of a lipstick composition

	Raw materials	Commercial reference	% used
Phase A	POLYDECENE HYDROGEN (VISCOSITY: 5,050 CPS)	PURESYN 150 EXXONMOBIL CHEMICAL	5
	POLYBUTENE (MONOOLEFINS / ISOPARAFFINS)(MW : 920)	INDOPOL H 100 INEOS	5
	DILINOLEYL / PHYTOSTERYL / BEHENYL / ISOSTEARYL DIMER DILINOLEATE DIMER	PLANDOOL-G NIPPON FINE CHEMICAL	5
	PENTAERYTHRITYL TETRA-ISO-STEARATE	CRODAMOL PTIS-LQ-(MH) CRODA	3
	DI-ISO-PROPYL DI-MERATE	SCHERCEMOL DID ESTER LUBRIZOL	5
	OXYETHYLENATED JOJOBA WAX(120 EO)	FLORASOLVS JOJOBA PEG 120 FLORATECH	2
	OXYETHYLENE GLYCERYL MONO-STEARATE (30 EO)	TAGAT S EVONIK GOLDSCHMIDT	0.5
	POLYGLYCEROL TRI-ISO-STEARATE (2 MOLES)	SALACOS 43 V (EUROPE) NISSHIN OILLIO	5
Aqueous phase	ACRYLIC POLYMER	CARBOPOL ULTREZ 21 POLYMER LUBRIZOL	0.5
	ACRYLAMIDO-2-METHYL PROPANE SULFONATE DE SODIUM / HYDROXYETHYLACRYLATE COPOLYMER AS A POWDER	SEPINOV EMT 10 SEPPIC	0.75
	MICROBIOLOGICALLY CLEAN DEIONIZED WATER (HQ)	MICROBIOLOGICALLY CLEAN DEIONIZED WATER (L'OREAL)	55
	2-AMINO-2-METHYL-1-PROPANOL	AMP ULTRA PC 1000, NEUTRALIZING AMINE ANGUS (DOW CHEMICAL	0.2
	COATEX MW 75000 DISPERSANT (POLYETHER POLYCARBOXYLATE, SODIUM SALT IN AN AQUEOUS SOLUTION)	RSY 15007 (COATEX)	0.5
Coloring agent	GLYCEROL	99.5% REFINED GLYCERIN PH. EURO. CARGILL	5
	ACID FUCHSINE D DISODIUM SALT (CI: 17200)	UNICERT RED K7057-J SENSIENT	0.4
	TARTRAZINE DISODIUM SALT (CI: 19140)	UNICERT YELLOW 08005-J SENSIENT	0.15
	MICROBIOLOGICALLY CLEAN DEIONIZED WATER	MICROBIOLOGICALLY CLEAN DEIONIZED WATER (L'OREAL)	4

Preservative	1,2-PENTANEDIOL	MINACARE PENTIOL MINASOLVE	1
	OCTANE-1,2 DIOL	DERMOSOFT OCTIOL DR STRAETMANS	0.3
	PHENOXY-2 ETHANOL	SEPICIDE LD SEPPIC	0.7
	POTASSIUM SORBATE POWDER	POTASSIUM SORBATE POWDER MITSUI	0.3
Mother-of-pearl	MICA-BLACK IRON OXIDE-TITANIUM OXIDE (43/50/7) (CI: 77019 + 77499 + 77891) (10-60µM)	COLORONA MICA BLACK MERCK	0.5
Perfume	PERFUME	WILD BERRY A MF180786 MANE	0.2

In order to prepare this composition, the whole is heated to 70°C, A and the aqueous phase are prepared separately. The phase A is emulsified with the aqueous phase.

The predispersed coloring agents are then added followed by the preservatives and finally the mothers-of-pearl and the perfume.

Example 4 of a nail varnish composition

Raw materials	Commercial reference	% used
96° non-denaturated ethyl alcohol	96% ethyl alcohol SURFIN MINI. (RYSSEN ALCOOLS)	3
water	Microbiologically clean deionized water (L'OREAL)	14
glycerol	REFINED GLYCERIN 99,5% PH. EURO. CARGILL	1
Non-protected mixture of aliphatic polyurethane, N-methylpyrrolidone, tri-ethylamine, water (35/8.5/2/54.5)	AVALURE UR 405 POLYMER LUBRIZOL	74,02
Coatex MW 75000 dispersant (polyether polycarboxylate, sodium salt in an aqueous solution)	RSY 15007 (COATEX)	0,5
Synthetic laponite (mixed magnésium/lithium/sodium silicate)	Laponite XLG ROCKWOOD ADDITIVES	1,24
N-(hydroxy-methyl) N-(di-hydroxy-methyl-1,3-di-oxo-2-imidazolidinyl-4) N-(hydroxy-methyl) urea	GERMALL IIL ISP (ASHLAND)	0,27
Tetrasodium pyrophosphate . 10 H_2O	Tetrasodium pyrophosphate 10 hydrate	0,21
Brown iron oxide-MICA (58/42)	COLORONA SIENNA FINE (MERCK)	3
MICA-black iron oxide (particle size: 10-60 microns)	COLORONA BLACKSTAR BLUE (MERCK)	1
Methyl p-hydroxybenzoate, sodium salt	NIPAGIN M SODIUM (CLARIANT)	0,3
methoxy-terminated poly-dimethylsiloxane oxyethylene (viscosity: 18-28 centipoises)	TEGOPREN 5878 EVONIK (GOLSCHMIDT)	0,46
MICA-titanium oxide (54/56)	FLAMENCO Violet 520 C (BASF Personal Care)	1

5

In order to prepare this composition, each ingredient should be added with stirring and if necessary dropwise or in infinitesimal successive amounts the preparation steps are the following:

Glycerol is added to the AVALURE polyurethane and one waits for 20 minutes (with stirring).

An extemporaneous mixture of water and alcohol is made for adding to the obtained mixture above (polyurethane + glycerol).

The dispersant, the laponite, the urea derivative and the pyrophosphate are then successively added.

Next, the preservative (methyl hydroxybenzoate) is added.

The glidant (methoxy-terminated PDMS EO) is then added.

Finally the coloring materials are added.

CLAIMS

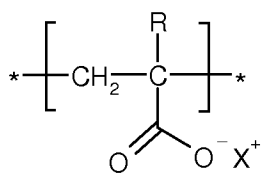
1. A cosmetic composition comprising, in a physiologically acceptable medium:

- a water content less than or equal to 63% by weight based on the total weight of the composition;

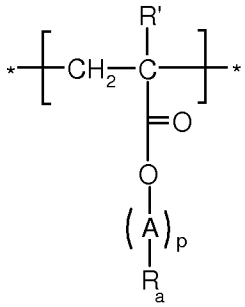
- at least one particle chosen from coloring materials, non-coloring fillers, and mixtures thereof, and

- at least one dispersant polymer,

wherein said dispersant polymer consists of two recurrent units (T_1) and (T_2), said recurrent units having the following respective formulae:



(T_1)



(T_2)

wherein:

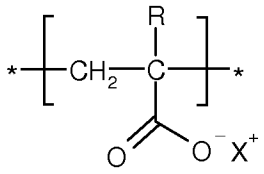
- p is an integer ranging from 1 to 200;
- X is an alkaline or earth alkaline metal; or X^+ represents a quaternary ammonium;
- R_a represents H or a linear or branched alkyl group, comprising from 1 to 6 carbon atoms;
- R and R', either identical or different, represent independently of each other, H or a linear or branched alkyl group comprising from 1 to 10 carbon atoms; and
- A represents a linear or branched C_2-C_8 alkyleneoxy radical or their mixture.

2. The cosmetic composition of claim 1, wherein the particle is a coloring material.

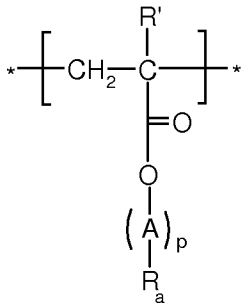
3. A cosmetic composition comprising, in a physiologically acceptable medium:

- at least one non-coloring filler, and
- at least one dispersant polymer;

wherein said dispersant polymer consists of two recurrent units (T_1) and (T_2), said recurrent units having the following respective formulae:



(T_1)



(T_2)

wherein:

- p is an integer ranging from 1 to 200;
- X is an alkaline or earth alkaline metal; or X^+ represents a quaternary ammonium;
- R_a represents H or a linear or branched alkyl group, comprising from 1 to 6 carbon atoms;
- R and R', either identical or different, represent independently of each other, H or a linear or branched alkyl group comprising from 1 to 10 carbon atoms; and
- A represents a linear or branched C_2-C_8 alkyleneoxy radical or their mixture.

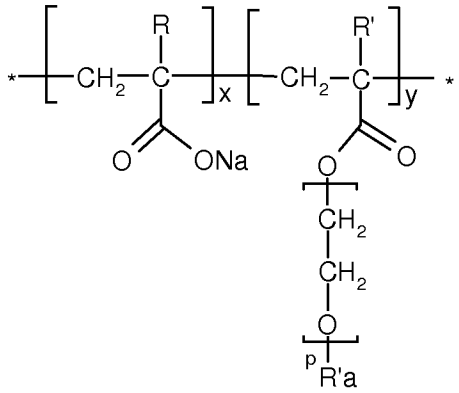
4. The cosmetic composition of any one of claims 1 to 3, wherein the recurrent units (T_1) and (T_2) are statistically distributed.

5. The cosmetic composition according to any of claims 1 to 4, wherein, in the recurrent unit (T_2), R_a is H, methyl or ethyl.

6. The cosmetic composition according to any of claims 1 to 4, wherein, in the recurrent unit (T_2), R_a is methyl or ethyl.

7. The cosmetic composition according to any of claims 1 to 6, wherein, in the recurrent unit (T_2), A is an ethyleneoxy radical, a propyleneoxy radical or mixtures thereof.

8. The cosmetic composition according to any of claims 1 to 7, wherein the dispersant polymer fits the following formula:

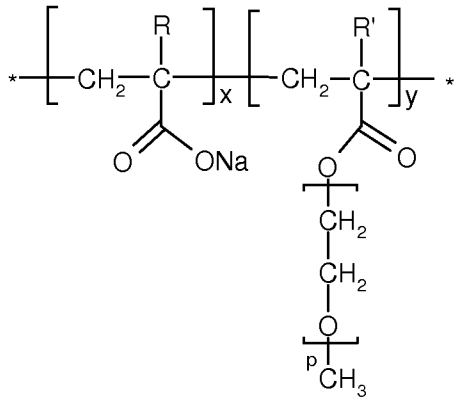


wherein:

- R and R', either identical or different, represent independently of each other, H or a linear or branched alkyl group, comprising from 1 to 10 carbon atoms;
- R'_a is H or CH_3;
- x is an integer ranging from 50 to 3,000;
- y is an integer ranging from 5 to 1,000; and
- p is an integer ranging from 20 to 200,

the units $-CH_2-C(R)(C(=O)ONa)-$ and $-CH_2-C(R')(C(=O)O-(CH_2-CH_2-O)_pR'a)-$ being distributed statistically.

9. The cosmetic composition according to any of claims 1 to 8, wherein the dispersant polymer fits the following formula:



wherein:

- R and R', either identical or different, represent independently of each other, H or a linear or branched alkyl group, comprising from 1 to 10 carbon atoms;

- x is an integer ranging from 50 to 3,000;
- y is an integer ranging from 5 to 1,000; and
- p is an integer ranging from 20 to 200;

the units $-CH_2-C(R)(C(=O)ONa)-$ and $-CH_2-C(R')(C(=O)O-(CH_2-CH_2-O)_pCH_3)-$ being distributed statistically.

10. The cosmetic composition according to any of claims 1 to 9, wherein the weight average molecular mass (Mw) of the dispersant polymer ranges from 50,000 to 90,000 g/mol.

11. The cosmetic composition of any one of claims 1 to 10, wherein the dispersant polymer is water-soluble.

12. The cosmetic composition according to any one of claims 1 to 11, wherein the dispersant polymer is present in a content ranging from 0.1% to 10% by weight based on the total weight of said composition.

13. The cosmetic composition according to any of claims 1, 2 and 4 to 12, wherein the coloring material is selected from pigments and preferably from metal oxides, and preferentially from iron oxides.

14. The cosmetic composition according to any of claims 1 to 13, comprising at least one filler selected from mineral or organic fillers.

15. The cosmetic composition according to any of claims 1 to 14, comprising at least one hydrophilic thickener.

16. The cosmetic composition according to any of claims 1 to 15, comprising at least one film-forming polymer in the form of dispersed particles in water.

17. The cosmetic composition according to any of claims 1 to 16, comprising at least one non-volatile oil, preferably with a content ranging from 0.01% to 20% by weight based on the total weight of the composition.

18. A non-therapeutic method for make-up and/or care of the skin comprising a step for applying on the skin at least one layer of a cosmetic composition according to any of claims 1 to 17.

19. A method for coating keratin materials, preferably keratin fibers, and in particular eyelashes, comprising a step for applying on said keratin materials, preferably keratin fibers, and in particular eyelashes, a cosmetic composition according to any of claims 1 to 17.

20. The use of the composition of any one of claims 1 to 17, for the make-up of keratin materials, preferably keratin fibers, and in particular eyelashes.

21. The use of the composition of any one of claims 1 to 17 as a mascara.

22. The use of the composition of any one of claims 1 to 17 for the make-up of eyelashes, for improving the bending properties of eyelashes coated with said composition.

23. The use of the composition of any one of claims 1 to 17 for the make-up of eyelashes, for improving the playtime properties.