Abstract: The invention relates to a cosmetic composition comprising a siloxane-saccharide copolymer and at least one ingredient chosen from a film-forming polymer, a gelling agent, a volatile solvent, a coloured pigment, a moisturizer, fibres, a filler, an oil, a fluid silicone and a surfactant. Use for making up and caring for keratin materials, in particular the skin, especially in mascaras, lipsticks and nail varnishes.
Cosmetic composition comprising a siloxane-saccharide copolymer

The present invention relates to a cosmetic composition comprising a siloxane-saccharide copolymer, the said composition being intended to be applied to keratin materials, for instance the skin, the lips, the eyelashes, the eyebrows, the nails and the hair.

The composition according to the invention may be a makeup composition or a care composition for keratin materials, in particular for the skin and the lips. The composition may be an antisun composition.

The makeup composition may be a lip makeup product (lipstick), a foundation, an eyeshadow, a makeup rouge, a concealer product, an eyeliner, a body makeup product, a mascara, a nail varnish or a hair makeup product.

The care composition may be a care product for bodily and facial skin, especially an antisun product or a skin-colouring product (such as a self-tanning product). The composition may also be a haircare product, especially for holding the hairstyle or for shaping the hair.

The inventors have discovered that it is possible to obtain a cosmetic composition that has good properties in terms of staying power of the deposit on the keratin materials, of staying power of the sheen over time, and of sheen, irrespective of the anhydrous or emulsion architecture, by incorporating therein a siloxane-saccharide copolymer.

The composition also has a novel texture.

In particular, the cosmetic composition in the case of a mascara or a lipstick makes it possible to increase
the perception of the volume of the keratin materials. Specifically, the composition may increase in volume in the presence of water, such as the water contained in saliva, in sweat or in a second composition applied in combination with the composition according to the invention. The staying power of the composition may also be improved, when, once applied to keratin materials, it comes into contact with water.

The composition may also be used for filling wrinkles, for hiding skin imperfections or for smoothing the surface of the skin.

The composition according to the invention may also advantageously make it possible to curl eyelashes onto which it is applied.

The composition according to the invention may also be applied before or after depositing a second composition containing at least one vehicle capable of gelling the siloxane-saccharide copolymer.

The siloxane-saccharide copolymer may contain a more or less substantial proportion of saccharide groups. For example, when the weight proportion of siloxane units is predominant, the copolymer is capable of totally or partially thickening, or even gelling, silicone oils, in particular volatile cyclic silicone oils such as cyclopentasiloxane. When the proportion of saccharide is equivalent to or even greater than the proportion of siloxane, the siloxane-saccharide copolymer may advantageously be used as an aqueous-medium gelling agent.

One subject of the present invention is thus a cosmetic composition comprising, in a cosmetically acceptable medium, at least one siloxane-saccharide copolymer.

The siloxane-saccharide copolymer may be totally or
partially crosslinked.

A subject of the present invention is also a cosmetic composition comprising at least one siloxane-saccharide copolymer, and at least one ingredient chosen from polymers, in particular film-forming polymers, gelling agents, volatile solvents, coloured pigments, moisturizers, fibres, fillers, glossy oils, silicone oils and surfactants.

A subject of the invention is especially a cosmetic composition comprising at least one siloxane-saccharide copolymer, in the form of an anhydrous composition or in the form of an emulsion.

The composition according to the invention may especially be in the form of a suspension, a dispersion, a solution, a gel, an emulsion, especially an oil-in-water (O/W) or water-in-oil (W/O) emulsion, or a multiple emulsion (W/O/W or polyol/O/W or O/W/O), in the form of a cream, a mousse, a stick, a dispersion of vesicles, especially of ionic or nonionic lipids, a two-phase or multiphase lotion, a spray, a powder or a paste, especially a soft paste (especially a paste with a dynamic viscosity at 25°C of about 0.1 to 40 Pa.s at a shear rate of 200 s⁻¹, after 10 minutes of measurement in cone/plate geometry). The composition may be an anhydrous composition, i.e. a composition containing less than 5% by weight of water, for example less than 2% by weight of water, or even less than 0.5% of water, especially free of water. The water present in the composition may be the residual water provided by the mixed ingredients or water added during the preparation of the composition.

The composition may be a leave-in composition.

The composition according to the invention may contain, besides the siloxane-saccharide copolymer, another
This polymer may be a film-forming polymer, a gelling polymer, a polyamide polymer or copolymer, an acrylate polymer or copolymer, or a semi-crystalline polymer.

The content of all the patents and patent applications to which reference is made hereinbelow in the present patent application is incorporated herein by way of reference.

The term "cosmetically acceptable medium" means a medium that is compatible with human keratin materials.

SILOXANE-SACCHARIDE COPOLYMER

The siloxane-saccharide copolymer may be an amphiphilic silicone derivative that is liquid, pasty or solid at 25°C.

It comprises a silicone backbone with saccharide side and/or end groups, in particular monosaccharide, disaccharide, trisaccharide or tetrasaccharide side and/or end groups.

The siloxane-saccharide copolymer may be obtained by reacting a silicone comprising an amino side or end group with a cyclic lactone containing an aldonolactone saccharide unit, for example gluconolactone or lactobiolactone.

The gluconamidosiloxanes and lactobionamidosiloxanes of formulae (II), (III) and (V) below:
may be prepared, for example, via the following synthetic schemes:

Scheme 1

\[ \text{Scheme 1} \]
Scheme 2

\[
\text{H}_3\text{C}-\text{Si}-\text{O}-\text{Si}-\text{O}_{n-1}-\text{Si}-\text{O}-\text{Si}-\text{CH}_3 + \text{H}_3\text{C}-\text{Si}-\text{O}-\text{Si}-\text{O}_{m-1}-\text{Si}-\text{CH}_3 \rightarrow \text{H}_3\text{C}-\text{Si}-\text{O}-\text{Si}-\text{O}_{n-1}-\text{Si}-\text{O}-\text{Si}-\text{CH}_3
\]

Scheme 3
In these schemes, an aminosilicone is reacted with a sugar lactone (gluconolactone or lactobionolactone) in a solvent, preferably a dipolar aprotic solvent, for instance tetrahydrofuran or acetonitrile, or without solvent, at a temperature of between 25°C and 80°C. The reaction is generally complete within a few hours.

The amino-functional silicones of formulae (I) and (VI) preferably have a molecular mass of between 500 and 50 000 and preferably between 800 and 30 000 g/mol and advantageously have an amine number, determined by NMR, of between 0.01 and 2 meq./g and preferably between 0.1 and 1.5 meq./g.

Example a [formula (II), A = -(CH2)3-]

To a suspension of 1.78 g (0.01 mol) of δ-gluconolactone in 70 cm³ of tetrahydrofuran was added slowly a solution of 33.3 g of aminopropyl polydimethylsiloxane Rhodorsil P331 with an amine number of 0.3 meq./g in 40 cm³ of tetrahydrofuran, and the mixture was stirred for about 24 hours at 40°C. The lactone reacted completely (monitoring by TLC). After evaporating to dryness under reduced pressure followed by drying for 24 hours under vacuum at room temperature, 34.9 g of gluconamidopropyl polydimethylsiloxane were obtained in
the form of a viscous colourless oil.

The $^1$H NMR spectrum (CDCl$_3$) is in accordance with the expected structure.

Titration of the amino groups with perchloric acid shows a conversion of greater than 95%.

Example b [formula (II), $A = -(CH_2)3-$]

To a suspension of 1.78 g (0.01 mol) of $\delta$-glucono-lactone in 70 cm$^3$ of tetrahydrofuran was added slowly a solution of 66.6 g of aminopropyl polydimethylsiloxane Rhodorsil P332 with an amine number of 0.15 meq./g in 80 cm$^3$ of tetrahydrofuran, and the mixture was stirred for about 24 hours at 40°c. The lactone reacted completely (monitoring by TLC). After evaporating to dryness under reduced pressure followed by drying for 24 hours under vacuum at room temperature, 68.1 g of gluconamidopropyl polydimethylsiloxane were obtained in the form of a very viscous colourless oil.

The $^1$H NMR spectrum (CDCl$_3$) is in accordance with the expected structure.

Titration of the amino groups with perchloric acid shows a conversion of greater than 95%.

Example c [formula (II), $A = -(CH_2-CH_2-CH_2-NH-CH_2-CH_2-)$]

To a suspension of 17.8 g (0.1 mol) of $\delta$-gluconolactone in 70 cm$^3$ of tetrahydrofuran was added slowly a solution of 76.9 g of Wacker aminoethylaminopropyl polydimethylsiloxane with an amine number of 1.30 meq./g in 100 cm$^3$ of tetrahydrofuran, and the mixture was stirred for about 24 hours at 40°c. The lactone reacted completely (monitoring by TLC). After evaporating to dryness under reduced pressure followed by drying for 24 hours under vacuum at room
temperature, 94.1 g of gluconamidoethylaminopropyl polydimethylsiloxane were obtained in the form of a viscous colourless oil.

5 The $^1$H NMR spectrum (CDCl$_3$) is in accordance with the expected structure.

Titration of the amino groups with perchloric acid shows a conversion of greater than 95%.

Example d [formula (II), $A = -\text{CH}_2\text{-CH}_2\text{-CH}_2\text{-NH-CH}_2\text{-CH}_2\text{-}]

To a suspension of 17.8 g (0.1 mol) of $\delta$-gluconolactone in 70 cm$^3$ of tetrahydrofuran was added slowly a solution of 12.66 g of General Electric aminoethylaminopropyl polydimethylsiloxane with an amine number of 0.79 meq./g in 20 cm$^3$ of tetrahydrofuran, and the mixture was stirred for about 24 hours at 40$^0$C. The lactone reacted completely (monitoring by TLC). After evaporating to dryness under reduced pressure followed by drying for 24 hours under vacuum at room temperature, 30.3 g of gluconamidoethylaminopropyl polydimethylsiloxane were obtained in the form of a viscous colourless oil.

The $^1$H NMR spectrum (CDCl$_3$) is in accordance with the expected structure.

Titration of the amino groups with perchloric acid shows a conversion of greater than 95%.

Example e [formula (III), $A = -(\text{CH}_2)_3\text{-}]

To a suspension of 3.4 g (0.01 mol) of lactobioniclactone in 70 cm$^3$ of tetrahydrofuran was added slowly a solution of 33.3 g of aminopropyl polydimethylsiloxane Rhodorsil P331 with an amine number of 0.3 meq./g in 40 cm$^3$ of tetrahydrofuran, and the mixture was stirred for about 24 hours at 40$^0$C. The
lactone reacted completely (monitoring by TLC). After
evaporating to dryness under reduced pressure followed
by drying for 24 hours under vacuum at room
temperature, 34.9 g of lactobionamidopropyl polydimethylsiloxane were obtained in the form of a
viscous colourless oil.

The \(^1\)H NMR spectrum (CDCl\(_3\)) is in accordance with the
expected structure.

Titration of the amino groups with perchloric acid
shows a conversion of greater than 95%.

Example f [formula (V), \(A = -(CH_2)_3-, \ B = -(CH_2)_3-\)]

To a suspension of 1.78 g (0.01 mol) of \(\delta\)-glucono-
lactone in 70 cm\(^3\) of tetrahydrofuran was added slowly a
solution of 22.3 g of bis-aminopropyl polydimethyl-
siloxane KF-8012 with an amine number of 0.45 meq./g in
25 cm\(^3\) of tetrahydrofuran, and the mixture was stirred
for about 24 hours at 40\(^\circ\)C. The lactone reacted
completely (monitoring by TLC). After evaporating to
dryness under reduced pressure followed by drying for
24 hours under vacuum at room temperature, 24.0 g of
\(\alpha,\omega\)-bis (3-gluconamidopropyl) polydimethylsiloxane were obtained in the form of a viscous colourless oil.

The \(^1\)H NMR spectrum (CDCl\(_3\)) is in accordance with the
expected structure.

Titration of the amino groups with perchloric acid
shows a conversion of greater than 98%.

Example g [formula (V), \(A = -(CH_2)_3-, \ B = -(CH_2)_3-\)]

To a suspension of 17.82 g (0.1 mol) of \(\delta\)-glucono-
lactone in 70 cm\(^3\) of tetrahydrofuran was added slowly a
solution of 333 g of bis-aminopropyl polydimethyl-
siloxane X-22-161-C (amine number = 0.3 meq./g) in
300 cm\(^3\) of tetrahydrofuran, and the mixture was stirred for about 24 hours at 40°C. The lactone reacted completely (monitoring by TLC). After evaporating to dryness under reduced pressure followed by drying for 24 hours under vacuum at room temperature, 349.8 g of α,ω-bis (3-gluconamidopropyl) polydimethylsiloxane were obtained in the form of a very viscous colourless oil.

The \(^1\)H NMR spectrum (CDCl\(_3\)) is in accordance with the expected structure.

Titration of the amino groups with perchloric acid shows a conversion of greater than 98%.

The siloxane-saccharide copolymer may comprise, for example, glucose groups, for instance:
- examples GL-A12, A21 and A32 below, which describe the reaction of polydimethylsiloxanes containing aminopropyl end groups with gluconolactone, and
- examples GL-8175 and 8211 below, which describe the reaction of polydimethylsiloxanes containing aminoethylaminoisobutyl side groups with gluconolactone.

The siloxane-saccharide copolymer may comprise, for example, disaccharide groups, for instance:
- examples LBL-A12, A21 and A32 below, which describe the reaction of polydimethylsiloxanes containing aminopropyl end groups with lactobiolactone, and
- examples LBL-8175 and 8211 below, which describe the reaction of PDMS containing aminoethyl-aminoisobutyl side groups with lactobiolactone.

The siloxane-saccharide copolymer may be one of the polymers described in patent application WO 2006/071 772 published on 6 July 2006, the content of which is incorporated into the present patent application by way of reference.
The siloxane-saccharide copolymer may be present in a content ranging from 0.1% to 70% by weight, preferably ranging from 0.5% to 50% by weight, preferentially ranging from 1% to 40% by weight and more preferably ranging from 0.5% to 5% by weight relative to the total weight of the composition.

The siloxane-saccharide copolymer may be present in a makeup composition to a proportion of at least 0.1% by weight, preferably between 0.5% and 15% by weight and especially between 1% and 5% by weight in the composition.

In one embodiment, the saccharide-siloxane copolymer has the following formula:

\[ \text{R}^2 \text{R}^1 (3-a) \text{SiO}- [(\text{SiR}^2 \text{R}^1 \text{O})_a - (\text{SiR}^\text{O})_n]y-\text{SiR}^1 (3-a) \text{R}^2 a \]

wherein:

- \( \text{R}^1 \) can be the same or different and comprises hydrogen, \( \text{CrCl}_2 \) alkyl, an organic radical, or \( \text{R}^1 \text{-Q} \),
- \( \text{Q} \) comprises an epoxy, cycloepoxy, primary or secondary amino, ethylenediamine, carboxyl, halogen, vinyl, allyl, anhydride, or mercapto functionality,
- \( m \) and \( n \) are integers between 0 and 10 000 and may be the same or different,
- \( a \) is independently 0, 1, 2 or 3,
- \( y \) is an integer such that the copolymer has a molecular weight less than 1 million,
- \( \text{R}^1 (3-a) \text{SiO-} [(\text{SiR}^1 \text{O})_a - (\text{SiR}^\text{O})_n]y-\text{SiR}^1 (3-a) \text{R}^2 a \) comprises an organosiloxane polymer component,
- \( \text{R}^2 \) has the formula \( \text{Z-} (\text{G}^1)_b - (\text{G}^2)_c \), and there is at least one \( \text{R}^2 \),

wherein \( \text{G}^1 \) is a saccharide component comprising 5 to 12 carbons, \( b+c \) is 1-10, \( b \) or \( c \) can be 0, either \( b \) or \( c \) must be 1, and \( a \) is 0-3,
- \( \text{G}^2 \) is a saccharide component comprising 5 to 12 carbons additionally substituted with organic or
organosilicon radicals, \( Z \) is a linking group between the organosiloxane polymer component and the saccharide component and is independently selected from the group consisting of:

- \( R^3\)-NHC(\(O\))\(-R^4\);  
- \( R^3\)-NH-C(\(O\))\(\cdot NH\)-R\(^4\);  
- \( R^3\)-C(\(O\))\(\cdot O\)-R\(^4\);  
- \( R^3\)-CH(\(OH\))\(-CH_2\)-O-R\(^4\);  
- \( R^3\)-CH(\(OH\))\(-CH_2-NH\)-R\(^4\); and  
- \( R^3\)-N(R\(^1\))-R\(^4\), and

\( R^3 \) and \( R^4 \) are spacer groups comprising \( R^5 \) \( R^6 \) \( R^7 \), and \( R^5 \) and \( R^7 \) are either \( C_1-C_{12} \) alkyl or \( ((C_1-C_{12})_p) \) where \( p \) is any integer 1-50 and each \( (C_1-C_{12})_p \) may be the same or different,

\( R^6 \) is \(-N(R^8)\)-, where \( R^8 \) is H or \( C_1-C_{12} \) alkyl, and at least one of \( R^3 \) and \( R^4 \) must be present and may be the same or different,

at least one of \( R^5 \), \( R^6 \) and \( R^7 \) must be present and may be the same or different, and

wherein the saccharide-siloxane copolymer comprises a reaction product of a functionalized organosiloxane polymer and at least one polyhydroxy-functional saccharide such that the organosiloxane is covalently linked via the linking group, \( Z \), to the at least one polyhydroxy-functional saccharide.

In one embodiment, the copolymer is the reaction product of a functionalized organosiloxane and at least one polyhydroxy-functional saccharide comprising an aldonic acid or an oligoaldonic acid. In a more specific embodiment the aldonic acid or the oligoaldonic acid comprises a lactone. Aldonolactones are particularly suitable saccharides when the organosiloxane comprises amino functionality. In very specific embodiments, the copolymer comprises the reaction product of an amino-functional organosiloxane and a lactone. Two exemplary lactones include glucono-lactone (GL) and lactobionolactone (LBL). Both glucono-
lactone (GL) and lactobionolactone (LBL) are commercially available. Gluconic acid, found naturally occurring in cells, is a polyhydroxy α-hydroxy aldonic acid. Lactobionic acid (4-O-β-D-galactopyranosyl-D-gluconic acid) is comprised of a galactose molecule attached to one molecule of gluconic acid via an ether-like linkage. Lactobionic acid is formed by oxidation of the disaccharide lactose. In very specific embodiments, the crosslinkable composition comprises the reaction product of an amino-functional organosiloxane and either GL or LBL.

For the purposes of the following examples, ingredients identified by a proprietary designation are equivalent to the following generic descriptions:

- **DC 0.65 cSt 200 fluid hexamethyldisiloxane**  
  Cab-O-SiI TS-530 hexamethyldisilazane treated silica
- **DC 245 Fluid dimethylcyclosiloxane**
- **DC 407 Resin hydroxyl functional silicone resin in solvents**
- **DC 6-3444 Resin vinyl functional silicone resin in solvent**  
  DC 7-4600 PSA condensation reaction products between silanol functional siloxane and silicone resin
- **DC 7-4107 silicone elastomer membrane**
- **DC 7-8211, 2-8175 aminosiloxane e.g.**  
  (dimethyl (methylisobutylethylenediamine) siloxane, (Me)₃SiO[Me₂SiO]ₓ[MeSiOJₓSi(Me)₃]CH₂CH(CH₃)CH₂NHCH₂CH₂NH₂
- **A12, 21, 32 aminosiloxane (dimethyl (methylamino-propyl) siloxane)**  
  H₂NCH₂CH₂CH₂SiO[Me₂SiO]ₓSiCH₂CH₂CH₂NH₂

Table 1, column 1 lists amine-functional siloxane polymers that may be covalently bonded to either of two saccharide molecules listed in column 2, gluconolactone (GL) or lactobionolactone (LBL), to yield polyhydroxy-functional saccharide-siloxanes.
Table 2 further characterizes the amine-functional siloxane components. Note that in Table 2, "DP Theory" indicates the degree of polymerization as the number of \( \text{Me}_2\text{SiO} \) units present in the polymer backbone, and "mpc F" refers to the "mol% functionality" which is the molar percentage of the isobutylethlenediamine groups.

Table 1 Saccharide-Siloxane Copolymer Descriptions

<table>
<thead>
<tr>
<th>Siloxane</th>
<th>Saccharide</th>
<th>Functionality:Saccharide</th>
<th>Solvent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A12</td>
<td>GL</td>
<td>1:1</td>
<td>water</td>
</tr>
<tr>
<td>A21</td>
<td>GL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>A32</td>
<td>GL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>8175</td>
<td>GL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>8211</td>
<td>GL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>8175/A12</td>
<td>GL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>A12</td>
<td>LBL</td>
<td>1:1</td>
<td>dispersion in water</td>
</tr>
<tr>
<td>A21</td>
<td>LBL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>A32</td>
<td>LBL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>8175</td>
<td>LBL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>8211</td>
<td>LBL</td>
<td>1:1</td>
<td>heptane, cyclics</td>
</tr>
<tr>
<td>8175/A12</td>
<td>LBL</td>
<td>1:1</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 Amino-functional Polymers Employed
Table 2

<table>
<thead>
<tr>
<th>polymer</th>
<th>cSt</th>
<th>mw</th>
<th>%NH2</th>
<th>DP</th>
<th>mpc F</th>
<th>functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMS-A12</td>
<td>20-30</td>
<td>950</td>
<td>3.1</td>
<td>20</td>
<td></td>
<td>aminopropyl</td>
</tr>
<tr>
<td>DMS-A21</td>
<td>100-200</td>
<td>5000</td>
<td>0.65</td>
<td>66</td>
<td></td>
<td>aminopropyl</td>
</tr>
<tr>
<td>DMS-A32</td>
<td>2000</td>
<td>27 000</td>
<td>0.085</td>
<td>383</td>
<td></td>
<td>aminopropyl</td>
</tr>
<tr>
<td>2-H175</td>
<td>150-400</td>
<td>7792</td>
<td>100</td>
<td>23</td>
<td></td>
<td>isobutylamines</td>
</tr>
<tr>
<td>2-H211</td>
<td>1000-22 332</td>
<td>300</td>
<td>100</td>
<td>19</td>
<td></td>
<td>isobutylamines</td>
</tr>
</tbody>
</table>

a) GL-A12
DMS-A12 (Gelest Inc., Morrisville, PA.), a 20-30 cSt. telechelic polydimethylsiloxane endblocked with aminopropyl groups, is reacted with gluconolactone (GL) (Sigma-Aldrich, St. Louis, MO.) at 1:1 amine : lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material is a solid.

b) GL-A21
DMS-A21 (Gelest Inc., Morrisville, PA.), a 100-320 cSt. telechelic polydimethylsiloxane endblocked with aminopropyl groups, is reacted with gluconolactone (GL) (Sigma-Aldrich, St. Louis, MO.) at 1:1 amine : lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material is a wax-like solid.

c) GL-A32
DMS-A32 (Gelest Inc., Morrisville, PA.), a 2000 cSt. telechelic polydimethylsiloxane endblocked with aminopropyl groups, is reacted with gluconolactone (GL) (Sigma-Aldrich, St. Louis, MO.) at 1:1 amine : lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed
with rotary evaporation. The resulting material has a gum-like consistency.

d) GL-8175
5 DC® Q2-8175 Fluid (Dow Corning Corp., Midland, MI), a 150-400 cSt. polydimethylsiloxane with pendant aminoethylaminoisobutyl groups (approximately 2.3 mol%), is reacted with gluconolactone at 1:1 primary amine: lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material has a gum-like consistency.

e) GL-8211
15 DC® 2-8211 Polymer (Dow Corning Corp., Midland, MI), a 1000 cSt. polydimethylsiloxane with pendant aminoethylaminoisobutyl groups (approximately 1.9 mol%), is reacted with gluconolactone at 1:1 primary amine: lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material has a gum-like consistency.

f) GL-8175/A12 DC® Q2-8175 Fluid (Dow Corning Corp., Midland, MI), a 150-400 cSt. polydimethylsiloxane with pendant aminoethylaminoisobutyl groups (approximately 2.3 mol%), and DMS-A12 are mixed together in a 1:1 by weight solution. This mixture is reacted with GL at a 1:1 primary amine: lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material is a wax-like substance.

g) LBL-A12
35 DMS-A12 (Gelest Inc., Morrisville, PA.), a 20-30 cSt. telechelic polydimethylsiloxane endblocked with aminopropyl groups, is reacted with lactobionolactone (LBL) (prepared from lactobionic acid, Sigma-Aldrich, St. Louis, MO.) at 1:1 amine:lactone stoichiometry in
methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material is a solid.

5 h) LBL-A21
DMS-A21 (Gelest Inc., Morrisville, PA.), a 100-320 cSt. telechelic polydimethylsiloxane endblocked with aminopropyl groups, is reacted with lactobiolactone (LBL) (prepared from lactobionic acid, Sigma-Aldrich, St. Louis, MO.) at 1:1 amine : lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material is wax-like.

15 i) LBL-A32
DMS-A32 (Gelest Inc., Morrisville, PA.), a 2000 cSt. telechelic polydimethylsiloxane endblocked with aminopropyl groups, is reacted with lactobiolactone (LBL) (prepared from lactobionic acid, Sigma-Aldrich, St. Louis, MO.) at 1:1 amine : lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material is wax-like.

25 j) LBL-8175
DC® Q2-8175 Fluid (Dow Corning Corp., Midland, MI), a 150-400 cSt. polydimethylsiloxane with pendent aminoethylaminoisobutyl groups (approximately 2.3 mol%), is reacted with lactobionolactone (LBL) (prepared from lactobionic acid, Sigma-Aldrich, St. Louis, MO.) at 1:1 primary amine : lactone stoichiometry in methanol at 50°C. Upon completion of the reaction, the methanol is removed with rotary evaporation. The resulting material is wax-like.

35 k) LBL-8211 DC® 2-8211 Polymer (Dow Corning Corp., Midland, MI), a 1000 cSt. polydimethylsiloxane with pendent aminoethylaminoisobutyl groups (approximately 1.9 mol%), is reacted with lactobionolactone (LBL)
(prepared from lactobionic acid, Sigma-Aldrich, St.
Louis, MO.) at 1:1 primary amine:lactone stoichiometry
in methanol at 50°C. Upon completion of the reaction,
the methanol is removed with rotary evaporation. The
resulting material is a rubbery powder.

1) LBL-8175/A12
DC® Q2-8175 Fluid (Dow Corning Corp., Midland, MI), a
150-400 cSt. polydimethylsiloxane with pendent
aminoethylaminoisobutyl groups (approximately
2.3 mol%), and DMS-A12 (Gelest Inc., Morrisville, PA.),
a 20-30 cSt. telechelic polydimethylsiloxane endblocked
with aminopropyl groups are mixed together in a 1:1 by
weight solution. This mixture is reacted with LBL at
1:1 primary amine:lactone stoichiometry in methanol at
50°C. Upon completion of the reaction, the methanol is
removed with rotary evaporation. The resulting material
is wax-like.

**Filler:**

Besides the said at least one siloxane-saccharide
copolymer, the composition may contain at least one
filler.

The term "fillers" should be understood as meaning
colourless or white, mineral or synthetic particles of
any shape, which are insoluble in the medium of the
composition irrespective of the temperature at which
the composition is manufactured. Pigments and nacres
are especially excluded from this definition.

According to one embodiment of the invention, the
filler is an organic filler, i.e. a filler comprising
at least one organic compound as mentioned in the above
paragraph. An organic filler may be a) a filler
consisting of at least one organic compound or b) a
filler comprising at least one organic compound and at
least one mineral compound.
The filler may be introduced into the cosmetic composition so as to adjust its properties in terms of texture, or in other words to control its rheological properties.

The fillers may be mineral or organic, of any form, platelet-shaped, spherical or oblong, irrespective of the crystallographic form (for example lamellar, cubic, hexagonal, orthorhombic, etc.). Mention may be made of talc, mica, silica, kaolin, polyamide (Nylon®) powder (Orgasol® from Atochem), poly-β-alanine powder and polyethylene powder, tetrafluoroethylene polymer (Teflon®) powders, lauroyllysine, starch, boron nitride, hollow polymer microspheres such as those of polyvinylidene chloride/acrylonitrile, for instance Expancel® (Nobel Industrie), or of acrylic acid copolymers (Polytrap® from the company Dow Corning) and silicone resin microbeads (for example Tospearls® from Toshiba), elastomeric polyorganosiloxane particles, precipitated calcium carbonate, magnesium carbonate, magnesium hydrogen carbonate, hydroxyapatite, hollow silica microspheres (Silica Beads® from Maprecos), glass or ceramic microcapsules, and metal soaps derived from organic carboxylic acids containing from 8 to 22 carbon atoms and preferably from 12 to 18 carbon atoms, for example zinc stearate, magnesium stearate, lithium stearate, zinc laurate or magnesium myristate.

The polymethyl methacrylate powders are generally in the form of hollow or solid white spherical particles whose numerical mean size is generally on the micrometre scale, in particular ranging from 3 to 15 microns and generally from 3 to 10 microns. As representative and non-limiting polymethyl methacrylates that are suitable for the invention, mention may be made especially of the polymethyl methacrylate particles sold by the company Matsumoto Yushi Co. under the name Micropearl M100, by the
company LCW under the name Covabead LH 85 and those sold by the company Nihon Junyaku under the name Jurymer MB1.

The polymethyl methacrylate particles may be present in a content ranging from 5% to 20% by weight relative to the total weight of the composition, for example ranging from 7% to 18% by weight, for example ranging from 8% to 15% by weight.

The filler may be a polyurethane powder. In particular, the polyurethane powder is not film-forming, i.e. it does not form a continuous film when it is deposited onto a support such as the skin, after having been mixed with a volatile solvent to allow its deposition.

Advantageously, the polyurethane powder is a powder of a copolymer of hexamethylene diisocyanate and of trimethylol hexyl lactone. Such a polyurethane powder is especially sold under the names Plastic Powder D-400 and Plastic Powder D-800 by the company Toshiki.

Another polyurethane powder that may be used is the product sold under the name Plastic Powder CS-400 by the company Toshiki.

The filler may be an elastomeric organopolysiloxane powder.

The elastomeric organopolysiloxane is advantageously crosslinked and may be obtained by a crosslinking addition reaction of diorganopolysiloxane containing at least one hydrogen linked to silicon and of diorganopolysiloxane containing ethylenically unsaturated groups linked to silicon, especially in the presence of a platinum catalyst; or by a condensation crosslinking dehydrogenation reaction between a diorganopolysiloxane with hydroxyl end groups and a diorganopolysiloxane containing at least one hydrogen
linked to silicon, especially in the presence of an organotin; or by crosslinking condensation reaction of a diorganopolysiloxane with hydroxyl end groups and of a hydrolysable organopolysilane; or by thermal crosslinking of organopolysiloxane, especially in the presence of an organoperoxide catalyst; or by crosslinking of organopolysiloxane by high-energy radiation such as gamma rays, ultraviolet rays or an electron beam.

Advantageously, the elastomeric organopolysiloxane is non-emulsifying.

The term "non-emulsifying" defines organopolysiloxane elastomers containing no hydrophilic chains such as polyoxyalkylene or polyglycerolated units.


Elastomeric organopolysiloxane powders that may be used include those sold under the names Dow Corning 9505 Powder and Dow Corning 9506 Powder by the company Dow Corning; these powders have the INCI name: dimethicone/vinyl dimethicone crosspolymer.

The elastomeric organopolysiloxane powder may comprise at least one elastomeric organopolysiloxane powder coated with silicone resin, especially with silsesquioxane resin, as described, for example, in patent US 5 538 793, the content of which is incorporated by way of reference. Such elastomeric powders are sold under the names KSP-100, KSP-101, KSP-102, KSP-103, KSP-104 and KSP-105 by the company Shin-Etsu, and have the INCI Name: vinyl dimethicone/methicone silsesquioxane crosspolymer.
Other elastomeric organopolysiloxanes in the form of spherical powders may be hybrid silicone powders functionalized with fluoroalkyl groups, sold especially under the name KSP-200 by the company Shin-Etsu; hybrid silicone powders functionalized with phenyl groups, sold especially under the name KSP-300 by the company Shin-Etsu.

The elastomeric organopolysiloxane powder, which is in particular non-emulsifying, and preferably spherical, may be present in the composition in a content ranging from 5% to 25% by weight, preferably ranging from 7% to 15% by weight and preferentially ranging from 8% to 12% by weight, relative to the total weight of the composition.

The filler may be an N-acylamino acid powder. The N-acylamino acids may comprise an acyl group containing from 8 to 22 carbon atoms, for instance a 2-ethylhexanoyl, caproyl, lauroyl, myristoyl, palmitoyl, stearoyl or cocooyl group. The amino acid may be, for example, lysine, glutamic acid or alanine.

**Fibres**

The composition may contain fibres.

The term "fibre" should be understood as meaning an object of length L and diameter D such that L is very much greater than D, D being the diameter of the circle in which the cross section of the fibre is inscribed. In particular, the ratio L/D (or shape factor) is chosen within the range from 3.5 to 2500, preferably from 5 to 500 and better still from 5 to 150.

The fibres that may be used in the composition of the invention may be fibres of synthetic or natural, mineral or organic origin. In particular, the fibres
have a length ranging from 1 \( \mu \text{m} \) to 10 mm, preferably from 0.1 mm to 5 mm and better still from 1 mm to 3.5 mm. Their cross section may be within a circle of diameter ranging from 2 nm to 500 \( \mu \text{m} \), preferably ranging from 100 nm to 100 \( \mu \text{m} \) and better still from 1 \( \mu \text{m} \) to 50 \( \mu \text{m} \). The weight or yarn count of the fibres is often given in denier or decitex and represents the weight in grams per 9 km of yarn. Preferably, the fibres according to the invention have a yarn count chosen within the range from 0.15 to 30 denier and better still from 0.18 to 18 denier.

The fibres may be those described in patent application EP 1 201 221, the content of which is incorporated into the present patent application by way of reference.

Preferably, fibres of synthetic origin and in particular organic fibres are used, for instance those used in surgery. Water-insoluble fibres may advantageously be used. The fibres that may be used in the composition according to the invention are preferably polyamide, cellulose, poly-p-phenylene-terephthamide or polyethylene fibres. Their length \((L)\) may range from 0.1 mm to 5 mm and preferably from 0.25 mm to 1.6 mm, and their mean diameter may range from 1 \( \mu \text{m} \) to 50 \( \mu \text{m} \). In particular, the polyamide fibres sold by Etablissements P. Bonte under the name Polyamide 0.9 Dtex 3 mm, with a mean diameter of 6 \( \mu \text{m} \), a yarn count of about 0.9 dtex and a length ranging from 0.3 mm to 5 mm, may be used. It is also possible to use poly-p-phenyleneterephthamide fibres with a mean diameter of 12 \( \mu \text{m} \) and a length of about 1.5 mm, for instance those sold under the name Kevlar Floe by the company DuPont Fibres, or else cellulose (or rayon) fibres with a mean diameter of 50 \( \mu \text{m} \) and a length ranging from 0.5 mm to 6 mm, for instance those sold under the name Natural rayon flock fiber RClBE - N003 - M04 by the company Claremont Flock. Polyethylene fibres may also be used, for instance those sold under the
The fibres may be present in the composition according to the invention in a content ranging from 0.01% to 10% by weight, preferably from 0.1% to 5% by weight and better still from 0.3% to 2% by weight relative to the total weight of the composition.

**Film-forming polymer**

According to one embodiment, the composition contains at least one polymer that may be chosen from film-forming polymers. Certain film-forming polymers may be gelling agents.

For the purposes of the invention, the term "polymer" means a compound containing at least two repeating units and preferably at least three repeating units.

The term "film-forming polymer" means a polymer capable, by itself or in the presence of an auxiliary film-forming agent, of forming a macroscopically continuous film on a support, especially on keratin materials, preferably a cohesive film and better still a film whose cohesion and mechanical properties are such that the said film can be isolated from the said support.

The polymer may be present in the composition in a content ranging from 0.1% to 60% by weight, preferably ranging from 0.1% to 50% by weight, preferably ranging from 0.5% to 40% by weight, preferentially ranging from 1% to 30% by weight and more preferentially ranging from 1% to 25% by weight relative to the total weight of the composition.

In one embodiment, the film-forming organic polymer is at least one polymer chosen from the group comprising:

- film-forming polymers that are soluble in an
organic liquid medium, in particular liposoluble polymers, when the organic liquid medium comprises at least one oil;
- film-forming polymers that are dispersible in an organic solvent medium, in particular polymers in the form of non-aqueous dispersions of polymer particles, preferably dispersions in silicone oils or hydrocarbon-based oils; in one embodiment, the non-aqueous polymer dispersions comprise polymer particles that are surface-stabilized with at least one stabilizer;
- film-forming polymers in the form of aqueous dispersions of polymer particles, often known as "latices"; in this case, the composition comprises an aqueous phase;
- water-soluble film-forming polymers; in this case, the composition comprises an aqueous phase.

Among the film-forming polymers that may be used in the composition of the present invention, mention may be made of synthetic polymers, of free-radical type or of polycondensate type, polymers of natural origin, and mixtures thereof. Film-forming polymers that may be mentioned in particular include acrylic polymers, polyurethanes, polyesters, polyamides, polyureas, cellulose-based polymers, for instance nitrocellulose, silicone polymers, in particular silicone resins, silicone-grafted acrylic polymers, polyamide polymers and copolymers, and polyisoprenes.

The film-forming polymer may be chosen from the film-forming polymers described in patent application WO 04/028 487, the content of which is incorporated into the present patent application by way of reference.

In particular, the film-forming polymer may be a crosslinked silicone compound as described in patent applications US 2003/0 103 918 and US 2003/0 049 216, the content of which is incorporated into the present patent application by way of reference.
Film-forming polymers are especially described in the international patent application filed under No. PCT/FR03/02849, the content of which is incorporated by way of reference.

**Film-forming polymer in liquid organic phase:**

According to one embodiment, the composition contains at least one liquid organic phase and at least one film-forming polymer that is soluble or dispersible in the said organic phase.

For the purposes of the invention, the term "polymer" means a compound containing at least two repeating units and preferably at least three repeating units.

The term "film-forming polymer" means a polymer that is capable of forming, by itself or in the presence of an auxiliary film-forming agent, a macroscopically continuous film on a support, especially on keratin materials, and preferably a cohesive film, and better still a film whose cohesion and mechanical properties are such that the said film can be isolated from the said support.

The polymer may be present in the composition in a content ranging from 0.1% to 60% by weight, preferably ranging from 0.1% to 50% by weight, preferably ranging from 0.5% to 40% by weight, preferentially ranging from 1% to 30% by weight and more preferentially ranging from 1% to 25% by weight relative to the total weight of the composition.

In one embodiment, the film-forming polymer is an organic polymer chosen from the group comprising:
- film-forming polymers that are soluble in an organic liquid medium, in particular liposoluble polymers, when the organic liquid medium comprises at least one oil;
film-forming polymers that are dispersible in an organic liquid medium, in particular polymers in the form of non-aqueous dispersions of polymer particles, preferably dispersions in silicone oils or hydrocarbon-based oils.

The composition according to the invention may comprise, as film-forming polymer, a dispersion of particles of a grafted ethylenic polymer in the fatty phase.

According to one particular embodiment of the invention, the grafted ethylenic polymer may be obtained via free-radical polymerization, in an organic polymerization medium:
- of an acrylic monomer chosen from C1-C3 alkyl (meth)acrylates, alone or as a mixture, and optionally of one or more additional acrylic monomers chosen from (meth)acrylic acid, methacrylic acid and the alkyl (meth)acrylates of formula defined below, and salts thereof; and
- of at least one silicone- or hydrocarbon-based macromonomer comprising a polymerizable end group.

Carbon-based macromonomers that may in particular be mentioned include:

- (i) homopolymers and copolymers of linear or branched C8-C22 alkyl acrylate or methacrylate, containing a polymerizable end group chosen from vinyl or (meth)acrylate groups, among which mention may be made in particular of: poly (2-ethylhexyl acrylate) macromonomers with a mono (meth)acrylate end group; poly(dodecyl acrylate) or poly(dodecyl methacrylate) macromonomers with a mono (meth)acrylate end group; poly(stearyl acrylate) or poly(stearyl methacrylate) macromonomers with a mono (meth)acrylate end group.

Such macromonomers are described in particular in the
Mention may be made in particular of macromonomers based on poly(2-ethylhexyl acrylate) or poly(dodecyl acrylate) with a mono (meth)acrylate end group.

(ii) polyolefins containing an ethylenically unsaturated end group, in particular containing a (meth)acrylate end group. Examples of such polyolefins that may be mentioned in particular include the following macromonomers, it being understood that they have a (meth)acrylate end group: polyethylene macromonomers, polypropylene macromonomers, macromonomers of polyethylene/polypropylene copolymer, macromonomers of polyethylene/polybutylene copolymer, polyisobutylene macromonomers; polybutadiene macromonomers; polyisoprene macromonomers; polybutadiene macromonomers; poly (ethylene/butylene) -polyisoprene macromonomers.

Such macromonomers are described in particular in US 5 625 005, which mentions ethylene/butylene and ethylene/propylene macromonomers containing a (meth) acrylate reactive end group.

Mention may be made in particular of the poly (ethylene/butylene) methacrylate such as that sold under the name Kraton Liquid L-1253 by Kraton Polymers.

Silicone-based macromonomers that may be mentioned in particular include polydimethylsiloxanes containing mono (meth)acrylate end groups, and especially those of formula (II) below:
in which $R_8$ denotes a hydrogen atom or a methyl group; $R_9$ denotes a divalent hydrocarbon-based group containing from 1 to 10 carbon atoms and optionally contains one or two ether bonds $-O-$; $R_{10}$ denotes an alkyl group containing from 1 to 10 carbon atoms and especially from 2 to 8 carbon atoms; and $n$ denotes an integer ranging from 1 to 300, preferably ranging from 3 to 200 and preferentially ranging from 5 to 100.

Silicone-based macromonomers that may be used include monomethacryloxypropyl polydimethylsiloxanes such as those sold under the name PS560-K6 by the company United Chemical Technologies Inc. (UCT) or under the name MCR-M17 by the company Gelest Inc.

Preferably, the polymerized macromonomer (constituting the side chains of the grafted polymer) represents from 0.1% to 15% by weight, preferentially from 0.2% to 10% by weight and more preferentially from 0.3% to 8% by weight relative to the total weight of the polymer.

The composition according to the invention may contain, as film-forming polymer, a linear block ethylenic polymer, referred to hereinbelow as a "block polymer", of particular structure as described below.

The term "block polymer" means a polymer comprising at least two different blocks and preferably at least three different blocks.

The polymer is a polymer of linear structure. In contrast, a polymer of non-linear structure is, for example, a polymer of branched, star, grafted or other
Advantageously, the polymer comprises at least three different blocks, and the first and second blocks of the block polymer are mutually incompatible.

Advantageously, the intermediate block has a glass transition temperature Tg that is between the glass transition temperatures of the first and second blocks.

The polymer may comprise a block with a Tg of greater than or equal to 40°C. The block with a Tg of greater than or equal to 40°C has, for example, a Tg ranging from 40 to 150°C, preferably greater than or equal to 50°C, for example ranging from 50°C to 120°C, and better still greater than or equal to 60°C, for example ranging from 60°C to 120°C.

Monomers that are particularly preferred are methyl methacrylate, isobutyl (meth)acrylate and isobornyl (meth)acrylate, and mixtures thereof.

The polymer may comprise a block with a Tg of less than or equal to 20°C. The block with a Tg of less than or equal to 20°C has, for example, a Tg ranging from -100 to 20°C, preferably less than or equal to 15°C, especially ranging from -80°C to 15°C and better still less than or equal to 10°C, for example ranging from -50°C to 0°C.

The main monomers that are particularly preferred for the block with a Tg of less than or equal to 20°C are alkyl acrylates whose alkyl chain contains from 1 to 10 carbon atoms, with the exception of the tert-butyl group, such as methyl acrylate, isobutyl acrylate and 2-ethylhexyl acrylate, and mixtures thereof.

The polymer may comprise a block with a Tg of between 20 and 40°C. The block that has a Tg of between 20 and
40°C may be a homopolymer or a copolymer.

The monomers whose homopolymer has a glass transition temperature of between 20 and 40°C are preferably chosen from n-butyl methacrylate, cyclodecyl acrylate, neopentyl acrylate and isodecylacrylamide, and mixtures thereof.

When the block with a Tg of between 20 and 40°C is a copolymer, it is totally or partially derived from one or more monomers (or main monomers) whose nature and concentration are chosen such that the Tg of the resulting copolymer is between 20 and 40°C.

According to one embodiment, the block polymer may comprise:
- a first block with a Tg of greater than or equal to 40°C, for example ranging from 85 to 115°C, which is an isobornyl acrylate/isobutyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -85 to -55°C, which is a 2-ethylhexyl acrylate homopolymer, and
- an intermediate block, which is an isobornyl acrylate/isobutyl methacrylate/2-ethylhexyl acrylate random copolymer.

According to one variant, the block polymer comprises:
- a first block with a Tg of between 20 and 40°C, for example with a Tg of 21 to 39°C, which is a copolymer comprising isobornyl acrylate/isobutyl methacrylate/2-ethylhexyl acrylate,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -65 to -35°C, which is a homopolymer of methyl methacrylate, and
- an intermediate block that is an isobornyl acrylate/isobutyl methacrylate/2-ethylhexyl acrylate random copolymer.

According to one variant, the block polymer may
comprise:
- a first block with a Tg of greater than or equal to 40°C, for example ranging from 85 to 115°C, which is an isobornyl methacrylate/isobutyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -35 to -5°C, which is an isobutyl acrylate homopolymer, and
- an intermediate block, which is an isobornyl methacrylate/isobutyl methacrylate/isobutyl acrylate random copolymer.

According to one variant, the block polymer may comprise:
- a first block with a Tg of greater than or equal to 40°C, for example ranging from 60 to 90°C, which is an isobornyl acrylate/isobutyl methacrylate copolymer,
- a second block with a Tg of less than or equal to 20°C, for example ranging from -35 to -5°C, which is an isobutyl acrylate homopolymer, and
- an intermediate block, which is an isobornyl acrylate/isobutyl methacrylate/isobutyl acrylate random copolymer.

In one embodiment, the film-forming agent is an organic film-forming polymer that is soluble in the fatty phase, which comprises a liquid phase comprising at least one oil.

The liposoluble polymer may be of any chemical type and may especially be chosen from:

a) liposoluble, amorphous homopolymers and copolymers of olefins, of cycloolefins, of butadiene, of isoprene, of styrene, of vinyl ethers, esters or amides, or of (meth)acrylic acid esters or amides comprising a linear, branched or cyclic C₄₋₀ alkyl group and which are preferably amorphous. The preferred liposoluble homopolymers and copolymers are obtained from monomers chosen from the group consisting of isoctyl (meth)acrylate, isononyl (meth)acrylate, 2-ethylhexyl
(meth) acrylate, lauryl (meth) acrylate, isopentyl (meth) acrylate, n-butyl (meth) acrylate, isobutyl (meth) acrylate, methyl (meth) acrylate, tert-butyl (meth) acrylate, tridecyl (meth) acrylate and stearyl (meth) acrylate, or mixtures thereof. Examples that will be mentioned include the alkyl acrylate/cycloalkyl acrylate copolymer sold by Phoenix Chem. under the name Giovarez AC-5099 ML, and vinylpyrrolidone copolymers, such as copolymers of a C_{2}-C_{30} and in particular C_{3} to C_{22} alkene, and combinations thereof, may be used. As examples of VP copolymers that may be used in the invention, mention may be made of copolymers of VP/vinyl laurate, VP/vinyl stearate, butylated polyvinylpyrrolidone (PVP), VP/hexadecene, VP/triacontene or VP/acrylic acid/lauryl methacrylate.

Particular liposoluble copolymers that may be mentioned include:

i) acrylic-silicone grafted polymers containing a silicone backbone and acrylic grafts or containing an acrylic backbone and silicone grafts, such as the product sold under the name SA 70.5 by 3M and described in patents US 5 725 882, US 5 209 924, US 4 972 037, US 4 981 903, US 4 981 902 and US 5 468 477, and in patents US 5 219 560 and EP 0 388 582;

ii) liposoluble polymers bearing fluoro groups, belonging to one of the classes described above, in particular the Fomblin products described in patent US 5 948 393 and the alkyl (meth) acrylate/perfluoroalkyl (meth) acrylate copolymers described in patents EP 0 815 836 and US 5 849 318;

iii) polymers or copolymers resulting from the polymerization or copolymerization of an ethylenic monomer, comprising one or more ethylenic bonds, which are preferably conjugated (or dienes). As polymers or copolymers resulting from the polymerization or copolymerization of an ethylenic monomer, it is possible to use vinyl, acrylic or methacrylic copolymers.
In one embodiment, the film-forming polymer is a block copolymer comprising at least one block consisting of styrene units or styrene derivatives (for example methylstyrene, chlorostyrene or chloromethylstyrene). The copolymer comprising at least one styrene block may be a diblock or triblock copolymer, or even a multiblock copolymer, in starburst or radial form. The copolymer comprising at least one styrene block may also comprise, for example, an alkylstyrene (AS) block, an ethylene/butylene (EB) block, an ethylene/propylene (EP) block, a butadiene (B) block, an isoprene (I) block, an acrylate (A) block, a methacrylate (MA) block or a combination of these blocks. The copolymer comprising at least one block consisting of styrene units or styrene derivatives may be a diblock or triblock copolymer, and in particular of the polystyrene/polyisoprene or polystyrene/polybutadiene type, such as those sold or manufactured under the name "Luvitol HSB" by BASF, and those of the polystyrene/copoly (ethylene-propylene) type or alternatively of the polystyrene/copoly (ethylene-butylene) type, such as those sold or manufactured under the brand name "Kraton" by Shell Chemical Co. or Gelled Permethyl 99A by Penreco may be used.

Examples that may be mentioned include Kraton G1650 (SEBS), Kraton G1651 (SEBS), Kraton G1652 (SEBS), Kraton G1657X (SEBS), Kraton G1701X (SEP), Kraton G1702X (SEP), Kraton G1726X (SEB), Kraton D-1101 (SBS), Kraton D-1102 (SBS), Kraton D-1107 (SIS), Gelled Permethyl 99A-750, Gelled Permethyl 99A-753-58 (blend of triblock and of starburst block polymer), Gelled Permethyl 99A-753-59 (blend of triblock and of starburst block polymer), Versagel 5970 and Versagel 5960 from Penreco (blend of triblock and of starburst polymer in isododecane).

Styrene-methacrylate copolymers may also be used, such
as the polymers sold under the references OS 129880, OS 129881 and OS 84383 from Lubrizol (styrene-methacrylate copolymer).

In one embodiment, the film-forming agent is chosen from copolymers of a vinyl ester (the vinyl group being directly attached to the oxygen atom of the ester group and the vinyl ester having a saturated, linear or branched hydrocarbon-based radical of 1 to 19 carbon atoms, linked to the carbonyl of the ester group) and of at least one other monomer, which may be a vinyl ester (other than the vinyl ester already present), an α-olefin (containing from 8 to 28 carbon atoms), an alkyl vinyl ether (the alkyl group of which contains from 2 to 18 carbon atoms) or an allylic or methallylic ester (containing a saturated, linear or branched hydrocarbon-based radical of 1 to 19 carbon atoms, linked to the carbonyl of the ester group).

These copolymers may be partially crosslinked using crosslinking agents, which may be either of the vinyl type or of the allylic or methallylic type, such as tetraallyloxyethane, divinylbenzene, divinyl octanedioate, divinyl dodecanedioate, and divinyl octadecanedioate.

Examples of these copolymers that may be mentioned include the following copolymers: vinyl acetate/allyl stearate, vinyl acetate/vinyl laurate, vinyl acetate/vinyl stearate, vinyl acetate/octadecene, vinyl acetate/octadecyl vinyl ether, vinyl propionate/allyl laurate, vinyl propionate/vinyl laurate, vinyl stearate/1-octadecene, vinyl acetate/1-dodecene, vinyl stearate/ethyl vinyl ether, vinyl propionate/cetyl vinyl ether, vinyl stearate/allyl acetate, vinyl 2,2-dimethyloctanoate/vinyl laurate, allyl 2,2-dimethylpentanoate/vinyl laurate, vinyl dimethylpropionate/vinyl stearate, allyl dimethylpropionate/vinyl stearate, vinyl propionate/vinyl stearate,
crosslinked with 0.2% divinylbenzene, vinyl dimethylpropionate/vinyl laurate, crosslinked with 0.2% divinylbenzene, vinyl acetate/octadecyl vinyl ether, crosslinked with 0.2% tetraallyloxyethane, vinyl acetate/allyl stearate, crosslinked with 0.2% divinylbenzene, vinyl acetate/1-octadecene, crosslinked with 0.2% divinylbenzene, and allyl propionate/allyl stearate, crosslinked with 0.2% divinylbenzene.

Liposoluble film-forming polymers that may also be mentioned include liposoluble copolymers, and in particular those resulting from the copolymerization of vinyl esters containing from 9 to 22 carbon atoms or of alkyl acrylates or methacrylates, the alkyl radicals containing from 10 to 20 carbon atoms.

Such liposoluble copolymers may be chosen from copolymers of polyvinyl stearate, polyvinyl stearate crosslinked with divinylbenzene, with diallyl ether or with diallyl phthalate, polystearyl (meth)acrylate copolymers, polyvinyl laurate and polylauryl (meth)acrylate copolymers, these poly (meth)acrylates possibly being crosslinked with ethylene glycol dimethacrylate or tetraethylene glycol dimethacrylate.

The liposoluble copolymers defined above are known and described especially in patent application FR-A-2 232 303; they may have a weight-average molecular weight ranging from 2000 to 500 000 and preferably from 4000 to 200 000.

As examples of liposoluble polymers that may be used in the invention, mention may be made of polyalkylenes and \( C_2\)-\( C_2\)O alkene copolymers, in particular polybutene.

b) amorphous and liposoluble polycondensates, preferably not comprising any groups donating hydrogen interactions, in particular aliphatic polyesters containing \( C_4\)–\( C_{50} \) alkyl side chains or polyesters
resulting from the condensation of fatty acid dimers, or even polyesters comprising a silicone-based segment in the form of a block, graft or end group, as defined in patent application FR 0 113 920.

c) amorphous and liposoluble polysaccharides comprising alkyl (ether or ester) side chains, in particular alkylcelluloses containing a saturated or unsaturated, linear or branched C1 to C8 alkyl radical, such as ethylcellulose and propylcellulose.

The film-forming polymer may be chosen in particular from cellulose-based polymers such as nitrocellulose, cellulose acetate, cellulose acetobutyrates, cellulose acetopropionates or ethylcellulose, or from polyurethanes, acrylic polymers, vinyl polymers, polyvinyl butyrals, alkyd resins, resins derived from aldehyde condensation products, such as arylsulfonamide-formaldehyde resins, for instance toluenesulfonamide-formaldehyde resin, and arylsulfonamide epoxy resins.

Film-forming polymers that may especially be used include nitrocellulose RS 1/8 sec; RS ¼ sec; ¼ sec; RS 5 sec; RS 15 sec; RS 35 sec; RS 75 sec; RS 150 sec; AS ¼ sec; AS ½ sec; SS ¼ sec; SS ½ sec; SS 5 sec, sold especially by the company Hercules; the toluenesulfonamide-formaldehyde resins Ketjentflex MS80 from the company Akzo or Santolite MHP and Santolite MS 80 from the company Faconnier or Resimpol 80 from the company Pan Americana, the alkyd resin Beckosol Ode 230-70-E from the company Dainippon, the acrylic resin Acryloid B66 from the company Rohm & Haas, and the polyurethane resin Trixene PR 4127 from the company Baxenden.

d) silicone resins.

The term "resin" means a three-dimensional structure.
In one embodiment, the silicone resin is chosen from silsesquioxanes and siloxysilicates.

In one embodiment, the silicone resin is chosen from siloxysilicates, such as trimethyl siloxysilicates, which are represented by the following formula:

\[ [R_3SiO_{172}]_x - (SiO_{4/2})_y \quad (\text{units M and Q}), \]

in which \( x \) and \( y \) may have values ranging from 50 to 80, and \( R \) represents an alkyl, such as a methyl or an alkyl of two or more carbon atoms.

The ratio of the units M to the units Q may be, for example, about 0.7:1. The film-forming silicone resin may be chosen, for example, from the resins Wacker 803 and 804, available from Wacker Silicone Corporation, and GE 1170-002 available from General Electric.

In another embodiment, the silicone resin is chosen from silsesquioxanes comprising units \( T \):

\[ [RSiO_{3/2}]_t \quad (\text{units } T), \]

in which \( t \) has a value that may range up to several thousand and \( R \) represents an alkyl, such as a methyl or an alkyl of two or more carbon atoms. In one embodiment, the silsesquioxane is chosen from polymethylsilsesquioxanes, which are silsesquioxanes such that \( R \) is a methyl group.

The polymethylsilsesquioxanes may comprise, for example, less than about 500 units \( T \) and preferably from about 50 to about 500 units \( T \).

Not all polymethylsilsesquioxanes are film-forming. For example, the polymethylsilsesquioxanes such as Tospearl™ from Toshiba or KMP 590 from Shin-Etsu are
highly insoluble in oils and, as a result, are inefficient film-forming agents. The molecular mass of these polymethylsilsesquioxanes is difficult to determine; they generally contain one thousand or more than one thousand units $T$.

An example of a polymethylsilsesquioxane that may be used according to the invention is Belsil PMS MK (also known as MK resin) available from Wacker Chemie.

Polymethylsilsesquioxane is a polymer mainly consisting of $\text{CH}_3\text{SiO}_3/2$ repeating units ($\text{units } T$) and also possibly containing up to about 1% (on a weight or molar basis) of $(\text{CH}_3)_2\text{SiO}_2/2$ (units $D$).

The polymethylsilsesquioxanes that are suitable for use in the present invention comprise KR-220L, available from Shin-Etsu. The structure of KR-220L consists essentially of silicone units $T$ ($\text{CH}_3\text{SiO}_3/2$) with Si-OH or silanol end units. There are no units $D$.

The polymethylsilsesquioxane KR-242A has a structure containing about 98% of methyl units $T$ and about 2% of dimethyl units $D$, with Si-OH or silanol end units, and KR-251 has a structure containing about 88% of methyl units $T$ and about 12% of dimethyl units $D$, with Si-OH or silanol end units; both are available from Shin-Etsu.

In one embodiment of the invention, the silicone resin is soluble or dispersible in silicone oils or volatile organic liquids. In one embodiment, the silicone resin is solid at 25°C.

In one embodiment, the silicone resin may have a molecular mass ranging from 1000 to 10 000 grams/mol. In one embodiment, the resin is present in the composition in an amount ranging from 0.5% to 20% by weight and preferably in an amount of 1% to 10% by weight relative to the total weight of the composition.
In one embodiment of the invention, the silicone resin is chosen from combinations of units M, D, T and Q, containing at least two units chosen from M, D, T and Q satisfying the relationship $R_n Si0_{(4-n)}$, in which n has a value ranging from 1.0 to 1.50. Certain resins of this type are described in US-A-6,074,054.

In another embodiment, the film-forming silicone resin is a copolymer, in which at least one unit of the copolymer is chosen from the silicone units M, D, T and Q, and in which at least one additional unit of the copolymer is chosen from esters. The film-forming silicone resin may be chosen, for example, from diisostearoyltrimethylolpropane siloxysilicates, such as SF 1318 available from GE Silicones.

In one embodiment, the film-forming polymer may be a solid that is insoluble in the liquid organic phase at ambient temperature, for example of about 25°C. In this case, the polymer is also insoluble in the liquid organic phase at its softening point, unlike a wax even of polymeric origin, which is soluble in the liquid organic phase (or fatty phase) at its melting point. In this sense, the polymer is not a wax.

The composition according to the invention advantageously comprises at least one stable dispersion of essentially spherical polymer particles of one or more polymers, in a physiologically acceptable fatty phase. The said fatty phase is a liquid organic phase comprising oils as described above.

These dispersions may especially be in the form of polymer nanoparticles in stable dispersion in the said liquid organic phase. The nanoparticles preferably have a mean size of between 5 and 800 nm and better still between 50 and 500 nm. However, it is possible to obtain polymer particle sizes ranging up to 1 µm.
Among the film-forming polymers, in dispersion or otherwise, mention may be made of acrylic or vinyl free-radical homopolymers or copolymers, preferably with a Tg of less than or equal to 40°C and especially ranging from -10°C to 30°C, used alone or as a mixture.

The term "free-radical polymer" means a polymer obtained by polymerization of unsaturated and especially ethylenic monomers, each monomer being capable of homopolymerizing (unlike polycondensates). The free-radical polymers may especially be vinyl polymers or copolymers, especially acrylic polymers.

The acrylic polymers may result from the polymerization of ethylenically unsaturated monomers containing at least one acid group and/or esters of these acid monomers and/or amides of these acids.

Monomers bearing an acid group that may be used include α,β-ethylenic unsaturated carboxylic acids such as acrylic acid, methacrylic acid, crotonic acid, maleic acid or itaconic acid. (Meth)acrylic acid and crotonic acid are preferably used, and more preferably (meth) acrylic acid.

The acid monomer esters are advantageously chosen from (meth) acrylate esters (also known as (meth) acrylates), for instance alkyl (meth) acrylates, in particular of a C1-C20 and preferably C1-C8 alkyl, aryl (meth) acrylates, in particular of a C6-C10 aryl, and hydroxyalkyl (meth) acrylates, in particular of a C2-C6 hydroxyalkyl. Alkyl (meth) acrylates that may be mentioned include methyl, ethyl, butyl, isobutyl, 2-ethylhexyl and lauryl (meth) acrylate. Hydroxyalkyl (meth) acrylates that may be mentioned include hydroxy-ethyl (meth) acrylate and 2-hydroxypropyl (meth) acrylate. Aryl (meth) acrylates that may be mentioned include benzyl or phenyl acrylate.
The (meth) acrylic acid esters that are particularly preferred are the alkyl (meth) acrylates.

Free-radical polymers that are preferably used include copolymers of (meth) acrylic acid and of alkyl (meth) acrylate, especially of a C<sub>1</sub>-C<sub>4</sub> alkyl. Methyl acrylates optionally copolymerized with acrylic acid may more preferentially be used.

Amides of the acid monomers that may be mentioned include (meth) acrylamides, especially N-alkyl (meth) -acrylamides, in particular of a C<sub>2</sub>-C<sub>4</sub> alkyl, such as N-ethylacrylamide, N-t-butylacrylamide and N-octyl-acrylamide; N-di (C<sub>1</sub>-C<sub>4</sub>)alkyl (meth) acrylamides.

The acrylic polymers may also result from the polymerization of ethylenically unsaturated monomers containing at least one amine group, in free form or in partially or totally neutralized form, or alternatively in partially or totally quaternized form. Such monomers may be, for example, dimethylaminoethyl (meth) acrylate, dimethylaminoethylmethacrylamide, vinylamine, vinyl-pyridine or diallyldimethylammonium chloride.

The vinyl polymers may also result from the homopolymerization or copolymerization of at least one monomer chosen from vinyl esters and styrene monomers. In particular, these monomers may be polymerized with acid monomers and/or esters thereof and/or amides thereof, such as those mentioned previously. Examples of vinyl esters that may be mentioned include vinyl acetate, vinyl propionate, vinyl neodecanoate, vinyl pivalate, vinyl benzoate and vinyl t-butylibenzoate.

Styrene monomers that may be mentioned include styrene and α-methylstyrene.

The list of monomers given is not limiting, and it is possible to use any monomer known to those skilled in
the art included in the categories of acrylic and vinyl monomers (including monomers modified with a silicone-based chain).

As other vinyl monomers that may be used, mention may also be made of:
- N-vinylpyrrolidone, vinylcaprolactam, vinyl-N- (Ci-C₆)-alkylpyrroles, vinyloxazoles, vinylthiazoles, vinylpyrimidines and vinylimidazoles,
- olefins such as ethylene, propylene, butylene, isoprene or butadiene.

The vinyl polymer may be crosslinked with one or more difunctional monomers especially comprising at least two ethylenic unsaturations, such as ethylene glycol dimethacrylate or diallyl phthalate.

In a non-limiting manner, the film-forming polymers may be chosen from the following polymers or copolymers:
- polyurethanes, polyurethane-acrylics, polyureas, polyurea-polyurethanes, polyester-polyurethanes, polyesters, polyesteramides, alkyds; acrylic and/or vinyl polymers or copolymers; acrylic-silicone copolymers; polyacrylamides; silicone polymers, for instance silicone polyurethanes or silicone acrylics, and fluoro polymers, and mixtures thereof.

According to one embodiment, the polymer particles are stabilized with a stabilizer that is solid at room temperature, which may be a block polymer, a grafted polymer and/or a random polymer, alone or as a mixture. The stabilization may be achieved by any known means, and in particular by direct addition of the stabilizing polymer during the polymerization. Among the grafted polymers that may be mentioned are silicone polymers grafted with a hydrocarbon-based chain; hydrocarbon-based polymers grafted with a silicone chain.
Thus, grafted-block or block copolymers comprising at least one block of polyorganosiloxane type and at least one block of a free-radical polymer, for instance grafted copolymers of acrylic/silicone type, may be used, which may be used especially when the non-aqueous medium contains silicone.

It is also possible to use grafted-block or block copolymers comprising at least one block of polyorganosiloxane type and at least one block of a polyether. The polyorganopolysiloxane block may especially be a polydimethylsiloxane or a poly (C$_2$-C$_8$)alkylmethylsiloxane; the polyether block may be a poly (C$_2$-C$_8$)alkylene, in particular polyoxyethylene and/or polyoxypropylene. In particular, dimethicone copolyols or (C$_2$-C$_8$)alkyldimethicone copolyols such as those sold under the name Dow Corning 3225C by the company Dow Corning, and lauryl methicones such as those sold under the name Dow Corning Q2-5200 by the company Dow Corning, may be used.

Grafted-block or block copolymers that may also be mentioned include those comprising at least one block resulting from the polymerization of at least one ethylenic monomer containing one or more optionally conjugated ethylenic bonds, for instance ethylene or dienes such as butadiene and isoprene, and of at least one block of a vinyl polymer and better still a styrene polymer. When the ethylenic monomer comprises several optionally conjugated ethylenic bonds, the residual ethylenic unsaturations after the polymerization are generally hydrogenated. Thus, in a known manner, the polymerization of isoprene leads, after hydrogenation, to the formation of an ethylene-propylene block, and the polymerization of butadiene leads, after hydrogenation, to the formation of an ethylene-butylene block. Among these polymers that may be mentioned are block copolymers, especially of "diblock" or "triblock" type such as polystyrene/polyisoprene (SI),
polystyrene/polybutadiene (SB) such as those sold under the name Luvitol HSB by BASF, of the type such as polystyrene/copoly (ethylene-propylene) (SEP) such as those sold under the name Kraton by Shell Chemical Co. or of the type such as polystyrene/copoly (ethylene-butylene) (SEB). Kraton G1650 (SEBS), Kraton G1651 (SEBS), Kraton G1652 (SEBS), Kraton G1657X (SEBS), Kraton G1701X (SEP), Kraton G1702X (SEP), Kraton G1726X (SEB), Kraton D-1101 (SBS), Kraton D-1102 (SBS) and Kraton D-1107 (SIS) may be used in particular. The polymers are generally known as hydrogenated or non-hydrogenated diene copolymers.

Gelled Permethyl 99A-750, 99A-753-59 and 99A-753-58 (mixture of triblock and of star polymer), Versagel 5960 from Penreco (triblock + star polymer); OS129880, OS129881 and OS84383 from Lubrizol (styrene/methacrylate copolymer) may also be used.

As grafted-block or block copolymers comprising at least one block resulting from the polymerization of at least one ethylenic monomer containing one or more ethylenic bonds and of at least one block of an acrylic polymer, mention may be made of poly (methyl methacrylate) /polyisobutylene diblock or triblock copolymers or grafted copolymers containing a poly (methyl methacrylate) backbone and polyisobutylene grafts .

As grafted-block or block copolymers comprising at least one block resulting from the polymerization of at least one ethylenic monomer containing one or more ethylenic bonds and of at least one block of a polyether such as a C_2-C_{18} polyalkylene (especially polyethylene and/or polyoxypropylene), mention may be made of polyoxyethylene/polybutadiene or polyoxyethylene/polyisobutylene diblock or triblock copolymers .
Copolymers based on alkyl acrylates or methacrylates derived from \( \text{C}_4 \) alcohols and on alkyl acrylates or methacrylates derived from \( \text{C}_8-\text{C}_{10} \) alcohols may be used. Mention may be made in particular of stearyl methacrylate/methyl methacrylate copolymer.

Preferably, diblock polymers are used as stabilizer.

The polymer may be a vinyl polymer comprising at least one carbosiloxane dendrimer-based unit.

The vinyl polymer may especially have a backbone and at least one side chain, which comprises a carbosiloxane dendrimer structure. The term "carbosiloxane dendrimer structure" in the context of the present invention represents a molecular structure with branched groups of high molecular masses with high regularity in the radial direction starting from the backbone bond. Such carbosiloxane dendrimer structures are described in the form of a highly branched siloxane-silylalkylene copolymer in the laid-open Japanese patent application Kokai 9-171 154.

The vinyl polymer contains carbosiloxane dendrimer-based units that may be represented by the following general formula:

\[
\begin{array}{c}
\text{Y-Si-O-Si-X}^1 \\
\text{R}^1 \\
\text{X}^1
\end{array}
\]

in which \( R^1 \) represents an aryl group or an alkyl group containing from 1 to 10 carbon atoms, and \( X^1 \) represents a silylalkyl group which, when \( i = 1 \), is represented by the formula:

\[
X^i = \text{R}^2 \text{Si}(\text{OR}^2)^i \text{Si}(\text{OR}^2)^{i+1} \text{Si}(\text{OR}^2)^i \]
in which \( R^1 \) is the same as defined above, \( R^2 \) represents an alkylene group containing from 2 to 10 carbon atoms, \( R^3 \) represents an alkyl group containing from 1 to 10 carbon atoms, \( X^{i+1} \) represents a hydrogen atom, an alkyl group containing from 1 to 10 carbon atoms, an aryl group or the silylalkyl group defined above with \( i = i + 1; i \) is an integer from 1 to 10 which represents the generation of the said silylalkyl group, and \( a^1 \) is an integer from 0 to 3; \( Y \) represents an organic group that may be polymerized using radicals chosen from the group consisting of an organic group that contains a methacrylic group or an acrylic group and that is represented by the formulae:

\[
\begin{align*}
\text{CH}_2&=\text{C}--\text{O}--\text{R}^6
\end{align*}
\]

and

\[
\begin{align*}
\text{CH}_2&=\text{C}--\text{NH}--\text{R}^5
\end{align*}
\]

in which \( R^4 \) represents a hydrogen atom or an alkyl group, \( R^5 \) represents an alkylene group containing from 1 to 10 carbon atoms, such as a methylene group, an ethylene group, a propylene group or a butylene group, the methylene group and the propylene group being preferred; and an organic group that contains a styryl group and that is represented by the formula:

\[
\begin{align*}
\text{CH}_2&=\text{C}--\text{NH}--\text{R}^5
\end{align*}
\]

in which \( R^6 \) represents a hydrogen atom or an alkyl group, \( R^7 \) represents an alkyl group containing from 1 to 10 carbon atoms, such as a methyl group, an ethyl group, a propyl group or a butyl group, the methyl
group being preferred, \( R^8 \) represents an alkylene group containing from 1 to 10 carbon atoms, such as a methylene group, an ethylene group, a propylene group or a butylene group, the ethylene group being preferred, \( b \) is an integer from 0 to 4, and \( c \) is 0 or 1 such that if \( c \) is 0, \(-(R^8)_c\) represents a bond, \( R^1 \) represents an aryl group or an alkyl group containing from 1 to 10 carbon atoms, in which the alkyl group is preferably represented by a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, an isopropyl group, an isobutyl group, a cyclopentyl group or a cyclohexyl group, and in which the aryl group is preferably represented by a phenyl group and a naphthyl group, in which the methyl and phenyl groups are more particularly preferred, and the methyl group is preferred among all.

The vinyl polymer may be one of the polymers described in the examples of patent application EP 0 963 751, or a polymer obtained according to the process described in the said patent application, the content of which is incorporated into the present patent application by way of reference.

According to one embodiment, the vinyl polymer also comprises at least one organofluorine group.

Structures in which the polymerized vinyl units constitute the backbone and carbosiloxane dendritic structures and also organofluorine groups are attached to side chains are particularly preferred.

The organofluorine groups may be obtained by replacing with fluorine atoms all or some of the hydrogen atoms of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tert-butyl, pentyl, neopentyl, hexyl, cyclohexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, hexadecyl and octadecyl groups and other alkyl groups of 1 to 20 carbon atoms, and
also alkylalkylene groups of 6 to 22 carbon atoms.

The groups represented by the formula: - (CH₂)ₓ - (CF₂)ᵧ - R¹³ are suggested as examples of fluoroalkyl groups obtained by substituting fluorine atoms for hydrogen atoms of alkyl groups. In the formula, the index "x" is 0, 1, 2 or 3 and "y" is an integer from 1 to 20. R¹³ is an atom or a group chosen from a hydrogen atom, a fluorine atom, -CH(CF₅)₂⁻ and CF(CF₃)₂. Such fluorine-substituted alkyl groups are exemplified by linear or branched polyfluoroalkyl or perfluoroalkyl groups represented by the formulae presented below:

-CF₃, -C₂F₅, -nC₃F₇, -CF(CF₅)₂, -nC₄F₉, CF₂CF(CF₃)₂, -nCsF₁₁, -nC₆F₁₃, -CH₂CF₃, -CH(CF₃)₂, CH₂CH(CF₃)₂ - CH₂(CF₂)₃F, -CH₂(CF₂)₄F, -CH₂(CF₂)₅F, -CH₂(CF₂)₆F, -CH₃CH₂CF₃, -CH₃CH₂(CF₂)₃F, -CH₃CH₂(CF₂)₄F, -CH₃CH₂(CF₂)₅F, -CH₂CH₂(CF₂)₁₀F, -CH₂CH₂(CF₂)₁₁F, -CH₂CH₂(CF₂)₁₂F, -CH₂CH₂(CF₂)₁₃F, -CH₂CH₂(CF₂)₁₄F, -CH₂CH₂(CF₂)₁₅F, -CH₂CH₂(CF₂)₁₆F, -CH₂CH₂(CF₂)₁₇F, -CH₂CH₂(CF₂)₁₈F, -CH₂CH₂(CF₂)₁₉F, -CH₂CH₂(CF₂)₂₀F, -CH₂CH₂(CF₂)₂₁F, -CH₂CH₂(CF₂)₂₂F, -CH₂(CF₂)₄₄H, and -CH₂CH₂(CF₂)₃₃H.

The groups represented by -CH₂CH₂⁻(CF₂)ₘ⁻CFR¹⁴⁻[OCF₂CF(CF₃)]ᵣ⁻OC₃F₇ are suggested as fluoroalkyloxyfluoroalkylene groups obtained by substituting fluorine atoms for hydrogen atoms of alkylalkylene groups. In the formula, the index "m" is 0 or 1, "n" is 0, 1, 2, 3, 4 or 5, and R¹⁴ is a fluorine atom or CF₃. Such fluoroalkyloxyfluoroalkylene groups are exemplified by the perfluoroalkyloxyfluoroalkylene groups represented by the formulae presented below:

-CH₂CH₂CF(CF₃)⁻[OCF₂CF(CF₃)]ᵣ⁻OC₃F₇, -CH₂CH₂CF₂CF₂⁻[OCF₂CF(CF₃)]ᵣ⁻OC₃F₇.

The number-average molecular weight of the vinyl polymer used in the present invention may be between 3000 and 2 000 000 and more preferably between 5000 and 800 000.
The fluoro vinyl polymer may be one of the polymers described in the examples of patent application WO 03/045 337, or one of polymers obtained according to the process described in the said patent application, the content of which is incorporated into the present patent application by way of reference.

The vinyl polymer may be present in a content ranging from 0.1% to 70% by weight, preferably ranging from 0.5% to 50% by weight, preferentially ranging from 1% to 40% by weight and more preferably ranging from 5% to 15% by weight relative to the total weight of the composition.

According to one preferred embodiment, the grafted vinyl polymers are borne in an oil, which is preferably volatile, chosen from silicone oils and/or hydrocarbon-based oils. According to one particular embodiment, the silicone oil may be cyclopentasiloxane. According to another particular embodiment, the hydrocarbon-based oil may be isododecane.

The vinyl polymers grafted with at least one carbosiloxane dendrimer-based unit that may be particularly suitable for the present invention are the polymers sold under the names TIB 4-100, TIB 4-101, TIB 4-120, TIB 4-130, TIB 4-200, FA 4002 ID (TIB 4-202), TIB 4-220 and FA 4001 CM (TIB 4-230) by the company Dow Corning.

**Latex**

The film-forming polymer of the composition according to the invention may be in the form of particles in aqueous dispersion, which are generally known as latices or pseudolatices.

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

The expression "free-radical film-forming polymer" means a polymer obtained by polymerization of monomers containing unsaturation, especially ethylenic unsaturation, each monomer being capable of homopolymerizing (unlike polycondensates).

The film-forming polymers of free-radical type may especially be vinyl polymers or copolymers, especially acrylic polymers.

The vinyl film-forming polymers may result from the polymerization of monomers containing ethylenic unsaturation having at least one acid group and/or esters of these acid monomers and/or amides of these acid monomers.

Monomers bearing an acid group that may be used include α,β-ethylenic unsaturated carboxylic acids such as acrylic acid, methacrylic acid, crotonic acid, maleic acid or itaconic acid, and mixtures thereof. (Meth) acrylic acid and crotonic acid are preferably used, and more preferentially (meth) acrylic acid.

The esters of acid monomers are advantageously chosen from the esters of (meth) acrylic acid (also known as (meth) acrylates), especially alkyl (meth) acrylates, in particular of a C1-C30 and preferably a C1-C20 alkyl, aryl (meth) acrylates, in particular of a C6-C10 aryl, and hydroxyalkyl (meth) acrylates, in particular of a C2-C6 hydroxyalkyl.

Among the alkyl (meth) acrylates that may be mentioned are methyl methacrylate, ethyl methacrylate, butyl methacrylate, isobutyl methacrylate, 2-ethylhexyl
methacrylate, lauryl methacrylate and cyclohexyl methacrylate, and mixtures thereof.

Among the hydroxyalkyl (meth)acrylates that may be mentioned are hydroxyethyl acrylate, 2-hydroxypropyl acrylate, hydroxyethyl methacrylate and 2-hydroxypropyl methacrylate.

Among the aryl (meth)acrylates that may be mentioned are benzyl acrylate and phenyl acrylate.

The (meth)acrylic acid esters that are particularly preferred are the alkyl (meth)acrylates.

According to the present invention, the alkyl group of the esters may be either fluorinated or perfluorinated, that is to say that some or all of the hydrogen atoms of the alkyl group are replaced with fluorine atoms.

Amides of the acid monomers that may be mentioned, for example, are (meth)acrylamides, and especially N-alkyl (meth)acrylamides, in particular of a C₂-C₁₂ alkyl. Among the N-alkyl (meth)acrylamides that may be mentioned are N-ethylacrylamide, N-t-butylacrylamide, N-t-octylacrylamide and N-undecylacrylamide.

The vinyl film-forming polymers may also result from the homopolymerization or copolymerization of monomers chosen from vinyl esters and styrene monomers. In particular, these monomers may be polymerized with acid monomers and/or esters thereof and/or amides thereof, such as those mentioned above.

Examples of vinyl esters that may be mentioned are vinyl acetate, vinyl neodecanoate, vinyl pivalate, vinyl benzoate and vinyl t-butylbenzoate, and mixtures thereof.

Styrene monomers that may be mentioned are styrene and
The list of monomers given is not limiting, and it is possible to use any monomer known to those skilled in the art falling within the categories of acrylic and vinyl monomers (including monomers modified with a silicone chain).

As acrylic film-forming polymer that may be used according to the invention, mention may be made of those sold under the names Neocryl XK-90®, Neocryl A-1070®, Neocryl A-1090®, Neocryl BT-62®, Neocryl A-1079® and Neocryl A-523® by the company Aveca-Neoresins, Dow Latex 432® by the company Dow Chemical, Daitosol 5000 AD by the company Daito Kasey Kogyo, and Syntran® 5190, Syntran® 5760 and Syntran® 5009 by the company Interpolymer.

Among the film-forming polycondensates, mention may also be made of polyurethanes, polyesters, polyesteramides, fatty-chain polyesters, polyamides and epoxyester resins. Polyurethanes are preferably used.

The polyurethanes may be chosen from anionic, cationic, nonionic or amphoteric polyurethanes, polyurethane-acrylics, polyurethane-polyvinylpyrrolidones, polyester-polyurethanes, polyether-polyurethanes, polyureas and polyurea-polyurethanes, and mixtures thereof.

The film-forming polyurethane may be, for example, an aliphatic, cycloaliphatic or aromatic polyurethane, polyurea-urethane or polyurea copolymer, comprising, alone or as a mixture:
- at least one block of aliphatic and/or cycloaliphatic and/or aromatic polyester origin, and/or
- at least one branched or non-branched silicone block, for example polydimethylsiloxane or polymethylphenylsiloxane, and/or
The film-forming polyurethanes that may be used in the invention may also be obtained from branched or non-branched polyesters or from alkyds comprising labile hydrogens, which are modified by reaction with a diisocyanate and a difunctional organic compound (for example dihydroxy, diamino or hydroxyamino), also comprising either a carboxylic acid or carboxylate group or a sulfonic acid or sulfonate group, or alternatively a neutralizable tertiary amine group or a quaternary ammonium group.

As film-forming polyurethanes that may be used according to the invention, it is possible to use those manufactured or sold under the names Neorez R-981® and Neorez R-974® by the company Avecia-Neoresins, Avalure UR-405®, Avalure UR-410®, Avalure UR-425®, Avalure UR-450®, Sancure 875®, Sancure 861®, Sancure 878® and Sancure 2060® by the company Goodrich, and Impranil 85® by the company Bayer, and mixtures thereof.

The polyesters can be obtained, in a known manner, by polycondensation of dicarboxylic acids with polyols, in particular diols.

The dicarboxylic acid can be aliphatic, alicyclic or aromatic. Examples of such acids that may be mentioned are: oxalic acid, malonic acid, dimethylmalonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, 2,2-dimethylglutaric acid, azelaic acid, suberic acid, sebacic acid, fumaric acid, maleic acid, itaconic acid, phthalic acid, dodecanedioic acid, 1,3-cyclohexanedicarboxylic acid, 1,4-cyclohexane-dicarboxylic acid, isophthalic acid, terephthalic acid, 2,5-norbornanedicarboxylic acid, diglycolic acid, thiodipropionic acid, 2,5-naphthalenedicarboxylic acid, 2,6-naphthalenedicarboxylic acid, and mixtures thereof. These dicarboxylic acid monomers can be used alone or
in a combination of at least two dicarboxylic acid monomers. Among these monomers, the ones preferably chosen are phthalic acid, isophthalic acid and terephthalic acid.

The diol can be chosen from aliphatic, alicyclic and aromatic diols. The diol preferably used is one chosen from: ethylene glycol, diethylene glycol, triethylene glycol, 1,3-propanediol, cyclohexanediethanol, 4-butanediol, and mixtures thereof. Other polyols that can be used are glycerol, pentaerythritol, sorbitol and trimethylolpropane.

The polyesteramides can be obtained in a manner similar to that for the polyesters, by polycondensation of diacids with diamines or amino alcohols. Diamines that can be used are ethylenediamine, hexamethylenediamine and meta- or para-phenylenediamine. An amino alcohol that can be used is monoethanolamine.

The polyester can also comprise at least one monomer bearing at least one group \(-\text{SO}_3\text{M}\), with M representing a hydrogen atom, an ammonium ion \(\text{NH}_4^+\) or a metal ion such as, for example, an \(\text{Na}^+, \text{Li}^+, \text{K}^+, \text{Mg}^{2+}, \text{Ca}^{2+}, \text{Cu}^{2+}, \text{Fe}^{2+}\) or \(\text{Fe}^{3+}\) ion. A difunctional aromatic monomer comprising such a group \(-\text{SO}_3\text{M}\) can be used in particular.

The aromatic nucleus of the difunctional aromatic monomer also bearing a group \(-\text{SO}_3\text{M}\) as described above can be chosen, for example, from benzene, naphthalene, anthracene, biphenyl, oxybiphenyl, sulfonylbiphenyl and methylenebiphenyl nuclei. Examples of difunctional aromatic monomers also bearing a group \(-\text{SO}_3\text{M}\) that may be mentioned are: sulfoisophthalic acid, sulfo-terephthalic acid, sulfophthalic acid, 4-sulfonaphthalene-2, 7-dicarboxylic acid, and mixtures thereof.

Copolymers based on isophthalate/sulfoisophthalate, and more particularly copolymers obtained by condensation
of diethylene glycol, cyclohexanediethanol, isophthalic acid, sulfoisophthalic acid, and mixtures thereof, are preferably used in the compositions that are the subject of the invention. Such polymers are sold, for example, under the brand name Eastman AQ by the company Eastman Chemical Products.

The polymers of natural origin, which are optionally modified, may be chosen from shellac resin, sandarac gum, dammar resins, elemi gums, copal resins and water-insoluble cellulose polymers, and mixtures thereof.

Mention may also be made of polymers resulting from the free-radical polymerization of one or more free-radical monomers inside and/or partially at the surface of pre-existing particles of at least one polymer chosen from the group consisting of polyurethanes, polyureas, polyesters, polyesteramides and/or alkyds. These polymers are generally known as hybrid polymers.

The dispersion comprising one or more film-forming polymers may be prepared by a person skilled in the art on the basis of his general knowledge.

The size of the polymer particles in aqueous dispersion may range from 5 to 800 nm, for example from 10 to 500 nm and preferably from 20 to 300 nm.

Advantageously, a film-forming polymer with a water uptake of less than or equal to 50%, preferably less than or equal to 40%, more preferentially less than or equal to 30% and better still less than or equal to 20% is used.

According to the present patent application, the term "water uptake of the film-forming polymer" means the percentage of water absorbed by the polymer after 10 minutes of immersion in tap water, at 20°C. The water uptake is measured for a coat 300 µm thick (before
drying) applied to a plate and then dried for 24 hours at 30°C and at 50% relative humidity; pieces of about 1 cm² cut from the dry film are weighed (mass measurement M₁) and then immersed in water for 10 minutes; after immersion, the piece of film is wiped to remove the excess surface water and is then weighed (mass measurement M₂). The difference M₂ - M₁ corresponds to the amount of water absorbed by the polymer.

The water uptake is equal to \( \frac{(M₂ - M₁)}{M₁} \times 100 \) and is expressed as a percentage by weight of water relative to the weight of polymer.

The film-forming polymer in aqueous dispersion may be present in the composition according to the invention in a solids content (or active material content) ranging from 1% to 60% by weight, preferably from 5% to 40% by weight and better still from 10% to 30% by weight relative to the total weight of the composition.

**Polyamide polymer or copolymer**

The composition may contain at least one polyamide polymer or copolymer, which may be chosen from polyamide homopolymers, polyamides branched with fatty chains, polyamide-organosiloxanes, polyamide-polyester copolymers and polyamide-polyacrylic copolymers, and mixtures thereof.

The polyamide polymer may be present in the composition in a content ranging from 0.1% to 60% by weight, preferably ranging from 0.1% to 50% by weight, preferably ranging from 0.5% to 40% by weight, preferentially ranging from 1% to 30% by weight and more preferentially ranging from 1% to 25% by weight, relative to the total weight of the composition.

As polyamide polymers that may be used in the
invention, mention may be made of the polymers described in patent application EP 1 343 458, the content of which is incorporated into the present patent application by reference, for example the polyamide resins resulting from the condensation of an aliphatic dicarboxylic acid and a diamine (including compounds containing more than 2 carbonyl groups and 2 amine groups), the carbonyl and amine groups of adjacent individual units being condensed via an amide bond. These polyamide resins are especially the products sold under the brand name Versamid® by the companies General Mills, Inc. and Henkel Corp. (Versamid 930, 744 or 1655) or by the company Olin Mathieson Chemical Corp., under the brand name Onamid®, especially Onamid S or C. These resins have a weight-average molecular mass ranging from 6000 to 9000. For further information regarding these polyamides, reference may be made to documents US-A-3 645 705 and US-A-3 148 125. Versamid® 930 or 744 is more especially used.

It is also possible to use the polyamides sold by the company Arizona Chemical under the references Uni-Rez (2658, 2931, 2970, 2621, 2613, 2624, 2665, 1554, 2623 and 2662) and the product sold under the reference Macromelt 6212 by the company Henkel. For further information regarding these polyamides, reference may be made to the document US-A-5 500 209.

It is also possible to use vegetable-based polyamide resins, for instance those described in patents US-A-5 783 657 and US-A-5 998 570.

As polyamide polymers that may be used in the invention, mention may be made of the polyamides branched with pendent fatty chains and/or terminal fatty chains containing from 6 to 120 carbon atoms, better still 8 to 120 and especially from 12 to 68 carbon atoms, each terminal fatty chain being linked to
the polyamide backbone via at least one bonding group, in particular ester. Preferably, these polymers comprise a fatty chain at each end of the polymer backbone and in particular of the polyamide backbone. Other bonding groups that may be mentioned include ether, amine, urea, urethane, thioester, thiourea and thiourethane groups.

These polymers are more especially those described in document US-A-5 783 657 from the company Union Camp. Examples that may be mentioned include the commercial products sold by the company Arizona Chemical under the names Uniclear 80 and Uniclear 100. They are sold, respectively, in the form of a gel at 80% (of active material) in a mineral oil, and at 100% (of active material). They have a softening point of from 88 to 94°C. These commercial products are a mixture of copolymers of a C36 diacid condensed with ethylenediamine, with a weight-average molecular mass of about 6000. The ester end groups result from the esterification of the remaining acid end groups with cetyl alcohol, stearyl alcohol or mixtures thereof (also known as cetylstearyl alcohol).

As polyamide polymers that may be used in the invention, mention may also be made of polyamides comprising at least one polyorganosiloxane group, consisting of from 1 to 1000 organosiloxane units in the main chain or in the form of a graft. The polymers are, for example, those described in documents US-A-5 874 069, US-A-5 919 444, US-A-6 051 216, US-A-5 981 680 and WO 04/054 524, the content of which is incorporated into the present patent application by way of reference.

The silicone polyamide may be a polymer comprising at least one unit of formula (IV) or (V):
R₄, R₅, R₆ and R₇, which may be identical or different, represent a group chosen from:
- saturated or unsaturated, Cᵢ to C₄₀ linear, branched or cyclic hydrocarbon-based groups, which may contain in their chain one or more oxygen, sulfur and/or nitrogen atoms, and which may be partially or totally substituted with fluorine atoms,
- C₆ to C₁₀ aryl groups, optionally substituted with one or more Cᵢ to C₄ alkyl groups,
- polyorganosiloxane chains possibly containing one or more oxygen, sulfur and/or nitrogen atoms, X, which may be identical or different, represent a linear or branched Cᵢ to C₃₀ alkylenediyl group, which may contain in its chain one or more oxygen and/or nitrogen atoms,

Y is a Cᵢ to C₅₀ saturated or unsaturated, linear or branched alkylene, arylene, cycloalkylene, alkylarylene or arylalkylene divalent group, which may comprise one or more oxygen, sulfur and/or nitrogen atoms, and/or which may bear as substituent one of the following atoms or groups of atoms: fluorine, hydroxyl, C₃ to C₈ cycloalkyl, Cᵢ to C₄₀ alkyl, C₅ to C₁₀ aryl, phenyl optionally substituted with 1 to 3 Cᵢ to C₃
alkyl, C\textsubscript{i} to C\textsubscript{3} hydroxyalkyl and C\textsubscript{i} to C\textsubscript{6} aminoalkyl groups, or

- \textit{n} is an integer ranging from 2 to 500 and preferably from 2 to 200, and \textit{m} is an integer ranging from 1 to 1000, preferably from 1 to 700 and better still from 6 to 200.

**Semi-crystalline polymer**

10 The composition may contain at least one semi-crystalline polymer, which preferably has a melting point of greater than or equal to 30\textdegree C. The melting point values correspond to the melting point measured using a differential scanning calorimeter (DSC) such as the calorimeter sold under the name DSC 30 by the company Mettler, with a temperature rise of 5 or 10\textdegree C per minute. (The melting point considered is the point corresponding to the temperature of the most endothermic peak in the thermogram).

15 The semi-crystalline polymer comprises at least one crystallizable pendent chain or at least one crystallizable block. Aside from the crystallizable chains or blocks, the polymer blocks are amorphous.

20 For the purposes of the invention, the term "crystallizable chain or block" means a chain or block which, if it was alone, would change from the amorphous state to the crystalline state reversibly, depending on whether it is above or below the melting point. For the purposes of the invention, a chain is a group of atoms that are pendent or lateral relative to the polymer backbone. A block is a group of atoms belonging to the backbone, this group constituting one of the repeating units of the polymer.

30 The semi-crystalline polymers that may be used in the invention are in particular:

- polyolefin block copolymers of controlled
crystallization, the monomers of which are described in EP-A-O 951 897,
- polycondensates, especially of aliphatic or aromatic or aliphatic/aromatic polyester type,
- homopolymers or copolymers bearing at least one crystallizable side chain and homopolymers or copolymers bearing in the backbone at least one crystallizable block, for instance those described in document US-A-5 156 911,
- homopolymers or copolymers bearing at least one crystallizable side chain, in particular containing fluorinated group(s), as described in document WO-A-01/19333,
- and mixtures thereof. In the last two cases, the crystallizable side chain(s) or block(s) are hydrophobic.

As particular examples of semi-crystalline polymers that may be used in the composition according to the invention, mention may be made of the Intelimer® IPA products from the company Landec. These polymers are in solid form at room temperature (25°C). They bear crystallizable side chains.

The semi-crystalline polymer may also be chosen from fatty acid esters of dextrin such as those described in patent application FR 2 843 019, the degree of substitution of which is less than or greater than 2, especially Rheopearl TL or Rheopearl KL. According to one embodiment, the semi-crystalline polymer is a polymer of organic structure other than a fatty acid ester of dextrin and other than a nitrocellulose.

**Organic polymer with at least one glass transition below 30°C**

The composition may contain at least one polymer with a glass transition below 30°C, which may be chosen from the list of polymers described above. The polymer may
have at least one glass transition below 200°C, for example below 100°C.

The theoretical glass transition temperature of the polymer or of a block of the polymer may be calculated from the theoretical $T_g$ values of the constituent monomers of the polymer or of a block of the polymer, which may be found in a reference manual such as the Polymer Handbook, 3rd edition, 1989, John Wiley, according to the following relationship, known as Fox's law:

$$\frac{1}{T_g} = \sum \omega_i \left( \frac{1}{T_g} \right)_i,$$

where $\omega_i$ is the mass fraction of the monomer i in the block under consideration and $T_g$ is the glass transition temperature of the homopolymer of the monomer i (in °K).

The glass transition temperature of the polymer according to the invention may be measured using a differential scanning calorimeter, for example the calorimeter sold under the name MDSC 2920 by the company TA Inst., via the technique known as Differential Scanning Calorimetry (DSC), in which a temperature rise of 10°C per minute is applied, for example.

The polymer with at least one glass transition below 30°C is preferably a block polymer or a copolymer capable of generating two phases in the composition according to the invention, and in particular in the liquid fatty phase of the composition.

Among the polymers with at least one glass transition below 30°C that are especially preferred are the silicone polyamides as described above, the silicone polymers with a viscosity of greater than 1000 cSt. and more particularly with a viscosity of greater than 10 000 cSt. or even greater than 100 000 cSt, as
described in patent US 6 074 654 and patent application EP 1 452 165, the content of which is incorporated into the patent application by way of reference.

5 Grafted or block silicone acrylic polymers; acrylic copolymers, for example obtained from butyl acrylate, isobutyl acrylate or ethylhexyl acrylate monomers; and ethylenic copolymers, are also preferred.

10 **Oil**

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

15 The oil may be chosen from hydrocarbon-based oils, silicone oils and fluoro oils.

The oil may be chosen from volatile oils and non-volatile oils, and mixtures thereof.

20 The term "hydrocarbon-based oil" means an oil formed essentially from, or even consisting of, carbon and hydrogen atoms, and possibly oxygen and nitrogen atoms, and containing no silicon or fluorine atoms; it may contain ester, ether, amine or amide groups.

The term "silicone oil" means an oil containing at least one silicon atom, and especially containing Si-O groups.

30 The term "fluoro oil" means an oil containing at least one fluorine atom.

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

The term "volatile oil" means an oil (or non-aqueous medium) capable of evaporating on contact with the skin in less than one hour, at room temperature and
atmospheric pressure. The volatile oil is a volatile cosmetic oil, which is liquid at room temperature, especially having a non-zero vapour pressure, at room temperature and atmospheric pressure, in particular having a vapour pressure ranging from 0.13 Pa to 40 000 Pa (10^{-3} to 300 mmHg), preferably ranging from 1.3 Pa to 13 000 Pa (0.01 to 100 mmHg) and preferentially ranging from 1.3 Pa to 1300 Pa (0.01 to 10 mmHg).

In addition, the volatile oil generally has a boiling point, measured at atmospheric pressure, ranging from 150 °C to 260 °C and preferably ranging from 170 °C to 250 °C.

The composition according to the invention may comprise a volatile hydrocarbon-based oil chosen especially from hydrocarbon-based oils with a flash point ranging from 40°C to 102°C, preferably ranging from 40°C to 55°C and preferentially ranging from 40°C to 50°C.

The volatile oil may be present in the composition according to the invention in a content ranging from 0.1% to 90% by weight, preferably ranging from 1% to 70% by weight and preferentially ranging from 5% to 50% by weight, relative to the total weight of the composition.

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

The non-volatile oil may be present in a content ranging from 0.1% to 70% by weight, preferably ranging from 0.5% to 60% by weight and preferentially ranging from 1% to 50% by weight relative to the total weight of the non-volatile liquid fatty phase.

The volatile hydrocarbon-based oils may be chosen from hydrocarbon-based oils containing from 8 to 16 carbon atoms, and especially branched C8-C16 alkanes, for
instance C8-C16 isoalkanes of petroleum origin (also known as isoparaffins), for instance isododecane (also known as 2,2,4,4,6-pentamethylheptane), isodecane and isohexadecane, for example the oils sold under the trade names Isopar or Permethyl, branched C8-C16 esters and isohexyl neopentanoate, and mixtures thereof. Other volatile hydrocarbon-based oils, for instance petroleum distillates, especially those sold under the name Shell Sol by the company Shell, may also be used. The volatile solvent is preferably chosen from volatile hydrocarbon-based oils containing from 8 to 16 carbon atoms, and mixtures thereof.

Volatile oils that may also be used include volatile silicones, for instance volatile linear or cyclic silicone oils, especially those with a viscosity \( \leq 8 \text{ centistokes} \) \( (8 \times 10^{-6} \text{ m}^2/\text{s}) \) and especially containing from 2 to 7 silicon atoms, these silicones optionally comprising alkyl or alkoxy groups containing from 1 to 10 carbon atoms. As volatile silicone oils that may be used in the invention, mention may be made especially of octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, heptamethylhexyltrisiloxane, heptamethyloctyltrisiloxane, hexamethylhexasiloxane, octamethyltrisiloxane, decamethyloctasiloxane and dodecamethylpentasiloxane, and mixtures thereof.

Mention may also be made of the linear volatile alkyltrisiloxane oils of general formula (I):

\[
\begin{align*}
\left(\begin{array}{c}
\text{CH}_3 \\
\end{array}\right)_3 & - \text{Si} & - \text{O} & - \text{Si} & \left(\begin{array}{c}
\text{CH}_3 \\
\end{array}\right)_3 \\
R & & & & \\
\end{align*}
\]

in which R represents an alkyl group containing from 2 to 4 carbon atoms and of which one or more hydrogen atoms may be substituted with one or more fluorine or
chlorine atoms.

Among the oils of general formula (I) that may be mentioned are:

3-butyl-1, 1,1,3,5,5, 5-heptamethyltrisiloxane,
3-propyl-1, 1,1,3,5,5, 5-heptamethyltrisiloxane, and
3-ethyl-1, 1,1,3,5,5, 5-heptamethyltrisiloxane,
corresponding to the oils of formula (I) for which R is, respectively, a butyl group, a propyl group or an ethyl group.

Volatile fluorinated solvents such as nonafluoromethoxybutane or perfluoromethylcyclopentane may also be used.

The oil of formula (I) for which R is an ethyl group is especially sold under the name Baysilone TP 3886 and the oil for which R is a butyl group is especially sold under the name Baysilone TP 3887 by the company Bayer Silicones.

Preferably, the compositions used in the process according to the invention each have a volatile oil content of less than or equal to 50% by weight, preferably less than or equal to 30% and better still less than or equal to 10% by weight relative to the total weight of each first and second composition. More preferably, the first and second composition(s) are free of volatile oil.

The composition may contain at least one non-volatile oil, especially from non-volatile hydrocarbon-based oils and/or silicone oils and/or fluoro oils.

Non-volatile hydrocarbon-based oils that may especially be mentioned include:
- hydrocarbon-based oils of plant origin, such as triesters of fatty acids and of glycerol, the fatty acids of which may have varied chain lengths from C4 to
C24, these chains possibly being linear or branched, and saturated or unsaturated; these oils are especially wheatgerm oil, sunflower oil, grapeseed oil, sesame seed oil, corn oil, apricot oil, castor oil, shea oil, avocado oil, olive oil, soybean oil, sweet almond oil, palm oil, rapeseed oil, cottonseed oil, hazelnut oil, macadamia oil, jojoba oil, alfalfa oil, poppyseed oil, pumpkin oil, marrow oil, blackcurrant oil, evening primrose oil, millet oil, barley oil, quinoa oil, rye oil, safflower oil, candlenut oil, passionflower oil or musk rose oil; or caprylic/capric acid triglycerides, for instance those sold by the company Stearineries Dubois or those sold under the names Miglyol 810, 812 and 818 by the company Dynamit Nobel; - synthetic ethers containing from 10 to 40 carbon atoms; - apolar hydrocarbon-based oils, for instance squalene, linear or branched hydrocarbons such as liquid paraffin, liquid petroleum jelly and naphthalene oil, hydrogenated or partially hydrogenated polyisobutene, isoeicosane, squalane, decene/butene copolymers and polybutene/polyisobutene copolymers, especially Indopol L-14, and polydecenes such as Puresyn 10, and mixtures thereof; - synthetic esters, for instance oils of formula \( \text{R}_1 \mathrm{COOR}_2 \) in which \( \text{R}_1 \) represents a linear or branched fatty acid residue containing from 1 to 40 carbon atoms and \( \text{R}_2 \) represents a hydrocarbon-based chain, which is especially branched, containing from 1 to 40 carbon atoms, on condition that \( \text{R}_1 + \text{R}_2 \geq 10 \), for instance Purcellin oil (cetostearyl octanoate), isopropyl myristate, isopropyl palmitate, \( \text{C}_{12} \) to \( \text{C}_{15} \) alkyl benzoates, hexyl laurate, diisopropyl adipate, isononyl isononanoate, 2-ethylhexyl palmitate, isostearyl isostearate, alcohol or polyalcohol octanoates, decanoates or ricinoleates, for instance propylene glycol dioctanoate; hydroxylated esters, for instance isostearyl lactate or diisostearyl malate; and pentaerythritol esters;
- fatty alcohols that are liquid at room temperature with a branched and/or unsaturated carbon-based chain containing from 12 to 26 carbon atoms, for instance octyldodecanol, isostearyl alcohol, oleyl alcohol, 2-hexyldecanol, 2-butyloctanol or 2-undecylpentadecanol;
- higher fatty acids such as oleic acid, linoleic acid or linolenic acid;
- carbonates;
- acetates;
- citrates;
- and mixtures thereof.

The non-volatile silicone oils may be:
- non-volatile polydimethylsiloxanes (PDMS),
- polydimethylsiloxanes comprising alkyl or alkoxy groups, which are pendent and/or at the end of a silicone chain, these groups each containing from 3 to 40 carbon atoms,
- phenylsilicones, for instance phenyl trimethicones, phenyl dimethicones, phenyltrimethylsiloxydiphenylsiloxanes, diphenyl dimethicones, diphenylmethyldiphenyltrisiloxanes and 2-phenylethyl trimethylsiloxyxilicates;
- optionally fluorinated polyalkylmethydsiloxanes, for instance polymethyltrifluoropropyldimethylsiloxanes,
  - polyalkylmethydsiloxanes substituted with functional groups such as hydroxyl, thiol and/or amine groups;
  - polysiloxanes modified with fatty acids, fatty alcohols or polyoxyalkylenes,
  - and mixtures thereof.

According to one embodiment, the composition comprises an ester oil. This ester oil may be chosen from the esters of monocarboxylic acids with monoalcohols and polyalcohols.
Advantageously, the said ester corresponds to formula (IV) below:

\[ \text{R}_1\text{-CO-O-R}_2 \]  

(IV)

where \( \text{R}_1 \) represents a linear or branched alkyl radical of 1 to 40 carbon atoms and preferably of 7 to 19 carbon atoms, optionally comprising one or more ethylenic double bonds, and optionally substituted,

\( \text{R}_2 \) represents a linear or branched alkyl radical of 1 to 40 carbon atoms, preferably of 3 to 30 carbon atoms and better still of 3 to 20 carbon atoms, optionally comprising one or more ethylenic double bonds, and optionally substituted.

The term "optionally substituted" means that \( \text{R}_1 \) and/or \( \text{R}_2 \) can bear one or more substituents chosen, for example, from groups comprising one or more hetero atoms chosen from O, N and S, such as amino, amine, alkoxy and hydroxyl.

Preferably, the total number of carbon atoms of \( \text{R}_1 + \text{R}_2 \) is \( \geq 9 \).

\( \text{R}_1 \) may represent the residue of a linear or, preferably, branched fatty acid, preferably a higher fatty acid, containing from 1 to 40 and even better from 7 to 19 carbon atoms, and \( \text{R}_2 \) may represent a linear or, preferably, branched hydrocarbon-based chain containing from 1 to 40, preferably from 3 to 30 and even better from 3 to 20 carbon atoms. Once again, preferably the number of carbon atoms of \( \text{R}_1 + \text{R}_2 \geq 9 \).

Examples of groups \( \text{R}_1 \) are those derived from fatty acids chosen from the group consisting of acetic acid, propionic acid, butyric acid, caproic acid, caprylic acid, pelargonic acid, capric acid, undecanoic acid, lauric acid, myristic acid, palmitic acid, stearic acid, isostearic acid, arachidic acid, behenic acid, oleic acid, linolenic acid, linoleic acid, oleostearic
acid, arachidonic acid and erucic acid, and mixtures thereof.

Examples of esters include purcellin oil (cetostearyl octanoate), isononyl isononanoate, isopropyl myristate, 2-ethylhexyl palmitate, 2-octyldodecyl stearate, 2-octyldodecyl erucate, isostearyl isostearate, and heptanoates, octanoates, decanoates or ricinoleates of alcohols or polyalcohols, for example of fatty alcohols.

Advantageously, the esters are chosen from the compounds of formula (IV) above, in which $R_1$ represents an unsubstituted linear or branched alkyl group of 1 to 40 carbon atoms and preferably of 7 to 19 carbon atoms, optionally comprising one or more ethylenic double bonds, and $R_2$ represents an unsubstituted linear or branched alkyl group of 1 to 40 carbon atoms, preferably of 3 to 30 carbon atoms and even better of 3 to 20 carbon atoms, optionally comprising one or more ethylenic double bonds.

Preferably, $R_1$ is an unsubstituted branched alkyl group of 4 to 14 carbon atoms and preferably of 8 to 10 carbon atoms, and $R_2$ is an unsubstituted branched alkyl group of 5 to 15 carbon atoms and preferably of 9 to 11 carbon atoms. Preferably, in formula (I), $R_i$-CO- and $R_j$ have the same number of carbon atoms and are derived from the same radical, preferably an unsubstituted branched alkyl, for example isononyl, i.e. the ester oil molecule is advantageously symmetrical.

The ester oil will preferably be chosen from the following compounds:

- isononyl isononanoate,
- cetostearyl octanoate,
- isopropyl myristate,
- 2-ethylhexyl palmitate,
- 2-octyldodecyl stearate,
2-octyldodecyl erucate,
isostearyl isostearate.

Advantageously, the non-volatile oil is chosen from the ester oils of formula (IV) above and phenyl silicones, and mixtures thereof.

The composition may contain an oil with a molar mass ranging from 650 to 10 000 g/mol that may be used in the present invention and which may be chosen from:

- lipophilic polymers such as:
  - polybutylenes such as Indopol H-100 (of molar mass where \(M_M = 965\) g/mol), Indopol H-300 (\(M_M = 1340\) g/mol) and Indopol H-1500 (\(M_M = 2160\) g/mol) sold or manufactured by the company Amoco,
  - polyisobutylenes, for example hydrogenated polyisobutylenes, such as Panalane H-300 E sold or manufactured by the company Amoco (\(M_M = 1340\) g/mol), Viseal 20000 sold or manufactured by the company Synteal (\(M_M = 6000\) g/mol) and Rewopal PIB 1000 sold or manufactured by the company Witco (\(M_M = 1000\) g/mol),
  - polydecenes and hydrogenated polydecenes such as: Puresyn 10 (\(M_M = 723\) g/mol) and Puresyn 150 (\(M_M = 9200\) g/mol) sold or manufactured by the company Mobil Chemicals,
  - vinylpyrrolidone copolymers such as: the vinylpyrrolidone/1-hexadecene copolymer Antaron V-216 sold or manufactured by the company ISP (\(M_M = 7300\) g/mol),

- esters such as:
  - linear fatty acid esters with a total carbon number ranging from 35 to 70, for instance pentaerythrityl tetrapelargonate (\(M_M = 697\) g/mol),
  - hydroxylated esters such as polyglyceryl-2 triisostearate (\(M_M = 965\) g/mol),
- aromatic esters such as tridecyl trimellitate (MM = 757 g/mol),
- esters of C₂₄-C₂₈ branched fatty alcohols or fatty acids, such as those described in patent application EP-A-0 955 039 and pentaerythritol esters, and especially triisoarachidyl citrate (MM = 1033.76 g/mol), pentaerythrityl tetraisononanoate (MM = 697 g/mol), glycercyl triisostearate (MM = 891 g/mol), glycercyl tris (2-decyl) tetradecanoate (MM = 1143 g/mol), pentaerythrityl trisostearate (MM = 1202 g/mol), polyglyceryl-2 tetraisostearate (MM = 1232 g/mol) or alternatively pentaerythrityl tetraisoctanoate (MM = 1538 g/mol),
- silicone oils such as phenyl silicones, for instance Belsil PDM 1000 from the company Wacker (MM = 9000 g/mol),
- oils of plant origin such as sesame oil (820 g/mol),
- esters of diacid dimers and of diol dimers, for instance Lusplan DD-DA5 and DD-DA7, and Plandool-G,
- and mixtures thereof.

The oil with a molar mass ranging from 650 to 10 000 g/mol used in the composition according to the invention may represent from 1% to 99%, preferably from 10% to 80% and better still from 5% to 70% of the total weight of the composition.

30 Fluid silicone

The composition may contain a fluid silicone compound such as, especially, a silicone gum or a silicone oil of high viscosity.

The fluid silicone compound, which is preferably non-volatile, may be chosen from polydimethylsiloxanes; alkyl dimethicones; polyphenylmethylsiloxanes such as phenyl dimethicones, phenyl trimethicones and...
vinylmethyl methicones; and also silicones modified with aliphatic and/or aromatic groups, which are optionally fluorinated, or with functional groups such as hydroxyl, thiol and/or amine groups.

The fluid silicone compound may be chosen especially from the silicones of formula (I):

\[
\begin{align*}
R_1 & \quad R_3 & \quad R_5 & \quad R_1 \\
X - Si & \quad O & \quad Si & \quad O & \quad Si & \quad X \\
R_2 & \quad R_4 & \quad R_6 & \quad R_2
\end{align*}
\]

in which:

- R_i, R_2, R_5 and R_e are, together or separately, an alkyl radical containing 1 to 6 carbon atoms,
- R_3 and R_4 are, together or separately, an alkyl radical containing from 1 to 6 carbon atoms, a vinyl radical or an aryl radical,
- X is an alkyl radical containing from 1 to 6 carbon atoms, a hydroxyl radical or a vinyl radical,
- n and p being integers chosen so as to have a fluid compound.

A polydimethylsiloxane with a viscosity at 25°C of between 10 and 1 000 000 cSt., preferably between 1000 and 2 500 000 cSt., preferably between 5000 and 1 000 000 cSt. and more preferably between 10 000 and 60 000 cSt. is selected, for example, as non-volatile silicone of formula (I).

The viscosity of this silicone may be measured according to ASTM standard D-445.

As fluid silicones that may be used according to the invention, mention may be made of those for which:
- the substituents R_i to R_e and X represent a methyl group, for instance the product sold under the name
SE30 by the company General Electric, and the product sold under the name AK 500000 by the company Wacker,

- the substituents Ri to R6 and X represent a methyl group and p and n are such that the molecular weight is 250 000 g/mol, for instance the product sold under the name Silbione 70047 V by the company Rhodia,

- the substituents R1, R2, R5, R6 and X represent a methyl group, the substituents R3 and R4 represent a aryl group and n and p are such that the molecular weight of the polymer is 600 000 g/mol, for instance the product sold under the name 761 by the company Rhône-Poulenc.

The fluid silicone may be chosen from the dimethicones described in patent US 4 152 416. They are sold, for example, under the references SE30, SE33, SE54 and SE76.

The dimethicones according to the invention include polydimethylsiloxanes, (polydimethylsiloxane) (methyl-vinylsiloxane) copolymers such as SE63 sold by GE Bayer Silicones, and poly (dimethylsiloxane) (diphenyl) (methyl-vinylsiloxane) copolymers, and mixtures thereof.

The weight-average molecular mass of the fluid silicone may be between 1000 and 1 500 000 g/mol and especially between 200 000 and 1 000 000 g/mol.

Aqueous phase

The composition may thus comprise a hydrophilic medium comprising water or a mixture of water and of hydrophilic organic solvent (§), for instance alcohols and especially linear or branched lower monoalcohols containing from 2 to 5 carbon atoms, for instance ethanol, isopropanol or n-propanol, and polyols, for instance glycerol, diglycerol, propylene glycol, sorbitol, pentylene glycol and polyethylene glycols, or alternatively hydrophilic C2 ethers and C₂-C₄ aldehydes.
The water or the mixture of water and of hydrophilic organic solvents may be present in the composition according to the invention in a content ranging from 0.1% to 95% by weight and preferably ranging from 10% to 80% by weight relative to the total weight of the composition.

In particular, the composition may be in any galenical form normally used for topical application, and especially in the form of an oily or aqueous solution, an oily or aqueous gel, or oil-in-water or water-in-oil emulsion, a multiple emulsion, a dispersion of oil in water by means of vesicles, the vesicles being at the oil/water interface, or a powder. Each composition may be fluid or solid.

The composition according to the invention may especially be in the form of a suspension, a dispersion, a solution, a gel, an emulsion, especially an oil-in-water (O/W) or water-in-oil (W/O) emulsion, or a multiple emulsion (W/O/W or polyol/O/W or O/W/O), in the form of a cream, a foam, a stick, a dispersion of vesicles, especially of ionic or nonionic lipids, a two-phase or multi-phase lotion, a spray, a powder, a paste, especially a soft paste (especially a paste having a dynamic viscosity at 25°C of about from 0.1 to 40 Pa.s at a shear rate of 200 s⁻¹, after 10 minutes of measurement in cone/plate geometry). The composition may be a leave-in composition.

The composition may have a continuous fatty phase; it may be in anhydrous form and may contain less than 5% water and better still less than 1% water relative to the total weight of the composition, and may especially be water-free, the water not being added during the preparation of the composition, but corresponding to the residual water provided by the mixed ingredients.
The composition may have the appearance of a lotion, a cream, a pomade, a soft paste, an ointment, a solid cast or moulded especially as a stick or a dish, or a compacted solid.

The composition is in the form of a more or less rigid stick.

**Dyestuffs**

The composition according to the invention may comprise at least one dyestuff.

The dyestuff may be chosen from pulverulent dyestuffs (especially pigments and nacres) and water-soluble dyestuffs.

The term "pigments" should be understood as meaning white or coloured, mineral or organic particles of any form, which are insoluble in the physiological medium, and which are intended to colour the composition.

The term "nacres" should be understood as meaning iridescent particles of any form, produced especially by certain molluscs in their shell, or else synthesized.

The pigments may be white or coloured, and mineral and/or organic.

In the context of the present invention, a coloured pigment is preferably incorporated into the composition.

Among the mineral pigments that may be mentioned are titanium dioxide, optionally surface-treated, zirconium oxide or cerium oxide, and also zinc oxide, iron oxide (black, yellow or red) or chromium oxide, manganese violet, ultramarine blue, chromium hydrate and ferric
blue, and metal powders, for instance aluminium powder or copper powder.

Among the organic pigments that may be mentioned are carbon black, pigments of D & C type, and lakes based on cochineal carmine or on barium, strontium, calcium or aluminium.

Mention may also be made of pigments with an effect, such as particles comprising a natural or synthetic, organic or mineral substrate, for example glass, acrylic resins, polyester, polyurethane, polyethylene terephthalate, ceramics or aluminas, the said substrate being uncoated or coated with metallic substances, for instance aluminium, gold, silver, platinum, copper or bronze, or with metal oxides, for instance titanium dioxide, iron oxide or chromium oxide, and mixtures thereof.

The nacreous pigments may be chosen from white nacreous pigments such as mica coated with titanium or with bismuth oxychloride, coloured nacreous pigments such as titanium mica coated with iron oxides, titanium mica coated especially with ferric blue or with chromium oxide, titanium mica coated with an organic pigment of the abovementioned type, and also nacreous pigments based on bismuth oxychloride. Interference pigments, especially liquid-crystal or multilayer interference pigments, may also be used.

**Moisturizer:**

The composition according to the invention may comprise a moisturizer, in particular a moisturizer that is miscible with water at 25°C.

The moisturizer may especially be a polyhydric alcohol chosen in particular from polyols especially containing from 2 to 20 carbon atoms, preferably containing from 2
to 10 carbon atoms and preferentially containing from 2 to 6 carbon atoms. The moisturizer may be chosen, for example, from glycerol, propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, dipropylene glycol, diethylene glycol, sorbitol, hydroxypropyl sorbitol and 1,2,6-hexanetriol; glycol ethers (especially containing from 3 to 16 carbon atoms) such as mono-, di- or tripropylene glycol Ci-C₆ alkyl ethers and mono-, di- or triethylene glycol (Ci-C₄) alkyl ethers; and mixtures thereof.

The moisturizer may be present in the composition in a content ranging from 1% to 60% by weight, preferably ranging from 2% to 40% by weight and preferentially ranging from 3% to 20% by weight, relative to the total weight of the composition.

**Structuring agents:**

The composition according to the invention may comprise a structuring agent.

The term "structuring agent" means a compound capable of increasing the viscosity of the composition. The structuring agent makes it possible especially to obtain a composition that can have a texture ranging from fluid to solid textures.

The structuring agent may be present in the composition in a content ranging from 0.1% to 40% by weight, preferably ranging from 0.1% to 30% by weight and preferentially ranging from 0.5% to 25% by weight, relative to the total weight of the composition.

The structuring agent may be chosen especially from thickeners (oily-medium thickeners; aqueous-medium thickeners), organogelling agents, waxes, pasty compounds and gums.
The aqueous-medium thickener may be chosen from:
- hydrophilic clays,
- hydrophilic fumed silica,
- water-soluble cellulose-based thickeners,
- guar gum, xanthan gum, carob gum, scleroglucan gum,
gellan gum, rhamsan gum, karaya gum or carrageenan gum,
- alginates, maltodextrins, starch and its derivatives, and
hyaluronic acid and its salts,
- the polyglyceryl (meth) acrylate polymers sold under
the names Hispagel or Lubragel by the companies Hispano
Quimica or Guardian,
- polyvinylpyrrolidone,
- polyvinyl alcohol,
- crosslinked acrylamide polymers and copolymers, such
as those sold under the names PAS 5161 or Bozepol C by
the company Hoechst, Sepigel 305 by the company SEPPIC
[lacuna] by the company Allied Colloid, or alternatively
- the crosslinked methacryloyloxyethyltrimethylammonium
chloride homopolymers sold under the name Salcare SC95
by the company Allied Colloid,
- associative polymers and especially associative
polyurethanes.

Such thickeners are described especially in patent
application EP-A-I 400 234, the content of which is
incorporated by reference.

The oily-medium thickener may be chosen from:
- organophilic clays;
- hydrophobic fumed silicas;
- alkyl guar gums (with a C1–C6 alkyl group), such as
those described in EP-A-708 114;
- oil-gelling polymers, for instance triblock polymers
or star polymers resulting from the polymerization or
copolymerization of at least one monomer containing an
ethylenic group, for instance the polymers sold under
the name Kraton;
- polymers with a weight-average molecular mass of less
than 100 000, comprising a) a polymer backbone containing hydrocarbon-based repeating units containing at least one hetero atom, and optionally b) at least one pendant fatty chain and/or at least one terminal fatty chain, which are optionally functionalized, containing from 6 to 120 carbon atoms and being linked to these hydrocarbon-based units, as described in patent applications WO-A-02/056847 and WO-A-02/47619, the content of which is incorporated by reference; in particular, polyamide resins (especially comprising alkyl groups containing from 12 to 22 carbon atoms) such as those described in US-A-5 783 657, the content of which is incorporated by reference;
- the silicone-based polyamide resins as described in patent application EP-A-I 266 647 and in the French patent application filed under the number 0 216 039, the content of which is incorporated by reference.

Such thickeners are especially described in patent application EP-A-I 400 234, the content of which is incorporated by reference.

The organogelling agents may be chosen from those described in patent application WO-A-03/105 788, the content of which is incorporated by reference.

The composition may contain at least one wax, which may be present in the composition in a content ranging from 0.1% to 40% by weight, preferably ranging from 0.1% to 30% by weight and preferentially ranging from 0.5% to 25% by weight relative to the total weight of the composition.

For the purposes of the present invention, the term "wax" means a lipophilic compound that is solid at room temperature (25°C), which undergoes a reversible solid/liquid change of state, and which has a melting point of greater than or equal to 30°C, which may be up to 120°C.
By bringing the wax to the liquid state (melting), it is possible to make it miscible with the oils that may be present and to form a microscopically homogeneous mixture, but on reducing the temperature of the mixture to room temperature, recrystallization of the wax in the oils of the mixture takes place. The melting point of the wax may be measured using a differential scanning calorimeter (DSC), for example the calorimeter sold under the name DSC 30 by the company Mettler.

The wax may also have a hardness ranging from 0.05 MPa to 15 MPa and preferably ranging from 6 MPa to 15 MPa. The hardness is determined by measuring the compressive force, measured at 20°C using the texturometer sold under the name TA-TX2i by the company Rheo, equipped with a stainless-steel cylinder 2 mm in diameter travelling at a measuring speed of 0.1 mm/s, and penetrating into the wax to a penetration depth of 0.3 mm.

The waxes may be hydrocarbon-based waxes, fluoro waxes and/or silicone waxes, and may be of plant, mineral, animal and/or synthetic origin. In particular, the waxes have a melting point of greater than 30°C and better still greater than 45°C.

As waxes that may be used in the composition of the invention, mention may be made of beeswax, carnauba wax or candelilla wax, paraffin, microcrystalline waxes, ceresin or ozokerite; synthetic waxes, for instance polyethylene waxes or Fischer-Tropsch waxes, and silicone waxes, for instance alkyl or alkoxy dimethicones containing from 16 to 45 carbon atoms.

The composition may contain a micronized wax, also known as a microwax.

As microwaxes that may be used in the compositions
according to the invention, mention may be made of
carnauba microwaxes, such as the product sold under the
name MicroCare 350® by the company Micro Powders,
synthetic microwaxes, such as that product sold under
the name MicroEase 114S® by the company Micro Powders,
microwaxes consisting of a mixture of carnauba wax and
polyethylene wax, such as the products sold under the
names Micro Care 300® and 310® by the company Micro
Powders, microwaxes consisting of a mixture of carnauba wax and of synthetic wax, such as the product sold under the name Micro Care 325® by the company Micro Powders, polyethylene microwaxes, such as the products sold under the names Micropoly 200®, 220®, 220L® and 250S® by the company Micro Powders, and polytetra-fluoroethylene microwaxes such as the products sold under the names Microslip 519® and 519 L® by the company Micro Powders.

Among the microwaxes mentioned above, some of them, for instance carnauba microwax, the synthetic microwax MicroEase 114S® or the microwax consisting of a mixture of carnauba wax and of synthetic wax MicroCare 325®, have a starting melting point of greater than or equal to 45°C.

As a guide, the composition may contain from 0.1% to 50% by weight and better still from 1% to 30% by weight of wax relative to the total weight of the composition.

The composition may contain at least one pasty compound, which may be chosen advantageously from:
- lanolin and its derivatives
- polymeric or non-polymeric silicone compounds
- polymeric or non-polymeric fluoro compounds
- vinyl polymers, especially:
  - olefin homopolymers
  - olefin copolymers
  - hydrogenated diene homopolymers and copolymers
  - linear or branched oligomers, homopolymers or
copolymers of alkyl (meth)acrylates preferably containing a C₈-C₃₀ alkyl group

- oligomers, homopolymers and copolymers of vinyl esters containing C₈-C₃₀ alkyl groups
- oligomers, homopolymers and copolymers of vinyl ethers containing C₈-C₃₀ alkyl groups
- liposoluble polyethers resulting from the polyetherification between one or more C₂-C₁₀₀ and preferably C₂-C₅₀ diols

- esters, and
- mixtures thereof.

Among the esters, the following are especially preferred:

- esters of a glycerol oligomer, especially diglycerol esters, in particular condensates of adipic acid and of glycerol, for which some of the hydroxyl groups of the glycerols have reacted with a mixture of fatty acids such as stearic acid, capric acid, stearic acid and isostearic acid, and 12-hydroxystearic acid, especially such as those sold under the brand name Softisan 649 by the company Sasol,
- the arachidyl propionate sold under the brand name Waxenol 801 by Alzo,
- phytosterol esters,
- fatty acid triglycerides and derivatives thereof,
- pentaerythritol esters,
- non-crosslinked polyesters resulting from the polycondensation between a linear or branched C₄-C₅₀ dicarboxylic acid or polycarboxylic acid and a C₂-C₅₀ diol or polyol,
- aliphatic esters of an ester, resulting from the esterification of an aliphatic hydroxyarboxylic acid ester with an aliphatic carboxylic acid,
- polyesters resulting from the esterification, with a polycarboxylic acid, of an aliphatic hydroxyarboxylic acid ester, the said ester comprising at least two hydroxyl groups, such as the products Risocast DA-H® and Risocast DA-L®.
Among the pasty compounds of plant origin that will preferably be chosen is a mixture of soybean sterols and of oxyethyleneated (5 OE) oxypropylenated (5 OP) pentaerythritol, sold under the reference Lanolide by the company Vevy.

The gums are generally high molecular weight polydimethylsiloxanes (PDMS), cellulose gums or polysaccharides, and the pasty substances are generally hydrocarbon-based compounds, for instance lanolins and derivatives thereof, or alternatively PDMSs.

**Surfactant**:  
The composition according to the invention may contain emulsifying surfactants especially present in a proportion ranging from 0.1% to 30%, better still from 1% to 15% and better still from 2% to 10% by weight relative to the total weight of the composition.

According to the invention, an emulsifier appropriately chosen to obtain an oil-in-water emulsion is generally used. In particular, an emulsifier having at 25°C an HLB (hydrophilic-lipophilic balance), in the Griffin sense, of greater than or equal to 8 may be used.


These surfactants may be chosen from nonionic, anionic, cationic and amphoteric surfactants or combinations thereof. Reference may be made to Kirk-Othmer's "Encyclopedia of Chemical Technology", volume 22, pp. 333-432, 3rd edition, 1979, Wiley, for the definition of the properties and (emulsifying) functions of surfactants, in particular pp. 347-377 of this reference, for anionic, amphoteric and nonionic surfactants.
The surfactants preferably used in the composition according to the invention are chosen from:

a) nonionic surfactants with an HLB of greater than or equal to 8 at 25°C, used alone or as a mixture; mention may be made especially of:

- oxyethylenated and/or oxypropylenated ethers (which may comprise from 1 to 150 oxyethylene and/or oxypropylene groups) of glycerol;

- oxyethylenated and/or oxypropylenated ethers (which may comprise from 1 to 150 oxyethylene and/or oxypropylene groups) of fatty alcohols (especially of a C8-C24 and preferably C12-C18 alcohol), such as oxyethylenated cetearyl alcohol ether containing 30 oxyethylene groups (CTFA name Ceteareth-30) and the oxyethylenated ether of the mixture of C12-C15 fatty alcohols comprising 7 oxyethylene groups (CTFA name C12-15 Pareth-7 sold under the name Neodol 25-7® by Shell Chemicals);

- fatty acid esters (especially of a C8-C24 and preferably C16-C22 acid) of polyethylene glycol (which may comprise from 1 to 150 ethylene glycol units), such as PEG-50 stearate and PEG-40 monostearate sold under the name Myrj 52P® by the company ICI Uniqema;

- fatty acid esters (especially of a C8-C24 and preferably C16-C22 acid) of oxyethylenated and/or oxypropylenated glyceryl ethers (which may comprise from 1 to 150 oxyethylene and/or oxypropylene groups), for instance PEG-200 glyceryl monostearate sold under the name Simulsol 220 TM® by the company SEPPIC;

- glyceryl stearate polyethoxylated with 30 ethylene oxide groups, for instance the product Tagat S® sold by the company Goldschmidt, glyceryl olate polyethoxylated with 30 ethylene oxide groups, for instance the product Tagat O® sold by the company Goldschmidt, glyceryl cocoate polyethoxylated with 30 ethylene oxide groups, for instance the product Varionic LI 13® sold by the company Sherex, glyceryl isostearate polyethoxylated with 30 ethylene oxide groups, for instance
the product Tagat L® sold by the company Goldschmidt, and glyceryl laurate polyethoxylated with 30 ethylene oxide groups, for instance the product Tagat I® from the company Goldschmidt;

fatty acid esters (especially of a C8-C24 and preferably C16-C22 acid) of oxyethylenated and/or oxypropylenated sorbitol ethers (which may comprise from 1 to 150 oxyethylene and/or oxypropylene groups), for instance polysorbate 60 sold under the name Tween 60® by the company Uniqema;

dimethicone copolyol, such as the product sold under the name Q2-5220® by the company Dow Corning;

dimethicone copolyol benzoate (Finsolv SLB 101® and 201® from the company Finetex);

copolymers of propylene oxide and of ethylene oxide, also known as EO/PO polycondensates;

The EO/PO polycondensates are more particularly copolymers consisting of polyethylene glycol and polypropylene glycol blocks, for instance polyethylene glycol/polypropylene glycol/polyethylene glycol triblock polycondensates. These triblock polycondensates have, for example, the following chemical structure:

\[ H-(0-CH_2-CH_2)_a-(0-CH(CH_3)-CH_2)_b-(0-CH_2-CH_2)_a-OH, \]

in which formula a ranges from 2 to 120 and b ranges from 1 to 100.

The EO/PO polycondensate preferably has a weight-average molecular weight ranging from 1000 to 15 000 and better still ranging from 2000 to 13 000. Advantageously, the said EO/PO polycondensate has a cloud point, at 10 g/l in distilled water, of greater than or equal to 20°C and preferably greater than or equal to 60°C. The cloud point is measured according to ISO standard 1065. As EO/PO polycondensates that may be used according to the invention, mention may be made of the polyethylene glycol/polypropylene glycol/poly-
ethylene glycol triblock polycondensates sold under the name Synperonic®, for instance Synperonic PE/L44® and Synperonic PE/F127®, by the company ICI.

b) nonionic surfactants with an HLB of less than 8 at 25°C, optionally combined with one or more nonionic surfactants with an HLB of greater than 8 at 25°C, such as those mentioned above, such as:
saccharide esters and ethers, such as sucrose stearate, sucrose cocoate and sorbitan stearate, and mixtures thereof, for instance Arlatone 2121® sold by the company ICI;
fatty acid esters (especially of a C8-C24 and preferably C16-C22 acid) of polyols, especially of glycercyl or of sorbitol, such as glycercyl stearate, glycercyl stearate such as the product sold under the name Tegin M® by the company Goldschmidt, glycercyl laurate such as the product sold under the name Imwitor 312® by the company HuIs, polyglyceryl-2 stearate, sorbitan tristearate or glycercyl ricinoleate;
the mixture of cyclomethicone/dimethicone copolyol sold under the name of Q2-3225C® by the company Dow Corning.
c) anionic surfactants such as:
Ci₆-C₃₀ fatty acid salts, especially those derived from amines, for instance triethanolamine stearate;
polyoxyethylenated fatty acid salts, especially those derived from amines or alkali metal salts, and mixtures thereof;
phosphoric esters and salts thereof, such as DEA oleth-10 phosphate (Crodafos N ION from the company Croda) or monocetyl monopotassium phosphate (Amphisol K from Givaudan);
sulfosuccinates such as Disodium PEG-5 citrate lauryl sulfosuccinate and Disodium ricinoleamido MEA sulfosuccinate;
alkyl ether sulfates, such as sodium lauryl ether sulfate;
isethionates;
acylglutamates such as Disodium hydrogenated
tallow glutamate (Amisoft HS-21 R® sold by the company Ajinomoto), and mixtures thereof.

Triethanolamine stearate is most particularly suitable for the invention. This surfactant is generally obtained by simple mixing of stearic acid and triethanolamine.

The compositions according to the invention may also contain one or more amphoteric surfactants, for instance N-acylamino acids such as N-alkylaminoacetates and disodium cocoamphodiacetate, and amine oxides such as stearamine oxide, or alternatively silicone surfactants, for instance dimethicone copolyol phosphates such as the product sold under the name Pecosil PS 100® by the company Phoenix Chemical.

**Hydrophilic gelling agent:**

The composition according to the invention may comprise a hydrophilic gelling agent.

The hydrophilic gelling agents that may be used in the compositions according to the invention may be chosen from:

- homopolymers or copolymers of acrylic or methacrylic acid or the salts and esters thereof, and in particular the products sold under the names Versicol F® or Versicol K® by the company Allied Colloid, Ultrahold 8® by the company Ciba-Geigy, and the polyacrylic acids of Synthalen K type;
- copolymers of acrylic acid and of acrylamide sold in the form of the sodium salt thereof under the name Reten® by the company Hercules, sodium polymethacrylate sold under the name Darvan 7® by the company Vanderbilt, and the sodium salts of polyhydroxycarboxylic acids sold under the name Hydagen F® by the company Henkel;
- polyacrylic acid/alkyl acrylate copolymers of the
Pemulen type;

AMPS (polyacrylamidomethylpropanesulfonic acid partially neutralized with ammonia and highly crosslinked) sold by the company Clariant;

AMPS/acrylamide copolymers of the Sepigel® or Simulgel® type, sold by the company SEPPIC, and

AMPS/polyoxyethylenated alkyl methacrylate copolymers (crosslinked or non-crosslinked), and mixtures thereof.

The water-soluble film-forming polymers mentioned above may also act as hydrophilic gelling agents.

The hydrophilic gelling agent may be present in the composition according to the invention in a solids content ranging from 0.01% to 60% by weight, preferably from 0.5% to 40% by weight, better still from 1% to 30% by weight or even from 5% to 20% by weight relative to the total weight of the composition.

Additives

The composition according to the invention may also contain ingredients commonly used in cosmetics, such as vitamins, trace elements, softeners, sequestrants, fragrances, acidifying or basifying agents, preserving agents, sunscreens, surfactants, antioxidants, moisturizers and propellants, or mixtures thereof.

 Needless to say, a person skilled in the art will take care to select this or these optional additional compound (s), and/or the amount thereof, such that the advantageous properties of the corresponding composition according to the invention are not, or are not substantially, adversely affected by the envisaged addition.

A person skilled in the art may select the appropriate galenical form, and also the method for preparing it,
on the basis of his general knowledge, taking into account firstly the nature of the constituents used, especially their solubility in the support, and secondly the intended application for the composition.

Packaging

According to another aspect, the invention also relates to a cosmetic assembly comprising:

i) a container delimiting at least one compartment, the said container being closed by means of a closing member; and

ii) a composition placed inside the said compartment, the composition being in accordance with any one of the claims hereinbelow.

The container may be in any adequate form. It may especially be in the form of a bottle, a tube, a jar, a case, a box, a sachet or a carton.

The closing member may be in the form of a removable stopper, a lid, a cap, a tear-off strip or a capsule, especially of the type comprising a body attached to the container and a cover cap articulated on the body. It may also be in the form of a member for selectively closing the container, especially a pump, a valve or a flap valve.

The container may be combined with an applicator, especially in the form of a brush comprising an arrangement of bristles maintained by a twisted wire. Such a twisted brush is described especially in patent US 4 887 622. It may also be in the form of a comb comprising a plurality of application members, obtained especially by moulding. Such combs are described, for example, in patent FR 2 796 529. The applicator may be in the form of a fine brush, as described, for example, in patent FR 2 722 380. The applicator may be in the form of a block of foam or of elastomer, a felt or a
spatula. The applicator may be free (tuft or sponge) or securely fastened to a rod borne by the closing member, as described, for example, in patent US 5 492 426. The applicator may be securely fastened to the container, as described, for example, in patent FR 2 761 959.

The product may be contained directly in the container, or indirectly. By way of example, the product may be arranged on an impregnated support, especially in the form of a wipe or a pad, and arranged (individually or in plurality) in a box or in a sachet. Such a support incorporating the product is described, for example, in patent application WO 01/03538.

The closing member may be coupled to the container by screwing. Alternatively, the coupling between the closing member and the container is done other than by screwing, especially via a bayonet mechanism, by click-fastening, gripping, welding, bonding or by magnetic attraction. The term "click-fastening" in particular means any system involving the crossing of a bead or cord of material by elastic deformation of a portion, especially of the closing member, followed by return to the elastically unconstrained position of the said portion after the crossing of the bead or cord.

The container may be at least partially made of thermoplastic material. Examples of thermoplastic materials that may be mentioned include polypropylene or polyethylene.

Alternatively, the container is made of non-thermoplastic material, especially glass or metal (or alloy).

The container may have rigid walls or deformable walls, especially in the form of a tube or a tubular bottle.

The container may comprise means for distributing or
facilitating the distribution of the composition. By way of example, the container may have deformable walls so as to cause the composition to exit in response to a positive pressure inside the container, this positive pressure being caused by elastic (or non-elastic) squeezing of the walls of the container. Alternatively, especially when the product is in the form of a stick, the product may be driven out by a piston mechanism. Still in the case of a stick, especially of makeup product (lipstick, foundation, etc.), the container may comprise a mechanism, especially a rack mechanism, a threaded-rod mechanism or a helical groove mechanism, and may be capable of moving a stick in the direction of the said aperture. Such a mechanism is described, for example, in patent FR 2 806 273 or in patent FR 2 775 566. Such a mechanism for a liquid product is described in patent FR 2 727 609.

The container may consist of a carton with a base delimiting at least one housing containing the composition, and a lid, especially articulated on the base, and capable of at least partially covering the said base. Such a carton is described, for example, in patent application WO 03/018423 or in patent FR 2 791 042.

The container may be equipped with a drainer arranged in the region of the aperture of the container. Such a drainer makes it possible to wipe the applicator and possibly the rod to which it may be securely fastened. Such a drainer is described, for example, in patent FR 2 792 618.

The composition may be at atmospheric pressure inside the container (at room temperature) or pressurized, especially by means of a propellant gas (aerosol). In the latter case, the container is equipped with a valve (of the type used for aerosols).
The invention is illustrated in greater detail by the examples described below.

The amounts are expressed as weight percentages.

**Example 1: anhydrous mascara**

- Siloxane-saccharide copolymer such as that prepared in example GL-8211 on page 26 of patent application WO 2006/071 772

1.8%

- Propylene carbonate
1.8%

- Pigments
3.9%

- Carnauba
6.19%

- Paraffin
2%

- Beeswax
4.44%

- Synthetic beeswax (Cyclochem 326 A)
3%

- PEG/PPG-17/18 dimethicone
0.09%

- Polyquaternium-10
0.08%

- Allyl stearate/VA copolymer
2%

- Sodium polymethacrylate
0.2%

- Polyvinyl laurate
0.68%

- PEG-30 glyceryl stearate
0.47%

- Alcohol
2.5%

- Polyethylene
1.82%

- Polybutene
0.9%

- Rice bran wax
1.4%

- Water
12.4%

- Disteardimonium hectorite
5.4%

- Preserving agents
qs

- Isododecane
qs 100%

This mascara may optionally contain fibres to a proportion of 0.5%, especially the fibres sold under the references

- RCIBE N0003 M04 - CLAREMONT FLOCK RCIBE N0003 02M - CLAREMONT FLOCK
- PULPE POLYAMIDE 12185 TAILLE 0,3 MM TRAITÉ PAR RAYONNEMENT IONISANT - UTEXBEL
**Example 2: emulsion mascara**

**Phase A**
- Siloxane-saccharide copolymer such as that prepared in example GL-8211 on page 26 of patent application WO 2006/071 772

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<tr>
<th>Ingredient</th>
<th>%</th>
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<tbody>
<tr>
<td>HEC</td>
<td>0.88%</td>
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<tr>
<td>Gum arabic</td>
<td>3.38%</td>
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<tr>
<td>Triethanolamine</td>
<td>2.4%</td>
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<tr>
<td>AMPD</td>
<td>0.8%</td>
</tr>
<tr>
<td>Simethicone (antifoam)</td>
<td>0.19%</td>
</tr>
<tr>
<td>Pigments (iron oxide)</td>
<td>7.14%</td>
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<tr>
<td>Preserving agents</td>
<td>qs</td>
</tr>
<tr>
<td>Water</td>
<td>qs 100%</td>
</tr>
</tbody>
</table>

**Phase B**
- Stearic acid                      | 6.6% |
- Paraffin                           | 13.8% |
- Beeswax                            | 4.4% |
- Carnauba                           | 3.45% |
- PEG-40 stearate                    | 0.5% |
- Simethicone                        | 0.13% |

**Phase C**
- sodium polymethacrylate            | 0.25% |
- polyquaternium-10                  | 0.09% |

This mascara may optionally contain fibres to a proportion of 0.5%, especially the fibres sold under the references

RCIBE N0003 M04 - CLAREMONT FLOCK RCIBE N0003 02M
- CLAREMONT FLOCK
- PULPE POLYAMIDE 12185 TAILLE 0,3 MM TRAÎTÉ PAR RAYONNEMENT IONISANT - UTEXBEL
- KERMEL TECH/2,2 DTEX/2MM/SECHEE/VENTILEE/IRRADIEE
Example 3: lipstick

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%</th>
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<td>Phenyl trimethicone</td>
<td>31.7</td>
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<tr>
<td>Hydrogenated polyisobutene</td>
<td>20</td>
</tr>
<tr>
<td>Octyldodecanol</td>
<td>10</td>
</tr>
<tr>
<td>Isononyl isononanoate</td>
<td>5</td>
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<tr>
<td>Siloxane-saccharide copolymer such as that prepared in example GL-8211 on page 26 of patent application WO 2006/071 772</td>
<td>3</td>
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<tr>
<td>PVP/Eicosane Copolymer</td>
<td>10</td>
</tr>
<tr>
<td>Polyethylene Wax</td>
<td>15</td>
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<tr>
<td>DC Red 7</td>
<td>0.15</td>
</tr>
<tr>
<td>Iron Oxide</td>
<td>0.15</td>
</tr>
<tr>
<td>Titanium Dioxide &amp; Mica</td>
<td>4</td>
</tr>
</tbody>
</table>

Example 4: nail varnish

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%</th>
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</thead>
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<tr>
<td>Acrylate/styrene polymer as an aqueous dispersion containing 44% solids</td>
<td>28.8</td>
</tr>
<tr>
<td>Diisobutyl adipate</td>
<td>2.8</td>
</tr>
<tr>
<td>Propylene glycol n-butyl ether</td>
<td>2.7</td>
</tr>
<tr>
<td>Dipropylene glycol n-butyl ether</td>
<td>1.6</td>
</tr>
<tr>
<td>Laponite XLS</td>
<td>0.8</td>
</tr>
<tr>
<td>Pigments</td>
<td>2</td>
</tr>
<tr>
<td>Saccharide-siloxane copolymer (1)</td>
<td>1</td>
</tr>
<tr>
<td>Water</td>
<td>qs 100</td>
</tr>
</tbody>
</table>

(1) A telechelic polydimethylsiloxane of viscosity 100 to 320 cSt. endblocked with aminopropyl groups (DMS-A21, Gelest Inc., Morrisville, Pa.) is reacted with a gluconolactone (GL) (Sigma-Aldrich, St. Louis, Mo.) in an amine:lactone stoichiometric ratio of 1:1, in methanol at 50°C. At the end of the reaction, the methanol is removed by rotary evaporation.
Application of this nail varnish leaves, after drying, a smooth, glossy, uniform film.

Example 5: nail varnish

<table>
<thead>
<tr>
<th>Nitrocellulose</th>
<th>19</th>
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<tr>
<td>N-Ethyl-o,p-toluenesulfonamide</td>
<td>6</td>
</tr>
<tr>
<td>Tributyl acetyl citrate</td>
<td>6</td>
</tr>
<tr>
<td>Rheological agent (hectorite)</td>
<td>1.2</td>
</tr>
<tr>
<td>Silica/D&amp;C Red No 7 composite pigment</td>
<td>3</td>
</tr>
<tr>
<td>Saccharide-siloxane copolymer (1)</td>
<td>1</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>8</td>
</tr>
<tr>
<td>Ethyl acetate/butyl acetate</td>
<td>qs 100</td>
</tr>
</tbody>
</table>

(1) A telechelic polydimethylsiloxane of viscosity 100 to 320 cSt. endblocked with aminopropyl groups (DMS-A21, Gelest Inc., Morrisville, Pa.) is reacted with a gluconolactone (GL) (Sigma-Aldrich, St. Louis, Mo.) in an amine:lactone stoichiometric ratio of 1:1, in methanol at 50°C. At the end of the reaction, the methanol is removed by rotary evaporation.

Application of this nail varnish leaves, after drying, a smooth, glossy, uniform film.

Example 6: powder foundation

| A | Talc | 65 |
|---------------|----|
| Nylon-12 | 10 |
| Polymethylsilsesquioxane | 5 |
| Titanium dioxide | 6.74 |
| Iron oxides | 3.26 |

| B | Dimethicone | 3 |
|---------------|----|
| Siloxane-saccharide copolymer such as that prepared in example GL-8211 on page 26 of | 7 |
**Example 7: water-in-oil foundation**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Siloxane-saccharide copolymer</td>
<td>3</td>
</tr>
<tr>
<td>such as that prepared in example</td>
<td></td>
</tr>
<tr>
<td>GL-8211 on page 26 of patent</td>
<td></td>
</tr>
<tr>
<td>application WO 2006/071 772</td>
<td></td>
</tr>
<tr>
<td>Isododecane</td>
<td>23.55</td>
</tr>
<tr>
<td>Butyl paraben</td>
<td>0.25</td>
</tr>
<tr>
<td>A2 Cyclopentasiloxane</td>
<td>5</td>
</tr>
<tr>
<td>Iron oxides &amp; disodium stearoyl</td>
<td>3.2</td>
</tr>
<tr>
<td>glutamate &amp; aluminium hydroxide</td>
<td></td>
</tr>
<tr>
<td>Titanium dioxide &amp; disodium</td>
<td>6.8</td>
</tr>
<tr>
<td>stearoyl glutamate &amp; aluminium</td>
<td></td>
</tr>
<tr>
<td>hydroxide</td>
<td></td>
</tr>
<tr>
<td>A3 Nylon-12</td>
<td>4</td>
</tr>
<tr>
<td>A4 Isododecane</td>
<td>6.96</td>
</tr>
<tr>
<td>Propylene carbonate</td>
<td>0.24</td>
</tr>
<tr>
<td>Distearidonium hectorite</td>
<td>0.8</td>
</tr>
<tr>
<td>B Water</td>
<td>41.4</td>
</tr>
<tr>
<td>Magnesium sulfate</td>
<td>0.7</td>
</tr>
<tr>
<td>Preserving agent</td>
<td>1.1</td>
</tr>
<tr>
<td>Glycerol</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
1. Cosmetic composition comprising, in a cosmetically acceptable medium, at least one siloxane-saccharide copolymer and at least one ingredient chosen from polymers, in particular film-forming polymers, gelling agents, volatile solvents, coloured pigments, moisturizers, fibres, fillers, glossy oils, silicone oils and surfactants.

2. Cosmetic composition according to Claim 1, characterized in that it comprises less than 5% by weight of water.

3. Cosmetic composition according to either of the preceding claims, characterized in that it is in the form of an emulsion.

4. Cosmetic composition according to one of the preceding claims, characterized in that it is in the form of a lipstick, a lip gloss, a mascara, a foundation or a nail varnish.

5. Cosmetic assembly comprising:
   a) a container delimiting at least one compartment, the said container being closed by means of a closing member; and
   b) a composition placed inside the said compartment, the composition being in accordance with any one of the preceding claims.

6. Cosmetic process for making up or caring for keratin materials, comprising the application to the keratin materials of a cosmetic composition according to one of Claims 1 to 5.

7. Cosmetic product comprising at least two different compositions packaged separately, the first composition being a composition according to one of Claims 1 to 5.
and being also characterized in that it contains less than 5% by weight of water, and the second composition comprising at least 10% by weight of water.
INTERNATIONAL SEARCH REPORT

PCT/EP2007/060682

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K/89 A61Q1/00

According to International Patent Classification (IPC) and 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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim</th>
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<tbody>
<tr>
<td>X</td>
<td>WO 2006/071772 A (DOW CORNING ET AL.) 6 July 2006 (2006-07-06) cited in the application</td>
<td>1,3,6</td>
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<tr>
<td>Y</td>
<td>page 22, line 11 - page 28, line 21; claims 1-7,22-25 page 4, lines 28-30 page 11, lines 9-12 page 21, lines 1,2</td>
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<td>X</td>
<td>WO 2006/066227 A (DOW CORNING ET AL.) 22 June 2006 (2006-06-22) page 11, line 29 - page 14, line 15; claims; figure 2</td>
<td>1-3,6</td>
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</tbody>
</table>

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

"B" earlier document but published on or after the international filing date

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

"D" document referring to an oral disclosure, use, exhibition or other means

"F" 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

"G" 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

"H" 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

"I" document member of the same patent family

Date of the actual completion of the international search 10 January 2008

Date of mailing of the international search report 17/01/2008

Name and mailing address of the ISA

European Patent Office, P B 581B Patentlaan 2
NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040, Tx (+31-70) 651 epo nl
Fax (+31-70) 340-3016

Authorized officer

Boeker, Ruth
# INTERNATIONAL SEARCH REPORT

**International application No**

PCT/EP2007/060682

## DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Category*</th>
<th>Citation of document, with indication where appropriate, of the relevant passages</th>
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<td>EP 1 356 805 A (WACKER CHEMIE GMBH)</td>
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<td>29 October 2003 (2003-10-29)</td>
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<td>EP 0 832 644 A (OREAL)</td>
<td>1,3,4,6</td>
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<td><strong>X</strong></td>
<td>US 5 747 016 A (YUI KOJI ET AL.)</td>
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<td>5 May 1998 (1998-05-05)</td>
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<td></td>
<td>synthesis examples 8 - 10;</td>
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<td></td>
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<td>EP 0 612 759 A (WACKER CHEMIE SMBH)</td>
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<td>EP 1 070 465 A (OREAL)</td>
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<td>EP 1 232 744 A (OREAL)</td>
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<td>paragraph [0050]; claims 1,10; example 6</td>
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<td>WO 2006127883 A</td>
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<td>US 6066326 A</td>
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<td>US 5747016 A</td>
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<td>31-08-1994</td>
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