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(54) Title: SOLID COSMETIC COMPOSITION COMPRISING A HYDROCARBON-BASED RESIN, A HYDROCARBON-BASED BLOCK COPOLYMER, A NON-VOLATILE APOLAR HYDROCARBON-BASED OIL AND A NON-VOLATILE SILICONE OIL

(57) Abstract: The present invention relates to a solid cosmetic composition, preferably for making up and/or caring for the skin and/or the lips, comprising, in a physiologically acceptable medium, at least one hydrocarbon-based phase comprising: at least one hydrocarbon-based resin with a number-average molecular weight of less than or equal to 10 000 g/mol, at least one hydrocarbon-based block polymer, at least one non-volatile apolar hydrocarbon-based oil, at least one silicone phase comprising at least one non-volatile silicone oil that is incompatible with the hydrocarbon-based phase, and at least one surfactant. The invention also relates to a process for making up and/or caring for the skin and/or the lips, comprising the application to the skin and/or the lips of a composition according to the invention.



SOLID COSMETIC COMPOSITION COMPRISING A HYDROCARBON-BASED RESIN, A HYDROCARBON-BASED BLOCK COPOLYMER, A NON-VOLATILE APOLAR HYDROCARBON-BASED OIL AND A NON-VOLATILE SILICONE OIL

5 The present invention relates to a solid cosmetic composition for making up and/or caring for the lips or the skin, comprising a hydrocarbon-based resin, a hydrocarbon-based block copolymer, a non-volatile apolar hydrocarbon-based oil and at least one non-volatile silicone oil that is incompatible with the hydrocarbon-based phase.

10 Lipsticks which have good colour persistence consist generally of mutually incompatible starting materials, which are compatibilized using volatile or semi-volatile solvent.

Although such compositions have improved colour persistence properties when compared with other compositions, the use of volatile ingredients nevertheless involves
15 several drawbacks associated, for example, with the increase in manufacturing cost brought about by the adaptation of the processes to the presence of these compounds, and also with the need to use devices that are leaktight with respect to these ingredients in order to condition and market the lipsticks. Moreover, the presence of volatile substances in the compositions is such that it is no longer possible to leave samples open
20 on shelf displays.

It is also noted that, after applying the compositions and over time, a loss of sheen of the deposit and also perceptible discomfort (sensation of dryness, tautness) are observed by consumers, initially caused by the volatile or semi-volatile ingredient(s).

25 The invention thus seeks to obtain the same colour persistence properties as lipsticks that have good colour persistence using the incompatibility of the starting materials, but without using any volatile or semi-volatile compatibilizer.

Thus, according to one of its aspects, a subject of the present invention is a solid cosmetic composition, preferably for making up and/or caring for the skin or the lips,
30 comprising, in a physiologically acceptable medium,

* at least one hydrocarbon-based phase comprising:

- at least one hydrocarbon-based resin with a number-average molecular weight of less than or equal to 10 000 g/mol,

- at least one hydrocarbon-based block polymer,

35 - at least one non-volatile apolar hydrocarbon-based oil,

* at least one silicone phase comprising at least one non-volatile silicone oil that is incompatible with the hydrocarbon-based phase, and

* at least one surfactant.

Surprisingly, the inventors have in fact observed that such a cosmetic composition for making up and/or caring for the lips or the skin makes it possible to obtain a deposit on the lips and/or the skin which remains comfortable over time, which is low-tack or tack-resistant, migration-resistant and glossy, and which has a good level of persistence, especially of colour persistence and also of gloss persistence.

Moreover, the composition according to the invention is homogeneous and stable at room temperature. The term "stable" composition especially means that it does not show any exudation or phase separation, in particular after 1 month or even 2 months at 47°C.

According to a first preferred embodiment, the composition is in solid form at 20°C.

In particular, according to this embodiment, the composition according to the invention is easy to apply to the skin and/or the lips. The ease of application is especially reflected in terms of glidance and the ease of erosion. Moreover, the composition according to the invention is solid enough not to crack during application.

The term "solid" cosmetic composition means the form of the composition at 20°C, in opposition to fluid compositions (for example liquid lip compositions such as "gloss"), and in particular the term "solid" means a composition whose hardness at 20°C and at atmospheric pressure (760 mmHg) is greater than or equal to 30 Nm⁻¹ when it is measured according to the protocol described below.

In a particularly preferred manner, the composition according to the invention is a makeup composition, preferably for the lips, for example a solid lipstick, which may be, for example, in the form of a stick or cast in a jar or a dish.

According to another aspect, the present invention relates to a cosmetic process for making up and/or caring for the lips, comprising the application to the lips and/or the skin of a cosmetic composition as defined previously.

Particularly preferably, the invention relates to a process preferably for making up the lips, comprising the application to the lips of a cosmetic composition as defined previously.

PHYSIOLOGICALLY ACCEPTABLE MEDIUM:

The term "physiologically acceptable medium" is intended to denote a medium that is particularly suitable for the application of a composition of the invention to the skin or the lips.

The physiologically acceptable medium is generally adapted to the nature of the support onto which the composition has to be applied, and also to the appearance under which the composition has to be packaged.

Preferably, the composition comprises less than 4% and preferably less than 2% water. Particularly preferably, the composition according to the invention is anhydrous. The term "anhydrous" especially means that water is preferably not deliberately added to the compositions, but may be present in trace amounts in the various compounds used in the compositions.

HYDROCARBON-BASED RESIN:

The composition according to the invention comprises at least one hydrocarbon-based resin.

Preferably, the resin used in the composition according to the invention (also known as the tackifying resin) has a number-average molecular weight of less than or equal to 10 000 g/mol, especially ranging from 250 to 5000 g/mol, better still less than or equal to 2000 g/mol and especially ranging from 250 to 2000 g/mol.

The number-average molecular weights (Mn) are determined by gel permeation liquid chromatography (THF solvent, calibration curve established with linear polystyrene standards, refractometric detector).

The resin of the composition according to the invention is advantageously a tackifying resin. Such resins are described especially in the Handbook of Pressure Sensitive Adhesive, edited by Donatas Satas, 3rd edition, 1989, pp. 609-619.

Preferably, the hydrocarbon-based resin is chosen from low molecular weight polymers that may be classified, according to the type of monomer they comprise, as:

- indene hydrocarbon-based resins, preferably such as resins derived from the polymerization in major proportion of indene monomer and in minor proportion of a monomer chosen from styrene, methylindene and methylstyrene, and mixtures thereof.

These resins may optionally be hydrogenated. These resins may have a molecular weight ranging from 290 to 1150 g/mol.

Examples of indene resins that may be mentioned include those sold under the reference Escorez 7105 by the company Exxon Chem., Nevchem 100 and Nevex 100 by the company Neville Chem., Norsolene S105 by the company Sartomer, Picco 6100 by the company Hercules and Resinall by the company Resinall Corp., or the hydrogenated indene/methylstyrene/styrene copolymers sold under the name "Regalite" by the company Eastman Chemical, in particular Regalite R 1100, Regalite R 1090, Regalite R-7100, Regalite R1010 Hydrocarbon Resin and Regalite R1125 Hydrocarbon Resin;

- aliphatic pentanediene resins such as those derived from the majority polymerization of the 1,3-pentanediene (trans- or cis-piperylene) monomer and of minor monomer(s) chosen from isoprene, butene, 2-methyl-2-butene, pentene and 1,4-pentanediene, and mixtures thereof. These resins may have a molecular weight ranging from 1000 to 2500 g/mol.

Such 1,3-pentanediene resins are sold, for example, under the references Piccotac 95 by the company Eastman Chemical, Escorez 1304 by the company Exxon Chemicals, Nevtag 100 by the company Neville Chem. or Wingtack 95 by the company Goodyear;

- mixed resins of pentanediene and of indene, which are derived from the polymerization of a mixture of pentanediene and indene monomers such as those described above, for instance the resins sold under the reference Escorez 2101 by the company Exxon Chemicals, Nevtag 9500 by the company Neville Chem., Hercotac 1148 by the company Hercules, Norsolene A 100 by the company Sartomer, and Wingtack 86, Wingtack Extra and Wingtack Plus by the company Goodyear;

- diene resins of cyclopentanediene dimers such as those derived from the polymerization of first monomers chosen from indene and styrene, and of second monomers chosen from cyclopentanediene dimers such as dicyclopentanediene, methyldicyclopentanediene and other pentanediene dimers, and mixtures thereof. These resins generally have a molecular weight ranging from 500 to 800 g/mol, for instance those sold under the reference Betaprene BR 100 by the company Arizona Chemical Co., Neville LX-685-125 and Neville LX-1000 by the company Neville Chem., Piccodiene 2215 by the company Hercules, Petro-Rez 200 by the company Lawter or Resinall 760 by the company Resinall Corp. ;

- diene resins of isoprene dimers such as terpenic resins derived from the polymerization of at least one monomer chosen from α -pinene, α -pinene and limonene, and mixtures thereof. These resins may have a molecular weight ranging from 300 to 2000 g/mol. Such resins are sold, for example, under the names Piccolyte A115 and S125 by Hercules or Zonarez 7100 or Zonatac 105 Lite by Arizona Chem.

Mention may also be made of certain modified resins such as hydrogenated resins, for instance those sold under the name Eastotac C6-C20 Polyolefin by the company Eastman Chemical Co., under the reference Escorez 5300 by the company Exxon Chemicals, or the resins Nevillac Hard or Nevroz sold by the company Neville Chem., the resins Piccofyn A-100, Piccotex 100 or Piccovar AP25 sold by the company Hercules or the resin SP-553 sold by the company Schenectady Chemical Co.

According to one preferred embodiment, the hydrocarbon-based resin is chosen from indene hydrocarbon-based resins, aliphatic pentadiene resins, mixed resins of

pentanediene and of indene, diene resins of cyclopentadiene dimers and diene resins of isoprene dimers, or mixtures thereof.

Preferably, the composition comprises at least one compound chosen from hydrocarbon-based resins as described previously, especially indene hydrocarbon-based resins and aliphatic pentadiene resins, or mixtures thereof. According to one preferred embodiment, the hydrocarbon-based resin is chosen from indene hydrocarbon-based resins.

According to one preferred embodiment, the resin is chosen from hydrogenated indene/methylstyrene styrene copolymers.

In particular, use may be made of indene/methylstyrene/hydrogenated styrene copolymers, such as those sold under the name Regalite by the company Eastman Chemical, such as Regalite R 1100, Regalite R 1090, Regalite R-7100, Regalite R1010 Hydrocarbon Resin and Regalite R1125 Hydrocarbon Resin.

Preferably, the hydrocarbon-based resin is present in the composition according to the invention in a content ranging from 1% to 45% by weight, preferably ranging from 1% to 30% by weight, more preferentially ranging from 1% to 25% by weight and even more advantageously between 1% and 15% by weight relative to the total weight of the composition.

HYDROCARBON-BASED BLOCK COPOLYMER:

The composition according to the invention comprises, besides the resin, a hydrocarbon-based block copolymer, also known as a block copolymer, preferably a block copolymer that is soluble or dispersible in a liquid hydrocarbon-based phase as defined previously.

The polymeric gelling agent is capable of thickening or gelling the hydrocarbon-based phase of the composition.

The term "amorphous polymer" means a polymer that does not have a crystalline form.

The polymeric gelling agent is also preferably film-forming, i.e. it is capable of forming a film when applied to the skin and/or the lips.

The hydrocarbon-based block copolymer may especially be a diblock, triblock, multiblock, radial or star copolymer, or mixtures thereof.

Such hydrocarbon-based block copolymers are described in patent application US-A-2002/005 562 and in patent US-A-5 221 534.

The copolymer may contain at least one block whose glass transition temperature is preferably less than 20°C, preferably less than or equal to 0°C, preferably less than or equal to -20°C and more preferably less than or equal to -40°C. The glass transition

temperature of the said block may be between -150°C and 20°C and especially between -100°C and 0°C.

The hydrocarbon-based block copolymer present in the composition according to the invention is an amorphous copolymer formed by polymerization of an olefin. The olefin
5 may especially be an elastomeric ethylenically unsaturated monomer.

Examples of olefins that may be mentioned include ethylenic carbide monomers, especially containing one or two ethylenic unsaturations and containing from 2 to 5 carbon atoms, such as ethylene, propylene, butadiene, isoprene or pentadiene.

Advantageously, the hydrocarbon-based block copolymer is an amorphous block copolymer of styrene and of an olefin.

Block copolymers comprising at least one styrene block and at least one block comprising units chosen from butadiene, ethylene, propylene, butylene and isoprene or a mixture thereof are especially preferred.

According to one preferred embodiment, the hydrocarbon-based block copolymer is hydrogenated to reduce the residual ethylenic unsaturations after the polymerization of the monomers.

In particular, the hydrocarbon-based block copolymer is an optionally hydrogenated copolymer, containing styrene blocks and ethylene/C₃-C₄ alkylene blocks.

According to one preferred embodiment, the composition according to the invention comprises at least one diblock copolymer, which is preferably hydrogenated, preferably chosen from styrene-ethylene/propylene copolymers, styrene-ethylene/butadiene copolymers and styrene-ethylene/butylene copolymers. Diblock polymers are especially sold under the name Kraton® G1701E by the company Kraton Polymers.

According to another preferred embodiment, the composition according to the invention comprises at least one triblock copolymer, which is preferably hydrogenated, preferably chosen from styrene-ethylene/propylene-styrene copolymers, styrene-ethylene/butadiene-styrene copolymers, styrene-isoprene-styrene copolymers and styrene-butadiene-styrene copolymers. Triblock polymers are especially sold under the names Kraton® G1650, Kraton® D1101, Kraton® D1102 and Kraton® D1160 by the company Kraton Polymers.

According to one embodiment of the present invention, the hydrocarbon-based block copolymer is a styrene-ethylene/butylene-styrene triblock copolymer.

According to one preferred embodiment of the invention, it is especially possible to use a mixture of a styrene-butylene/ethylene-styrene triblock copolymer and of a styrene-ethylene/butylene diblock copolymer, especially the products sold under the name Kraton® G1657M by the company Kraton Polymers.

5 According to another preferred embodiment, the composition according to the invention comprises a mixture of styrene-butylene/ethylene-styrene hydrogenated triblock copolymer and of ethylene-propylene-styrene hydrogenated star polymer, such a mixture possibly being especially in isododecane or in another oil. Such mixtures are sold, for example, by the company Penreco under the trade names Versagel® M5960 and
10 Versagel® M5670.

Advantageously, a diblock copolymer such as those described previously is used as polymeric gelling agent, in particular a styrene-ethylene/propylene diblock copolymer or a mixture of diblock and triblock copolymers, as described previously.

15 The hydrocarbon-based block copolymer (or the mixture of hydrocarbon-based block copolymers) may be present in a content ranging from 0.1% to 15% by weight, preferably ranging from 0.5% to 10% by weight and even more advantageously from 1% to 5% by weight relative to the total weight of the composition.

20 More particularly, the weight ratio of the hydrocarbon-based resin to the hydrocarbon-based block copolymer is between 1 and 10.

Preferably, the weight ratio of the hydrocarbon-based resin to the hydrocarbon-based block copolymer is between 1 and 8 and even more particularly between 1 and 5.

NON-VOLATILE APOLAR HYDROCARBON-BASED OIL:

The composition according to the invention also comprises at least one non-volatile apolar hydrocarbon-based oil.

30 The term "*oil*" means a water-immiscible non-aqueous compound that is liquid at room temperature (25°C) and at atmospheric pressure (760 mmHg).

The term "*non-volatile*" oil refers to an oil for which the vapour pressure at room temperature and atmospheric pressure is non-zero and less than 10^{-3} mmHg (0.13 Pa).

35 The term "hydrocarbon-based oil" means an oil formed essentially from, or even constituted by, carbon and hydrogen atoms, and optionally oxygen and nitrogen atoms, and not containing any silicon or fluorine atoms. It may contain alcohol, ester, ether, carboxylic acid, amine and/or amide groups.

These hydrocarbon-based oils may be of plant, mineral or synthetic origin.

For the purposes of the present invention, the term "apolar oil" is intended to mean an oil of which the solubility parameter at 25°C, δ_a , is equal to 0 (J/cm³)^{1/2}.

The definition and calculation of the solubility parameters in the Hansen three-dimensional solubility space are described in the paper by C.M. Hansen: "The three dimensional solubility parameters", J. Paint Technol. 39, 105 (1967).

According to this Hansen space:

- δ_D characterizes the London dispersion forces derived from the formation of dipoles induced during molecular impacts;

- δ_p characterizes the Debye interaction forces between permanent dipoles and also the Keesom interaction forces between induced dipoles and permanent dipoles;

- δ_h characterizes the specific interaction forces (such as hydrogen bonding, acid/base, donor/acceptor, etc.); and

- δ_a is determined by the equation: $\delta_a = (\delta_p^2 + \delta_h^2)^{1/2}$.

The parameters δ_p , δ_h , δ_D and δ_a are expressed in (J/cm³)^{1/2}.

Preferably, the non-volatile apolar hydrocarbon-based oil may be chosen from linear or branched hydrocarbons of mineral or synthetic origin, such as:

- liquid paraffin or derivatives thereof,

- squalane,

- isoeicosane,

- naphthalene oil,

- polybutenes such as Indopol H-100 (molar mass or MW = 965 g/mol), Indopol H-300 (MW = 1340 g/mol) and Indopol H-1500 (MW = 2160 g/mol) sold or manufactured by the company Amoco,

- polyisobutenes,

- hydrogenated polyisobutenes such as Parleam[®] sold by the company Nippon Oil Fats, Panalane H-300 E sold or manufactured by the company Amoco (MW = 1340 g/mol), Viseal 20000 sold or manufactured by the company Syntel (MW = 6000 g/mol) and Rewopal PIB 1000 sold or manufactured by the company Witco (MW = 1000 g/mol), or alternatively Parleam Lite sold by NOF Corporation,

- decene/butene copolymers, polybutene/polyisobutene copolymers, in particular Indopol L-14,

- polydecenes and hydrogenated polydecenes such as: Puresyn 10 (MW = 723 g/mol) and Puresyn 150 (MW = 9200 g/mol) sold or manufactured by the company Mobil Chemicals, or alternatively Puresyn 6 sold by ExxonMobil Chemical),

- and mixtures thereof.

Preferably, the composition according to the invention comprises at least one apolar oil preferably chosen from polybutenes; hydrogenated or non-hydrogenated polyisobutenes; hydrogenated or non-hydrogenated polydecenes; and mixtures thereof.

- 5 Preferably, the composition according to the invention comprises a content of non-volatile apolar hydrocarbon-based oil(s) ranging from 5% to 70% by weight relative to the total weight of the composition.

- 10 Preferably, the composition according to the invention comprises a total content of non-volatile apolar hydrocarbon-based oil(s) ranging from 10% to 60% by weight and preferably from 10% to 50% by weight relative to the total weight of the composition.

NON-VOLATILE SILICONE OIL:

- 15 As indicated previously, the composition according to the invention comprises a silicone phase containing at least one non-volatile silicone oil that is incompatible with the hydrocarbon-based phase described previously, and comprising at least one hydrocarbon-based resin with a number-average molecular weight of less than or equal to 10 000 g/mol, at least one hydrocarbon-based block polymer and at least one non-volatile
20 apolar hydrocarbon-based oil.

Compatibility tests

- For the purposes of the present invention, the term "incompatible oils" means that the mixing of these two oils does not lead to a homogeneous one-phase solution. The
25 said mixing is performed with the same weight amount of each oil.

More particularly, the oils are said to be "incompatible" when mixing them leads to a separation of phases according to the following protocols:

- For oils whose viscosity is less than 10 000 cPs (10 Pa.s) at 25°C, the two oils to be evaluated are introduced (in the weight ratio desired for the composition) at room
30 temperature into a conical-tipped plastic centrifuge tube (ref. Corning® 15mL PET Centrifuge Tubes, Rack Packed with Plug Seal Cap, Sterile (Product #430055) which is placed in a Vortex Genie 2 machine. Stirring is performed at speed 10 for 10 seconds, followed by manual inversion of the tube before replacing it in the Vortex machine. This cycle is repeated three times in succession. The mixture is then left to stand at room
35 temperature for 48 hours.

If at least one of the oils has a viscosity of greater than or equal to 10 000 cPs (10 Pa.s) at 25°C, then the mixture of the two oils (5 g/5 g) is placed in an oven at 50°C for 30 minutes before performing the three stirring cycles described previously.

The mixture is then observed.

When the mixture is separated into two phases and the separation of the two phases is sharply delimited at the interface, the phases are said to be "separated" and the oils are consequently incompatible.

In the contrary case, the mixture is observed using a phase-contrast microscope, at room temperature (about 25°C). If a continuous phase and a dispersed phase in the form of drops are observed, the phases are said to be "separated" and the oils are considered as incompatible.

If the observation of the mixture reveals only a single phase, then the phases are said to be "non-separated" and the oils are considered as compatible.

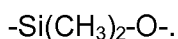
The non-volatile silicone oil(s) present in the composition according to the invention may be chosen from phenylated or non-phenylated non-volatile silicone oils, optionally bearing a dimethicone fragment.

Non-volatile phenylated silicone oils

The expression "phenylated silicone oil" or "phenyl silicone oil" denotes a silicone oil bearing at least one phenyl substituent.

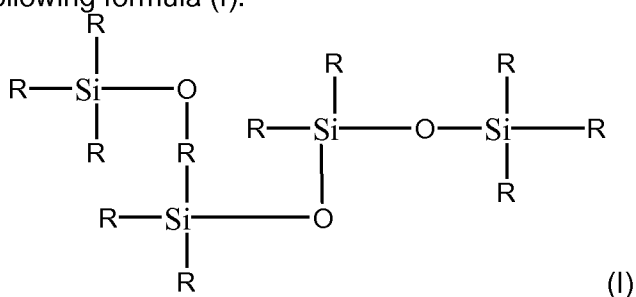
These phenylated silicone oils may be chosen from those which also bear at least one dimethicone fragment, or from those which do not bear one.

According to the invention, a dimethicone fragment corresponds to the following unit:



The non-volatile phenylated silicone oil may thus be chosen from:

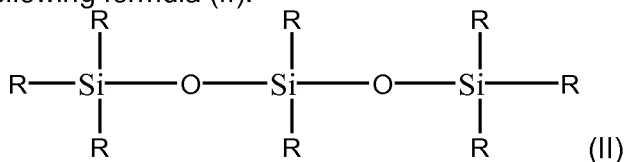
a) phenyl silicone oils optionally bearing a dimethicone fragment corresponding to the following formula (I):



in which the groups R, which are monovalent or divalent, represent, independently of each other, a methyl or a phenyl, with the proviso that at least one group R represents a phenyl.

Preferably, in this formula, the phenyl silicone oil comprises at least three, for example at least four, at least five or at least six, phenyl groups.

b) phenyl silicone oils optionally bearing a dimethicone fragment corresponding to the following formula (II):



in which the groups R represent, independently of each other, a methyl or a phenyl, with the proviso that at least one group R represents a phenyl.

Preferably, in this formula, the compound of formula (II) comprises at least three, for example at least four or at least five, phenyl groups.

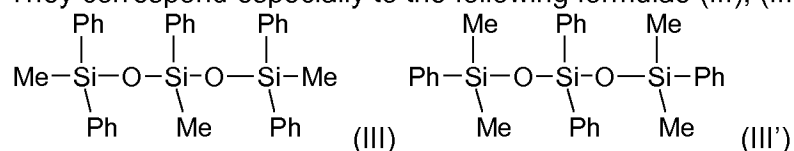
Mixtures of different phenylorganopolysiloxane compounds described above can be used.

Examples which may be mentioned include mixtures of triphenyl-, tetraphenyl- or pentaphenylorganopolysiloxanes.

Among the compounds of formula (II), mention may more particularly be made of phenyl silicone oils which do not bear a dimethicone fragment, corresponding to formula (II) in which at least 4 or at least 5 radicals R represent a phenyl radical, the remaining radicals representing methyls.

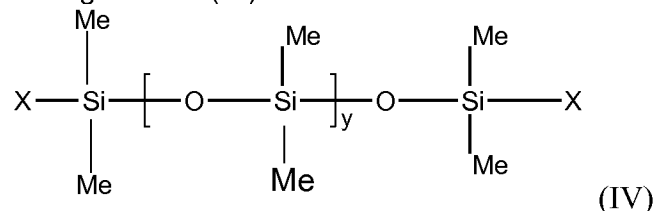
Such non-volatile phenyl silicone oils are preferably trimethylpentaphenyltrisiloxane or tetramethyltetraphenyltrisiloxane. They are in particular sold by Dow Corning under the reference PH-1555 HRI or Dow Corning 555 Cosmetic Fluid (chemical name: 1,3,5-trimethyl-1,1,3,5,5-pentaphenyltrisiloxane; INCI name: trimethylpentaphenyltrisiloxane), or the tetramethyltetraphenyltrisiloxane sold under the reference Dow Corning 554 Cosmetic Fluid by Dow Corning can also be used.

They correspond especially to the following formulae (III), (III'):



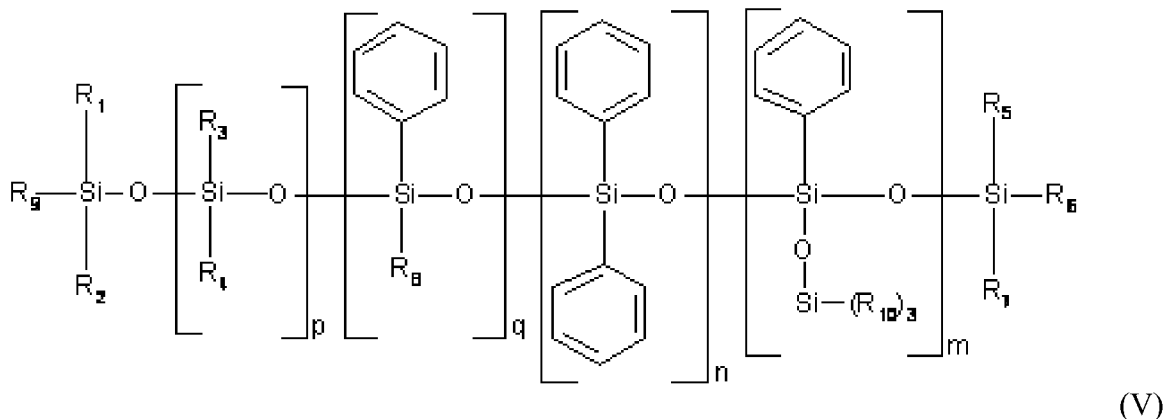
in which Me represents methyl, and Ph represents phenyl.

c) phenyl silicone oils bearing at least one dimethicone fragment corresponding to the following formula (IV):



in which Me represents methyl, y is between 1 and 1000 and X represents $-\text{CH}_2-\text{CH}(\text{CH}_3)(\text{Ph})$.

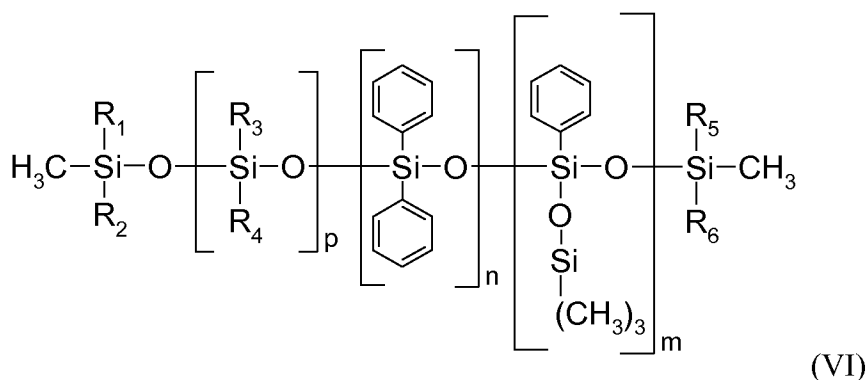
d) phenyl silicone oils corresponding to formula (V) below, and mixtures thereof:



in which:

- 5 - R_1 to R_{10} , independently of each other, are saturated or unsaturated, linear, cyclic or branched, preferably saturated or unsaturated, linear or branched, C_1 - C_{30} hydrocarbon-based radicals,
- m , n , p and q are, independently of each other, integers between 0 and 900, with the proviso that the sum $m+n+q$ is other than 0.
- 10 Preferably, the sum $m+n+q$ is between 1 and 100. Preferably, the sum $m+n+p+q$ is between 1 and 900 and preferably between 1 and 800. Preferably, q is equal to 0.
- Preferably, R_1 to R_{10} , independently of each other, represent a linear or branched C_1 - C_{30} alkyl radical, preferably C_1 - C_{20} and more particularly C_1 - C_{16} alkyl, or a monocyclic or polycyclic C_6 - C_{14} and in particular C_{10} - C_{13} aryl radical, or an aralkyl radical, the alkyl
- 15 part of which is preferably C_1 - C_3 alkyl.
- Preferably, R_1 to R_{10} may each represent a methyl, ethyl, propyl, butyl, isopropyl, decyl, dodecyl or octadecyl radical, or alternatively a phenyl, tolyl, benzyl or phenethyl radical. R_1 to R_{10} may in particular be identical, and in addition may be a methyl radical.
- 20 According to a first more particular embodiment of formula (V), mention may be made of:

i) phenyl silicone oils optionally bearing at least one dimethicone fragment corresponding to formula (VI) below, and mixtures thereof:



in which:

- R_1 to R_6 , independently of each other, are saturated or unsaturated, linear, cyclic or branched, preferably saturated or unsaturated, linear or branched, C_1 - C_{30} hydrocarbon-based radicals, a preferably C_6 - C_{14} aryl radical or an aralkyl radical, the alkyl part of which is C_1 - C_3 alkyl,

- m , n and p are, independently of each other, integers between 0 and 100, with the proviso that the sum $n+m$ is between 1 and 100.

Preferably, R_1 to R_6 , independently of each other, represent a C_1 - C_{30} , preferably C_1 - C_{20} and in particular C_1 - C_{16} , alkyl radical, or a C_6 - C_{14} aryl radical which is monocyclic (preferably C_6) or polycyclic and in particular C_{10} - C_{13} , or an aralkyl radical (preferably the aryl part is C_6 aryl; the alkyl part is C_1 - C_3 alkyl).

Preferably, R_1 to R_6 may each represent a methyl, ethyl, propyl, butyl, isopropyl, decyl, dodecyl or octadecyl radical, or alternatively a phenyl, tolyl, benzyl or phenethyl radical.

R_1 to R_6 may in particular be identical, and in addition may be a methyl radical. Preferably, $m = 1$ or 2 or 3 , and/or $n = 0$ and/or $p = 0$ or 1 can be applied, in formula (VI).

According to one particular embodiment, the non-volatile phenylated silicone oil is chosen from phenylated silicone oils bearing at least one dimethicone fragment.

Preferably, such oils correspond to compounds of formula (VI) in which:

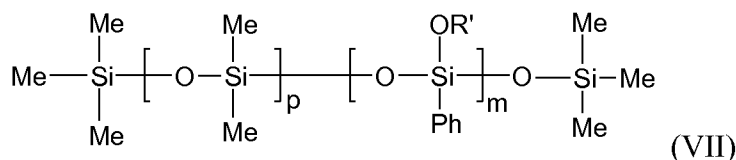
A) $m=0$ and n and p are, independently of each other, integers between 1 and 100.

Preferably, R_1 to R_6 are methyl radicals.

According to this embodiment, the silicone oil is preferably chosen from a diphenyl dimethicone such as KF-54 from Shin Etsu, KF54HV from Shin Etsu, KF-50-300CS from Shin Etsu, KF-53 from Shin Etsu or KF-50-100CS from Shin Etsu.

B) p is between 1 and 100, the sum $n+m$ is between 1 and 100, and $n=0$.

These phenyl silicone oils optionally bearing at least one dimethicone fragment correspond more particularly to formula (VII) below:



in which Me is methyl and Ph is phenyl, OR' represents a group

-OSiMe₃ and p is 0 or is between 1 and 1000, and m is between 1 and 1000. In particular, m and p are such that the compound (VII) is a non-volatile oil.

5

According to a first embodiment of non-volatile phenylated silicone bearing at least one dimethicone fragment, p is between 1 and 1000 and m is more particularly such that the compound (VII) is a non-volatile oil. Trimethylsiloxyphenyldimethicone, sold in particular under the reference Belsil PDM 1000 by the company Wacker, may, for example, be used.

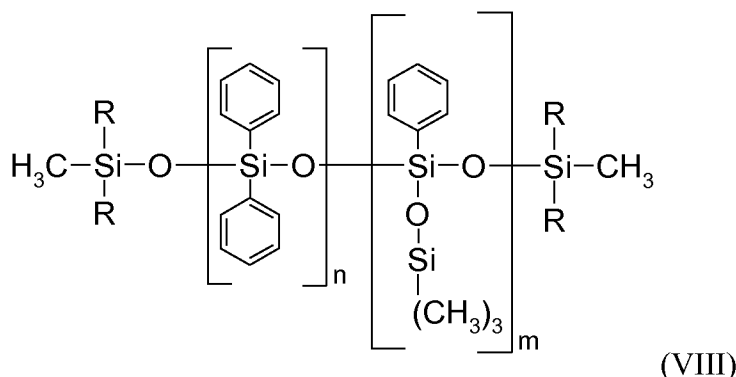
10

According to a second embodiment of non-volatile phenylated silicone not bearing a dimethicone fragment, p is equal to 0 and m is between 1 and 1000, and in particular is such that the compound (VII) is a non-volatile oil.

15

Phenyltrimethylsiloxytrisiloxane, sold in particular under the reference Dow Corning 556 Cosmetic Grade Fluid (DC556), may, for example, be used.

ii) non-volatile phenyl silicone oils not bearing a dimethicone fragment corresponding to formula (VIII) below, and mixtures thereof:



20

in which:

- R, independently of each other, represent a saturated or unsaturated, linear, cyclic or branched, preferably saturated or unsaturated, linear or branched, C₁-C₃₀ hydrocarbon-based radical; more particularly, R represent a C₁-C₃₀ alkyl radical, an aryl radical, preferably a C₆-C₁₄ aryl radical, or an aralkyl radical, the alkyl part of which is C₁-C₃ alkyl,

25

- m and n are, independently of each other, integers between 0 and 100, with the proviso that the sum n+m is between 1 and 100.

Preferably, R, independently of each other, represent a linear or branched C₁-C₃₀ and in particular a C₁-C₂₀, in particular C₁-C₁₆ alkyl radical, a monocyclic or polycyclic C₆-

C₁₄, and in particular C₁₀-C₁₃, aryl radical, or an aralkyl radical of which preferably the aryl part is C₆ aryl and the alkyl part is C₁-C₃ alkyl.

Preferably, the R may each represent a methyl, ethyl, propyl, butyl, isopropyl, decyl, dodecyl or octadecyl radical, or alternatively a phenyl, tolyl, benzyl or phenethyl radical.

5 The R may in particular be identical, and in addition may be a methyl radical.

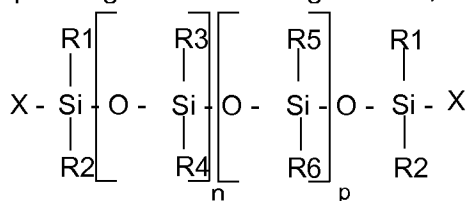
Preferably, m = 1 or 2 or 3, and/or n = 0 and/or p = 0 or 1 can be applied, in formula (VIII).

10 According to one preferred embodiment, n is an integer between 0 and 100 and m is an integer between 1 and 100, with the proviso that the sum n+m is between 1 and 100, in formula (VIII). Preferably, R is a methyl radical.

According to one embodiment, a phenyl silicone oil of formula (VIII) with a viscosity at 25°C of between 5 and 1500 mm²/s (i.e. 5 to 1500 cSt), and preferably with a viscosity of between 5 and 1000 mm²/s (i.e. 5 to 1000 cSt), may be used.

15 According to this embodiment, the non-volatile phenyl silicone oil is preferably chosen from phenyl trimethicones (when n=0) such as DC556 from Dow Corning (22.5 cSt), or else from diphenylsiloxylphenyl trimethicone oil (when m and n are between 1 and 100) such as KF56 A from Shin Etsu, or the Silbione 70663V30 oil from Rhône-Poulenc (28 cSt). The values in parentheses represent the viscosities at 25°C.

20 e) phenyl silicone oils optionally bearing at least one dimethicone fragment corresponding to the following formula, and mixtures thereof:



(IX)

in which:

25 R₁, R₂, R₅ and R₆, which may be identical or different, are an alkyl radical containing 1 to 6 carbon atoms,

R₃ and R₄, which may be identical or different, are an alkyl radical containing from 1 to 6 carbon atoms or an aryl radical (preferably C₆-C₁₄), with the proviso that at least one of R₃ and R₄ is a phenyl radical,

30 X is an alkyl radical containing from 1 to 6 carbon atoms, a hydroxyl radical or a vinyl radical,

n and p being an integer greater than or equal to 1, chosen so as to give the oil a weight-average molecular weight of less than 200 000 g/mol, preferably less than 150 000 g/mol and more preferably less than 100 000 g/mol.

35 f) and a mixture thereof.

Non-volatile non-phenylated silicone oils

The term "non-phenylated silicone oil" or "non-phenyl silicone oil" denotes a silicone oil which does not bear any phenyl substituents.

Representative examples of these non-volatile non-phenylated silicone oils which may be mentioned include polydimethylsiloxanes; alkyl dimethicones; vinylmethyl methicones; and also silicones modified with aliphatic groups and/or with functional groups such as hydroxyl, thiol and/or amine groups.

It should be noted that "dimethicone" (INCI name) corresponds to a polydimethylsiloxane (chemical name).

In particular, these oils may be chosen from the following non-volatile non-phenylated silicone oils:

- polydimethylsiloxanes (PDMSs),

- PDMSs comprising aliphatic groups, in particular alkyl or alkoxy groups, which are pendent and/or at the end of the silicone chain, these groups each comprising from 2 to 24 carbon atoms. By way of example, mention may be made of the cetyl dimethicone sold under the commercial reference Abil Wax 9801 from Evonik Goldschmidt,

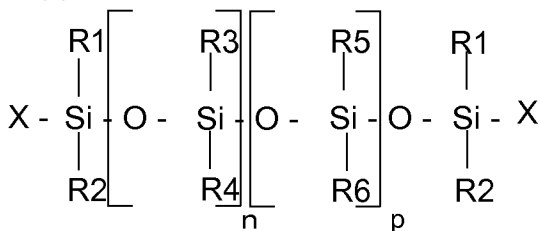
- PDMSs comprising at least one aliphatic group and/or at least one functional group such as hydroxyl, thiol and/or amine groups,

- polysiloxanes modified with fatty acids, fatty alcohols or polyoxyalkylenes, and mixtures thereof.

The non-volatile non-phenylated silicone oil is preferably chosen from non-volatile dimethicone oils.

Preferably, these non-volatile non-phenylated silicone oils are chosen from polydimethylsiloxanes; alkyl dimethicones and also PDMSs comprising at least one aliphatic group, in particular C₂-C₂₄ alkyl groups and/or at least one functional group such as hydroxyl, thiol and/or amine groups.

The non-phenylated silicone oil may be chosen in particular from silicones of formula (I'):



(I')

in which:

R_1 , R_2 , R_5 and R_6 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, an amine radical or a hydroxyl radical,

5 X is an alkyl radical containing from 1 to 6 carbon atoms, a hydroxyl radical or an amine radical,

n and p are integers chosen so as to have a fluid compound, in particular whose viscosity at 25°C is between 9 centistokes (cSt) ($9 \times 10^{-6} \text{ m}^2/\text{s}$) and 800 000 cSt (i.e. between 8 mPa.s and 720 000 mPa.s).

10 As non-volatile non-phenylated silicone oils which can be used according to the invention, mention may be made of those for which:

- the substituents R_1 to R_6 and X represent a methyl group, and p and n are such that the viscosity is 500 000 cSt (i.e. 450 000 mPa.s), for example the product sold under the name SE30 by the company General Electric, the product sold under the name AK 500000 by the company Wacker, the product sold under the name Mirasil DM 500 000 by the company Bluestar, and the product sold under the name Dow Corning 200 Fluid 500 000 cSt (i.e. 450 000 mPa.s) by the company Dow Corning,

15 - the substituents R_1 to R_6 and X represent a methyl group, and p and n are such that the viscosity is 60 000 cSt (54 000 mPa.s), for example the product sold under the name Dow Corning 200 Fluid 60 000 CS by the company Dow Corning, and the product sold under the name Wacker Belsil DM 60 000 by the company Wacker,

20 - the substituents R_1 to R_6 and X represent a methyl group, and p and n are such that the viscosity is 100 cSt (i.e. 90 mPa.s) or 350 cSt (i.e. 315 mPa.s), for example the products sold respectively under the names Belsil DM100 and Dow Corning 200 Fluid 350 CS by the company Dow Corning,

25 - the substituents R_1 to R_6 represent a methyl group, the group X represents a hydroxyl group, and n and p are such that the viscosity is 700 cSt (630 mPa.s), for example the product sold under the name Baysilone Fluid T0.7 by the company Momenive.

30 In accordance with a particularly advantageous embodiment of the invention, the silicone phase comprises at least two silicone oils chosen such that the mixture is incompatible with the hydrocarbon-based phase.

35 In addition, the non-volatile silicone oils may be chosen, without preference, from silicone oils that are mutually compatible or incompatible.

Preferably, the silicone phase comprises at least one phenylated non-volatile silicone oil not comprising a dimethicone fragment and at least one phenylated or non-phenylated silicone oil comprising a dimethicone fragment.

Moreover, according to an advantageous embodiment of the invention, the content of non-volatile silicone oil(s) ranges between 10% and 50% by weight relative to the weight of the composition and preferably between 15% and 50% by weight relative to the weight of the composition.

In accordance with a particularly advantageous embodiment of the invention, the silicone phase comprises a content of phenylated or non-phenylated non-volatile oil, comprising a dimethicone fragment, of at least 5% by weight relative to the weight of the composition.

SURFACTANTS:

The composition according to the invention also comprises at least one surfactant.

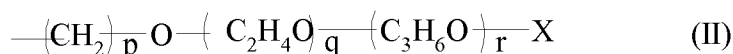
Preferably, the surfactant(s) are especially present in a total content ranging from 0.1% to 20% by weight, more particularly from 0.5% to 15% by weight and preferably from 1% to 10% by weight relative to the total weight of the composition.

In accordance with a particular embodiment of the invention, the surfactant(s) are chosen from silicone surfactants.

Silicone surfactants

By way of example, mention may be made of polyorganosiloxanes comprising at least one saturated or unsaturated hydrocarbon-based radical, optionally comprising one or more heteroatoms, for instance oxygen or sulfur, which hydrocarbon-based group may be substituted with at least one group comprising at least one hydroxyl, carboxylic, carboxylate, thiol, amine, sulfonate, sulfate, phosphate and/or hydroxypolyethylenoxy function.

More precisely, the abovementioned hydrocarbon-based radical may correspond to formula (II):



in which

- p ranges from 0 to 5, q ranges from 0 to 100, r ranges from 0 to 50, with p or q being other than zero,

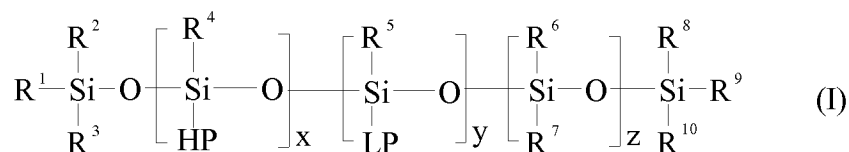
- the units (C₂H₄O) and (C₃H₆O) may be distributed randomly or in blocks, and

- X is a hydrogen or a C₁-C₁₀ alkyl radical, optionally substituted with one or more functions of hydroxyl, thiol, amine, carboxylic, carboxylate, amide, phosphate, sulfate or sulfonate type.

In particular, p may range from 1 to 5, q from 1 to 100 and r from 1 to 50. X may more particularly feature a hydrogen atom.

More specifically, the organopolysiloxane may comprise as hydrocarbon-based radical at least one hydroxy-polyalkylenoxy radical and especially a hydroxy-polyethylenoxy radical.

In particular, the organopolysiloxane used in the composition according to the invention may correspond to formula (I):



in which

- $\text{R}^1, \text{R}^2, \text{R}^3, \text{R}^4, \text{R}^5, \text{R}^6, \text{R}^7, \text{R}^8, \text{R}^9$ and R^{10} represent, independently of each other, a linear, branched or cyclic, saturated or unsaturated C_1 to C_6 alkyl radical,

- HP is a radical bearing at least one hydrocarbon-based group as defined previously,

- LP is a lipophilic radical, and

- x ranges from 1 to 5000; y from 0 to 5000; z from 0 to 5000.

As regards the radical LP, it may be chosen especially from branched, cyclic or linear C_1 to C_{40} alkyls, fluorine atoms, aryl or aryloxy radicals, C_1 to C_{40} hydrocarbyl acyl and hydroxypropylenoxy radicals.

The organopolysiloxane compound may be totally or partially fluorinated. In particular, the lower dialkyl siloxy groups may be substituted with one or more fluorine atoms.

According to a particular variant of the invention, the organopolysiloxane belongs to the family of dimethicone polyethylene glycols and may be chosen especially from the group comprising dimethicone copolyols, more specifically from

a) the product sold under the brand name Abil WE09 or Abil EM90 by the company Degussa-Goldschmidt;

b) the product sold under the reference KF-6017 by the company Shin-Etsu;

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

d) dimethicone copolyol benzoate, such as the product sold under the name Finsolv SLB 101[®] or 201[®] by the company Finetex;

e) the mixture of cyclomethicone/dimethicone copolyol sold under the name Q2-3225C[®] by the company Dow Corning;

f) a mixture of such surfactants.

The composition may optionally comprise at least one additional hydrocarbon-based surfactant, more particularly chosen from nonionic hydrocarbon-based surfactants.

Preferably, the composition does not comprise any such additional surfactants.

ADDITIONAL OILS:**Polar hydrocarbon-based oils:**

5 The composition according to the invention may also comprise at least one additional polar non-volatile hydrocarbon-based oil.

For the purposes of the present invention, the term "*polar oil*" means an oil whose solubility parameter at 25°C, δ_a , is other than 0 (J/cm³)^{1/2}.

10 In particular, the hydrocarbon-based non-volatile polar oil may be chosen from the list of oils below, and mixtures thereof:

- hydrocarbon-based plant oils such as liquid triglycerides of fatty acids containing from 4 to 10 carbon atoms, for instance heptanoic or octanoic acid triglycerides or jojoba oil;

- ester oils, preferably chosen from:

15 - fatty acid esters, in particular of 4 to 22 carbon atoms, and especially of octanoic acid, heptanoic acid, lanolic acid, oleic acid, lauric acid or stearic acid, for instance propylene glycol dioctanoate, propylene glycol monoisostearate or neopentyl glycol diheptanoate;

20 - synthetic esters, for instance the oils of formula R_1COOR_2 in which R_1 represents a linear or branched fatty acid residue comprising from 4 to 40 carbon atoms and R_2 represents a hydrocarbon-based chain, which is especially branched, containing from 4 to 40 carbon atoms, on condition that $R_1 + R_2 \geq 16$, for instance purcellin oil (cetostearyl octanoate), isononyl isononanoate, C_{12} to C_{15} alkyl benzoate, 2-ethylhexyl palmitate, octyldodecyl neopentanoate, 2-octyldodecyl stearate, 2-octyldodecyl erucate, oleyl erucate, isostearyl isostearate, 2-octyldodecyl benzoate, alcohol or polyalcohol octanoates, decanoates or ricinoleates, isopropyl myristate, isopropyl palmitate, butyl stearate, hexyl laurate, 2-ethylhexyl palmitate, 2-hexyldecyl laurate, 2-octyldecyl palmitate, 2-octyldodecyl myristate or 2-diethylhexyl succinate; preferably, the preferred synthetic esters R_1COOR_2 in which R_1 represents a linear or branched fatty acid residue comprising from 4 to 40 carbon atoms and R_2 represents a hydrocarbon-based chain, which is especially branched, containing from 4 to 40 carbon atoms are such that R_1 and $R_2 \geq 20$;

- linear fatty acid esters with a total carbon number ranging from 35 to 70, for instance pentaerythrityl tetrapelargonate (MW = 697 g/mol);

35 - hydroxylated esters, preferably with a total carbon number ranging from 35 to 70, for instance polyglyceryl-2 triisostearate (MW = 965 g/mol), isostearyl lactate, octyl hydroxystearate, octyldodecyl hydroxystearate, diisostearyl malate, glyceryl stearate; diethylene glycol diisononanoate;

- esters of aromatic acids and of alcohols comprising 4 to 22 atoms, such as tridecyl trimellitate (MW = 757 g/mol);

- C₂₄-C₂₈ esters of branched fatty alcohols or fatty acids such as those described in patent application EP-A-0 955 039, and especially triisoarachidyl citrate (MW = 1033.76 g/mol), pentaerythrityl tetraisononanoate (MW = 697 g/mol), glyceryl triisostearate (MW = 891 g/mol), glyceryl tris(2-decyl)tetradecanoate (MW = 1143 g/mol), pentaerythrityl tetraisostearate (MW = 1202 g/mol), polyglyceryl-2 tetraisostearate (MW = 1232 g/mol) or pentaerythrityl tetrakis(2-decyl)tetradecanoate (MW = 1538 g/mol),

- polyesters resulting from the esterification of at least one hydroxylated carboxylic acid triglyceride with an aliphatic monocarboxylic acid and with an aliphatic dicarboxylic acid, which is optionally unsaturated, for instance the succinic acid and isostearic acid castor oil sold under the reference Zenigloss by Zenitech;

- esters of a diol dimer and of a diacid dimer of general formula HO-R¹-(OCO-R²-COO-R¹)_h-OH, in which:

R¹ represents a diol dimer residue obtained by hydrogenation of dilinoleic diacid,

R² represents a hydrogenated dilinoleic diacid residue, and

h represents an integer ranging from 1 to 9,

especially the esters of dilinoleic diacids and of dilinoleyl diol dimers sold by the company Nippon Fine Chemical under the trade names Lusplan DD-DA5[®] and DD-DA7[®],

- polyesters obtained by condensation of an unsaturated fatty acid dimer and/or trimer and of diol, such as those described in patent application FR 0 853 634, in particular such as dilinoleic acid and 1,4-butanediol. Mention may especially be made in this respect of the polymer sold by Biosynthis under the name Viscoplast 14436H (INCI name: dilinoleic acid/butanediol copolymer), or copolymers of polyols and of diacid dimers, and esters thereof, such as Hailuscent ISDA;

fatty alcohols containing from 12 to 26 carbon atoms, which are preferably branched, for instance octyldodecanol, 2-butyloctanol, 2-hexyldecanol, 2-undecylpentadecanol and oleyl alcohol;

- C₁₂-C₂₂ higher fatty acids, such as oleic acid, linoleic acid and linolenic acid, and mixtures thereof;

- oils of plant origin, such as sesame oil (820.6 g/mol);

- fatty acids containing from 12 to 26 carbon atoms, for instance oleic acid;

- dialkyl carbonates, the two alkyl chains possibly being identical or different, such as dicaprylyl carbonate sold under the name Cetiol CC[®] by Cognis; and

- vinylpyrrolidone copolymers such as the vinylpyrrolidone/1-hexadecene copolymer, Antaron V-216 sold or manufactured by the company ISP (MW = 7300 g/mol).

Preferably, if one or more of these polar non-volatile oils are present, they are chosen from ester oils.

Preferably, the said ester oil is chosen from synthetic esters of formula R_1COOR_2 in which R_1 represents a linear or branched fatty acid residue containing from 4 to 40 carbon atoms and R_2 represents a hydrocarbon chain that is especially branched, containing from 4 to 40 carbon atoms, provided that $R_1 + R_2 \geq 16$.

Preferably, the composition according to the invention comprises at least one non-volatile ester oil chosen from purcellin oil (cetostearyl octanoate), isononyl isononanoate, C_{12} to C_{15} alkyl benzoate, 2-ethylhexyl palmitate, octyldodecyl neopentanoate, 2-octyldodecyl stearate, 2-octyldodecyl erucate, oleyl erucate, isostearyl isostearate, 2-octyldodecyl benzoate, alcohol or polyalcohol octanoates, decanoates or ricinoleates, isopropyl myristate, isopropyl palmitate, butyl stearate, hexyl laurate, 2-ethylhexyl palmitate, 2-hexyldecyl laurate, 2-octyldecyl palmitate, 2-octyldodecyl myristate and 2-diethylhexyl succinate.

Preferably, the composition according to the invention comprises at least one non-volatile oil chosen from neopentanoic acid esters, preferably octyldodecyl neopentanoate.

Preferably, if the composition comprises one or more polar non-volatile oils, the total content thereof is such that the polar oil(s)/apolar oil(s) weight ratio is less than 1 and preferably less than 0.6.

VOLATILE OILS:

Although this does not represent a preference of the present invention, the composition may optionally comprise at least one volatile oil as additional oil.

Such a volatile oil may especially be a hydrocarbon-based oil or a silicone oil.

For the purposes of the invention, the term "volatile oil" means an oil that is capable of evaporating on contact with keratin materials in less than one hour, at room temperature and atmospheric pressure (760 mmHg).

The volatile organic solvent(s) and volatile oils of the invention are volatile organic solvents and cosmetic oils that are liquid at room temperature, with a non-zero vapour pressure at room temperature and atmospheric pressure, ranging in particular from 0.13 Pa to 40 000 Pa (10^{-3} to 300 mmHg), in particular ranging from 1.3 Pa to 13 000 Pa (0.01 to 100 mmHg), and more particularly ranging from 1.3 Pa to 1300 Pa (0.01 to 10 mmHg).

These oils may be hydrocarbon-based oils, silicone oils or fluoro oils, or mixtures thereof.

In particular, volatile oils that may be mentioned include volatile hydrocarbon-based oils and especially volatile hydrocarbon-based oils with a flash point of less than or equal to 80°C (the flash point is in particular measured according to ISO Standard 3679), such

as hydrocarbon-based oils containing from 8 to 14 carbon atoms, and especially:

- branched C₈-C₁₄ alkanes, for instance C₈-C₁₄ isoalkanes of petroleum origin (also known as isoparaffins), for instance isododecane (also known as 2,2,4,4,6-pentamethylheptane), isodecane, and, for example, the oils sold under the trade name

Isopar or Permethyl,

- linear alkanes, for instance n-dodecane (C₁₂) and n-tetradecane (C₁₄) sold by Sasol under the respective references Parafol 12-97 and Parafol 14-97, and also mixtures thereof, the undecane-tridecane mixture, the mixtures of n-undecane (C₁₁) and of n-tridecane (C₁₃) obtained in Examples 1 and 2 of patent application WO 2008/155 059 from the company Cognis, and mixtures thereof.

The volatile solvent is preferably chosen from volatile hydrocarbon-based oils containing from 8 to 14 carbon atoms, and mixtures thereof.

As other volatile hydrocarbon-based oils, and especially as volatile hydrocarbon-based oils with a flash point of less than or equal to 80°C, mention may also be made of ketones that are liquid at room temperature, such as methyl ethyl ketone or acetone; short-chain esters (containing from 3 to 8 carbon atoms in total) such as ethyl acetate, methyl acetate, propyl acetate or n-butyl acetate; ethers that are liquid at room temperature, such as diethyl ether, dimethyl ether or dichlorodiethyl ether; alcohols and especially linear or branched lower monoalcohols containing from 2 to 5 carbon atoms, such as ethanol, isopropanol or n-propanol.

A volatile hydrocarbon-based oil with a flash point of greater than 80°C that may be mentioned is isohexadecane.

Advantageously, the composition comprises less than 5% and better still less than 2% by weight of volatile oil relative to the total weight of the composition. Preferably, the composition is free of volatile oil.

Particularly preferably, the composition according to the invention is free of volatile oil.

ADDITIONAL FATTY SUBSTANCES:

The composition according to the invention may optionally comprise one or more additional fatty substances, more particularly chosen from waxes and pasty fatty substances, or mixtures thereof.

Waxes

As indicated previously, the composition according to the invention may comprise at least one wax.

The wax(es) under consideration in the context of the present invention are generally lipophilic compounds that are solid at room temperature (25°C), with a

solid/liquid reversible change of state, having a melting point of greater than or equal to 30°C, which may be up to 200°C and especially up to 120°C.

In particular, the waxes that are suitable for the invention may have a melting point of greater than or equal to 45°C and in particular greater than or equal to 55°C.

5 For the purpose of the invention, the melting point corresponds to the temperature of the most endothermic peak observed on thermal analysis (DSC) as described in Standard ISO 11357-3; 1999. The melting point of the wax may be measured using a differential scanning calorimeter (DSC), for example the calorimeter sold under the name DSC Q2000 by the company TA Instruments.

10 Preferably, the waxes have an enthalpy of fusion ΔH_f of greater than or equal to 70 J/g.

Preferably, the waxes comprise at least one crystallizable part, which is visible by X-ray observation.

15 The measurement protocol is as follows:

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

- the melting point (Mp) of the wax, as mentioned previously corresponding to the temperature of the most endothermic peak of the melting curve observed, representing the variation of the difference in power absorbed as a function of the temperature,

- ΔH_f : the enthalpy of fusion of the wax, corresponding to the integral of the entire
25 melting curve obtained. This enthalpy of fusion of the wax is the amount of energy required to make the compound change from the solid state to the liquid state. It is expressed in J/g.

The wax may especially 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
30 compressive force, measured at 20°C using the texture analyser sold under the name TA-TX2i by the company Rheo, equipped with a stainless-steel cylinder with a diameter of 2 mm, travelling at a measuring speed of 0.1 mm/second, and penetrating the wax to a penetration depth of 0.3 mm.

35 Preferably, the composition according to the invention comprises a wax content of between 0.5% and 30% by weight and preferably between 1% and 25% by weight, relative to the total weight of the composition.

Preferably, the composition according to the invention has a wax content of between 5% and 15% by weight, relative to the total weight of the composition.

Apolar waxes:

Preferably, the composition according to the invention comprises at least one apolar wax.

For the purposes of the present invention, the term "apolar wax" means a wax whose solubility parameter at 25°C as defined below, δ_a , is equal to 0 (J/cm³)^{1/2}.

Apolar waxes are in particular hydrocarbon-based waxes constituted solely of carbon and hydrogen atoms, and free of heteroatoms such as N, O, Si and P.

The term "*hydrocarbon-based wax*" means a wax formed essentially from, or even constituted of, carbon and hydrogen atoms, and optionally oxygen and nitrogen atoms, and that does not contain any silicon or fluorine atoms. It may contain alcohol, ester, ether, carboxylic acid, amine and/or amide groups.

In particular, the expression "apolar wax" is understood to mean a wax that is constituted solely of apolar wax, rather than a mixture also comprising other types of waxes that are not apolar waxes.

Preferably, the composition according to the invention comprises at least one hydrocarbon-based apolar wax.

Preferably, the said wax is chosen from microcrystalline waxes, paraffin waxes, ozokerite, polyethylene waxes and polymethylene waxes, and mixtures thereof.

An ozokerite that may be mentioned is Ozokerite Wax SP 1020 P.

As microcrystalline waxes that may be used, mention may be made of Multiwax W 445[®] sold by the company Sonneborn, and Microwax HW[®] and Base Wax 30540[®] sold by the company Paramelt.

As microwaxes that may be used in the compositions according to the invention as apolar wax, mention may be made especially of polyethylene microwaxes such as those sold under the names Micropoly 200[®], 220[®], 220L[®] and 250S[®] by the company Micro Powders.

Polyethylene waxes that may be mentioned include Performalene 500-L Polyethylene and Performalene 400 Polyethylene sold by New Phase Technologies.

Polymethylene waxes that may be mentioned include the Polymethylene Wax (54°C) sold under the reference Cirebelle 303; the Polymethylene Wax (80°C) sold under the reference Cirebelle 108, sold by Cirebelle.

Polar waxes

According to another embodiment, the composition according to the invention may comprise, besides the apolar wax, at least one polar wax.

For the purposes of the present invention, the term "*polar wax*" means a wax whose solubility parameter at 25°C, δ_a , is other than 0 (J/cm³)^{1/2}.

In particular, the term "*polar wax*" means a wax whose chemical structure is formed essentially from, or even constituted of, carbon and hydrogen atoms, and comprising at least one highly electronegative heteroatom such as an oxygen, nitrogen, silicon or phosphorus atom.

The definition and calculation of the solubility parameters in the Hansen three-dimensional solubility space are described in the paper by C.M. Hansen: *The three dimensional solubility parameters*, J. Paint Technol. 39, 105 (1967).

According to this Hansen space:

- δ_D characterizes the London dispersion forces derived from the formation of dipoles induced during molecular impacts;

- δ_p characterizes the Debye interaction forces between permanent dipoles and also the Keesom interaction forces between induced dipoles and permanent dipoles;

- δ_h characterizes the specific interaction forces (such as hydrogen bonding, acid/base, donor/acceptor, etc.); and

- δ_a is determined by the equation: $\delta_a = (\delta_p^2 + \delta_h^2)^{1/2}$

The parameters δ_p , δ_h , δ_D and δ_a are expressed in (J/cm³)^{1/2}.

The polar waxes may especially be hydrocarbon-based, fluoro or silicone waxes.

Preferentially, the polar waxes are hydrocarbon-based waxes.

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

According to a first preferred embodiment, the polar wax is a hydrocarbon-based wax. As a hydrocarbon-based polar wax, a wax chosen from ester waxes and alcohol waxes is in particular preferred.

According to the invention, the term "*ester wax*" means a wax comprising at least one ester function.

According to the invention, the term "*alcohol wax*" means a wax comprising at least one alcohol functional group, i.e. comprising at least one free hydroxyl (OH) group.

The following may especially be used as ester wax:

- ester waxes such as those chosen from:

- i) Waxes of formula R_1COOR_2 in which R_1 and R_2 represent linear, branched or cyclic aliphatic chains, the number of atoms of which varies from 10 to 50, which may contain a heteroatom such as O, N or P and the melting point of which varies from 25°C to 120°C. In particular, use may be made, as an ester wax, of a C₂₀-C₄₀ alkyl

(hydroxystearyl)stearate (the alkyl group comprising from 20 to 40 carbon atoms), alone or as a mixture, or a C₂₀-C₄₀ alkyl stearate. Such waxes are especially sold under the names Kester Wax K 82 P[®], Hydroxypolyester K 82 P[®], Kester Wax K 80 P[®] and Kester Wax K82H by the company Koster Keunen.

5 Use may also be made of a glycol and butylene glycol montanate (octacosanoate) such as the wax Licowax KPS Flakes (INCI name: glycol montanate) sold by the company Clariant.

10 ii) Bis(1,1,1-trimethylolpropane) tetrastearate, sold under the name Hest 2T-4S[®] by the company Heterene.

15 iii) Diester waxes of a dicarboxylic acid of general formula R³-($\text{-OCO-R}^4\text{-COO-R}^5$), in which R³ and R⁵ are identical or different, preferably identical and represent a C₄-C₃₀ alkyl group (alkyl group comprising from 4 to 30 carbon atoms) and R⁴ represents a linear or branched C₄-C₃₀ aliphatic group (alkyl group comprising from 4 to 30 carbon atoms) which may or may not contain one or more unsaturated groups, and preferably that is linear and unsaturated.

20 iv) Mention may also be made of the waxes obtained by catalytic hydrogenation of animal or vegetable oils having linear or branched C₈-C₃₂ fatty chains, for example such as hydrogenated jojoba oil, hydrogenated sunflower oil, hydrogenated castor oil, hydrogenated coconut oil, and also the waxes obtained by hydrogenation of castor oil esterified with cetyl alcohol, such as those sold under the names Phytowax Ricin 16L64[®] and 22L73[®] by the company Sophim. Such waxes are described in patent application FR-A-2792190 and the waxes obtained by hydrogenation of olive oil esterified with stearyl alcohol such as that sold under the name Phytowax Olive 18 L 57, or else;

30 v) Beeswax, synthetic beeswax, polyglycerolated beeswax, carnauba wax, candelilla wax, oxypropylenated lanolin wax, rice bran wax, ouricury wax, esparto grass wax, cork fibre wax, sugar cane wax, Japan wax, sumach wax; montan wax, orange wax, laurel wax and hydrogenated jojoba wax.

According to a preferred embodiment, if the composition comprises a polar wax, it is candelilla wax.

35 Alcohol waxes that may be mentioned include for example the wax Performacol 550-L Alcohol from New Phase Technologies, stearyl alcohol and cetyl alcohol.

If the composition according to the invention comprises at least one polar wax, and especially a polar hydrocarbon-based wax, the polar wax(es)/apolar wax(es) weight ratio

is less than 1 and preferably less than 0.4; more particularly, if the composition contains the same, the said weight ratio ranges from 0.05 to 0.4.

According to a particularly preferred embodiment, the composition in accordance with the invention is free of polar wax.

5

Pasty fatty substances

The composition according to the invention may optionally comprise at least one solid fatty substance whose melting point is between 20 and 60°C and preferably between 23°C and 60°C, chosen from pasty fatty substances.

10 For the purpose of the present invention, the term "pasty fatty substance" is intended to mean a lipophilic fatty compound that undergoes a reversible solid/liquid change in state, that exhibits an anisotropic crystal organization in the solid state, and that comprises, at a temperature of 20°C and preferably of 23°C, a liquid fraction and a solid fraction.

15 In other words, the starting melting point of the pasty compound may be less than 20°C and preferably 23°C. The liquid fraction of the pasty compound measured at 20°C and preferably at 23°C may represent 1% to 97% by weight and preferably from 9% to 97% by weight of the compound. This liquid fraction at 20°C and preferably at 23°C preferably represents between 15% and 85% and more preferably between 40% and 85%
20 by weight.

For the purposes of the invention, the melting point corresponds to the temperature of the most endothermic peak observed in thermal analysis (DSC) as described in the standard ISO 11357-3; 1999. The melting point of a paste or of a wax may be measured using a differential scanning calorimeter (DSC), for example the calorimeter sold under
25 the name MDSC 2920 by the company TA Instruments.

The measurement protocol is as follows:

A sample of 5 mg of paste or wax (depending on the case) placed in a crucible is subjected to a first temperature rise passing from -20°C to 100°C, at the heating rate of
30 10°C/minute, then is cooled from 100°C to -20°C at a cooling rate of 10°C/minute and finally subjected to a second temperature rise passing from -20°C to 100°C at a heating rate of 5°C/minute. During the second temperature rise, the variation in the difference between the power absorbed by the empty crucible and the crucible containing the sample of paste or wax as a function of the temperature is measured. The melting point of
35 the compound is the value of the temperature corresponding to the tip of the peak of the curve representing the variation in the difference in power absorbed as a function of the temperature.

The liquid fraction by weight of the pasty compound at 20°C and preferably at 23°C is equal to the ratio of the heat of fusion consumed at 20°C and preferably at 23°C to the heat of fusion of the pasty compound.

5 The heat of fusion of the pasty compound is the heat consumed by the compound in order to pass from the solid state to the liquid state. The pasty compound is said to be in the solid state when all of its mass is in crystalline solid form. The pasty compound is said to be in the liquid state when all of its mass is in liquid form.

10 The heat of fusion of the pasty compound is equal to the area under the curve of the thermogram obtained using a differential scanning calorimeter (DSC), such as the calorimeter sold under the name MDSC 2920 by the company TA Instrument, with a temperature rise of 5°C or 10°C per minute, according to standard ISO 11357-3:1999. The heat of fusion of the pasty compound is the amount of energy required to make the compound change from the solid state to the liquid state. It is expressed in J/g.

15 The heat of fusion consumed at 20°C and preferably at 23°C is the amount of energy absorbed by the sample to change from the solid state to the state that it has at 20°C and preferably at 23°C, composed of a liquid fraction and a solid fraction.

20 The liquid fraction of the pasty compound measured at 32°C preferably represents from 30% to 100% by weight of the compound, preferably from 50% to 100% and more preferably from 60% to 100% by weight of the compound. When the liquid fraction of the pasty compound measured at 32°C is equal to 100%, the temperature of the end of the melting range of the pasty compound is less than or equal to 32°C.

25 The liquid fraction of the pasty compound measured at 32°C is equal to the ratio of the heat of fusion consumed at 32°C to the heat of fusion of the pasty compound. The heat of fusion consumed at 32°C is calculated in the same way as the heat of fusion consumed at 20°C or 23°C.

The pasty fatty substance may be chosen from synthetic compounds and compounds of plant origin. A pasty fatty substance may be obtained by synthesis from starting materials of plant origin.

The pasty fatty substance is advantageously chosen from:

- 30
- lanolin and derivatives thereof, such as lanolin alcohol, oxyethylenated lanolins, acetylated lanolin, lanolin esters such as isopropyl lanolate, and oxypropylenated lanolins,
 - polymeric or non-polymeric silicone compounds, for instance polydimethylsiloxanes of high molecular masses, polydimethylsiloxanes containing side chains of the alkyl or alkoxy type containing from 8 to 24 carbon atoms, especially stearyl dimethicones,

35

 - 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 polyesters,
- and mixtures thereof.

The pasty fatty substance may be a polymer, especially a hydrocarbon-based polymer.

A preferred silicone and fluoro pasty fatty substance is polymethyltrifluoropropylmethylalkyldimethylsiloxane, manufactured under the name X22-1088 by Shin-Etsu.

When the pasty fatty substance is a silicone and/or fluoro polymer, the composition advantageously comprises a compatibilizer such as short-chain esters, for instance isodecyl neopentanoate.

Among the liposoluble polyethers, mention may be made especially of copolymers of ethylene oxide and/or of propylene oxide with C₆-C₃₀ alkylene oxides. Preferably, the weight ratio of the ethylene oxide and/or propylene oxide to the alkylene oxides in the copolymer is from 5/95 to 70/30. In this family, mention will be made especially of block copolymers comprising C₆-C₃₀ alkylene oxide blocks with a molecular weight ranging from 1000 to 10 000, for example a polyoxyethylene/polydodecylene glycol block copolymer such as the ethers of dodecanediol (22 mol) and of polyethylene glycol (45 oxyethylene or OE units) sold under the brand name Elfacos ST9 by Akzo Nobel.

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;

- phytosterol esters;

- pentaerythritol esters;

- esters formed from:

- at least one C₁₆₋₄₀ alcohol, at least one of the alcohols being a Guerbet alcohol,

and

- a diacid dimer formed from at least one unsaturated C₁₈₋₄₀ fatty acid,

such as the ester of a dimer of fatty acids and of tall oil comprising 36 carbon atoms and of a mixture i) of Guerbet alcohols comprising 32 carbon atoms and ii) of behenyl alcohol; the ester of a dimer of linoleic acid and of a mixture of two Guerbet alcohols, 2-tetradecyloctadecanol (32 carbon atoms) and 2-hexadecyleicosanol (36 carbon atoms);

- 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;

- polyesters resulting from the esterification between a polycarboxylic acid and an ester of aliphatic hydroxylated carboxylic acid, such as Risocast DA-L and Risocast DA-H sold by the Japanese company Kokyu Alcohol Kogyo, which are esters resulting from the esterification reaction of hydrogenated castor oil with dilinoleic acid or isostearic acid; and

- aliphatic esters of an ester resulting from the esterification between an ester of aliphatic hydroxylated carboxylic acid and an aliphatic carboxylic acid, for example the product sold under the trade name Salacos HCIS (V)-L by the company Nisshin Oil.

A Guerbet alcohol is the reaction product of the Guerbet reaction, which is well known to those skilled in the art. It is a reaction for transforming a primary aliphatic alcohol into its β -alkyl dimeric alcohol with loss of one equivalent of water.

The aliphatic carboxylic acids described above generally comprise from 4 to 30 and preferably from 8 to 30 carbon atoms. They are preferably chosen from hexanoic acid, heptanoic acid, octanoic acid, 2-ethylhexanoic acid, nonanoic acid, decanoic acid, undecanoic acid, dodecanoic acid, tridecanoic acid, tetradecanoic acid, pentadecanoic acid, hexadecanoic acid, hexyldecanoic acid, heptadecanoic acid, octadecanoic acid, isostearic acid, nonadecanoic acid, eicosanoic acid, isoarachidic acid, octyldodecanoic acid, heneicosanoic acid and docosanoic acid, and mixtures thereof.

The aliphatic carboxylic acids are preferably branched.

The esters of aliphatic hydroxylated carboxylic acid are advantageously derived from an aliphatic hydroxylated carboxylic acid comprising from 2 to 40 carbon atoms, preferably from 10 to 34 carbon atoms and better still from 12 to 28 carbon atoms, and from 1 to 20 hydroxyl groups, preferably from 1 to 10 hydroxyl groups and better still from 1 to 6 hydroxyl groups. The esters of aliphatic hydroxylated carboxylic acid are especially chosen from:

a) partial or total esters of saturated linear monohydroxylated aliphatic monocarboxylic acids;

b) partial or total esters of unsaturated monohydroxylated aliphatic monocarboxylic acids;

c) partial or total esters of saturated monohydroxylated aliphatic polycarboxylic acids;

d) partial or total esters of saturated polyhydroxylated aliphatic polycarboxylic acids;

e) partial or total esters of C₂ to C₁₆ aliphatic polyols that have reacted with a monohydroxylated or polyhydroxylated aliphatic monocarboxylic or polycarboxylic acid,
f) and mixtures thereof.

The aliphatic esters of an ester are advantageously chosen from:

5 - the ester resulting from the esterification reaction of hydrogenated castor oil with isostearic acid in proportions of 1 to 1 (1/1), known as hydrogenated castor oil monoisostearate,

10 - the ester resulting from the esterification reaction of hydrogenated castor oil with isostearic acid in proportions of 1 to 2 (1/2), known as hydrogenated castor oil diisostearate,

- the ester resulting from the esterification reaction of hydrogenated castor oil with isostearic acid in proportions of 1 to 3 (1/3), known as hydrogenated castor oil triisostearate,

- and mixtures thereof.

15 If the composition comprises at least one compound of this type, its content is between 0.5% and 30% by weight and preferably between 1% and 20% by weight relative to the total weight of the said composition.

20 **DYESTUFFS:**

The composition according to the invention preferably comprises at least one dyestuff (also known as a colouring agent), which may be chosen from water-soluble or liposoluble dyes, pigments and naces, and mixtures thereof.

25 The composition according to the invention may also comprise one or more dyestuffs chosen from water-soluble dyes and pulverulent dyestuffs, for instance pigments, naces and glitter flakes that are well known to those skilled in the art.

30 The dyestuffs may be present in the composition in a content ranging from 0.01% to 30% by weight, relative to the weight of the composition, preferably from 0.1% to 20% by weight.

The term "pigments" should be understood as meaning white or coloured, mineral or organic particles that are insoluble in an aqueous solution, which are intended to colour and/or opacify the resulting film.

35 The pigments may be present in a proportion of from 0.01% to 20% by weight, especially from 0.1% to 15% by weight and in particular from 0.2% to 10% by weight, relative to the total weight of the cosmetic composition.

As mineral pigments that may be used in the invention, mention may be made of titanium oxides, zirconium oxides or cerium oxides, and also zinc oxides, iron oxides or chromium oxides, ferric blue, manganese violet, ultramarine blue and chromium hydrate.

It may also be a pigment having a structure that may be, for example, of sericite/brown iron oxide/titanium dioxide/silica type. Such a pigment is sold, for example, under the reference Coverleaf NS or JS by the company Chemicals and Catalysts, and has a contrast ratio in the region of 30.

5 The dyestuff may also comprise a pigment with a structure that may be, for example, of silica microsphere type containing iron oxide. An example of a pigment having this structure is the product sold by the company Miyoshi under the reference PC Ball PC-LL-100 P, this pigment consisting of silica microspheres containing yellow iron oxide.

10 Among the organic pigments that may be used in the invention, mention may be made of carbon black, pigments of D&C type, lakes based on cochineal carmine or on barium, strontium, calcium or aluminium, or alternatively the diketopyrrolopyrroles (DPPs) described in documents EP-A-542 669, EP-A-787 730, EP-A-787 731 and WO-A-96/08537.

15 The term "nacres" should be understood as meaning coloured particles of any form, which may or may not be iridescent, especially produced by certain molluscs in their shell, or alternatively synthesized, and which have a colour effect via optical interference.

20 The nacres may be chosen from nacreous pigments such as titanium mica coated with an iron oxide, titanium mica coated with bismuth oxychloride, titanium mica coated with chromium oxide, titanium mica coated with an organic dye and also nacreous pigments based on bismuth oxychloride. They may also be mica particles at the surface of which are superposed at least two successive layers of metal oxides and/or of organic dyestuffs.

25 Examples of nacres that may also be mentioned include natural mica coated with titanium oxide, with iron oxide, with natural pigment or with bismuth oxychloride.

30 Among the commercially available nacres that may be mentioned are the nacres Timica, Flamenco and Duochrome (on mica base) sold by the company Engelhard, the Timiron nacres sold by the company Merck, the Prestige nacres on mica base sold by the company Eckart and the Sunshine nacres on synthetic mica base sold by the company Sun Chemical.

The nacres may more particularly have a yellow, pink, red, bronze, orangey, brown, gold and/or coppery colour or tint.

35 As illustrations of nacres that may be used in the context of the present invention, mention may be made especially of the gold-coloured nacres sold especially by the company Engelhard under the name Brilliant gold 212G (Timica), Gold 222C (Cloisonne), Sparkle gold (Timica), Gold 4504 (Chromalite) and Monarch gold 233X (Cloisonne); the bronze nacres sold especially by the company Merck under the name Bronze fine (17384) (Colorona) and Bronze (17353) (Colorona) and by the company Engelhard under the name Super bronze (Cloisonne); the orange nacres sold especially by the company

Engelhard under the name Orange 363C (Cloisonne) and Orange MCR 101 (Cosmica) and by the company Merck under the name Passion orange (Colorona) and Matte orange (17449) (Microna); the brown nacres sold especially by the company Engelhard under the name Nu-antique copper 340XB (Cloisonne) and Brown CL4509 (Chromalite); the nacres
5 with a copper tint sold especially by the company Engelhard under the name Copper 340A (Timica); the nacres with a red tint sold especially by the company Merck under the name Sienna fine (17386) (Colorona); the nacres with a yellow tint sold especially by the company Engelhard under the name Yellow (4502) (Chromalite); the red nacres with a gold tint sold especially by the company Engelhard under the name Sunstone G012
10 (Gemtone); the pink nacres sold especially by the company Engelhard under the name Tan opale G005 (Gemtone); the black nacres with a gold tint sold especially by the company Engelhard under the name Nu antique bronze 240 AB (Timica), the blue nacres sold especially by the company Merck under the name Matte blue (17433) (Microna), the white nacres with a silvery tint sold especially by the company Merck under the name
15 Xirona Silver, and the golden-green pink-orange nacres sold especially by the company Merck under the name Indian summer (Xirona), and mixtures thereof.

The term “dyes” should be understood as meaning compounds that are generally organic, which are soluble in fatty substances such as oils or in an aqueous-alcoholic
20 phase.

The cosmetic composition according to the invention may also comprise water-soluble or liposoluble dyes. The liposoluble dyes are, for example, Sudan red, DC Red 17, DC Green 6, β -carotene, Sudan brown, DC Yellow 11, DC Violet 2, DC Orange 5 and quinoline yellow. The water-soluble dyes are, for example, beetroot juice or methylene
25 blue.

The cosmetic composition according to the invention may also contain at least one material with a specific optical effect as dyestuff.

This effect is different from a simple conventional hue effect, i.e. a unified and
30 stabilized effect as produced by standard dyestuffs, for instance monochromatic pigments. For the purposes of the invention, the term “stabilized” means lacking an effect of variability of the colour as a function of the angle of observation or alternatively in response to a temperature change.

For example, this material may be chosen from particles with a metallic glint,
35 goniochromatic colouring agents, diffractive pigments, thermochromic agents, optical brighteners, and also fibres, especially interference fibres. Needless to say, these various materials may be combined so as to afford the simultaneous manifestation of two effects, or even of a novel effect in accordance with the invention.

FILLERS:

A composition according to the invention may also contain at least one or more filler(s).

5 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. These fillers serve especially to modify the rheology or the texture of the composition.

10 The fillers may be mineral or organic and of any shape, 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, bentone, fumed silica particles, optionally hydrophilic- or hydrophobic-treated, polyamide (Nylon[®]) powder (Orgasol[®] from Atochem), poly- β -alanine powder and polyethylene powder, tetrafluoroethylene polymer (Teflon[®]) powders, lauroyllysine, starch, boron nitride, hollow
15 polymer microspheres such as polyvinylidene chloride/acrylonitrile microspheres, for instance Expancel[®] (Nobel Industrie), acrylic acid copolymer microspheres (Polytrap[®] from the company Dow Corning) and silicone resin microbeads (for example Tospearls[®] from Toshiba), precipitated calcium carbonate, magnesium carbonate, magnesium hydrogen carbonate, hydroxyapatite, hollow silica microspheres (Silica Beads[®] from
20 Maprecos), elastomeric polyorganosiloxane particles, 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.

25 They may also be particles comprising a copolymer, the said copolymer comprising trimethylol hexyl lactone. In particular, it may be a copolymer of hexamethylene diisocyanate/trimethylol hexyl lactone. Such particles are especially commercially available, for example, under the name Plastic Powder D-400[®] or Plastic Powder D-800[®] from the company Toshiki.

30 According to one preferred embodiment, the composition comprises at least one filler, and in particular chosen from fumed silica particles that have optionally been hydrophilic- or hydrophobic-treated, preferably hydrophobic-treated. Preferably, the composition comprises at least one filler known as Silica Dimethyl Silylate (according to the CTFA).

35 The hydrophobic groups may especially be dimethylsilyloxyl or polydimethylsiloxane groups, which are especially obtained by treating fumed silica in the presence of polydimethylsiloxane or dimethyldichlorosilane. Silicas thus treated are known as Silica Dimethyl Silylate according to the CTFA (6th edition, 1995). They are sold, for example,

under the references Aerosil R972® and Aerosil R974® by Degussa, and Cab-O-Sil TS-610® and Cab-O-Sil TS-720® by Cabot.

Preferably, the composition contains between 0.01% and 25% by weight and in particular between 0.1% and 20% by weight of fillers relative to the total weight of the composition.

ADDITIVES:

A composition according to the invention may furthermore comprise any ingredient conventionally used as additive in cosmetics and dermatology.

These additives are advantageously chosen from antioxidants, thickeners, sweeteners, basifying or acidifying preserving agents, and mixtures thereof, and may be chosen advantageously from those proposed in Table 1 of the Codex Alimentarius.

As antioxidant, a composition in accordance with the invention may advantageously comprise at least one pentaerythrityl di-t-butyl hydroxycinnamate.

A composition according to the invention may also contain flavourings and/or fragrances.

As cosmetic active agents that may be used in the invention, mention may be made of sunscreens, vitamins A, E, C and B3, provitamins such as D-panthenol, calmatives such as α -bisabolol, *Aloe vera*, allantoin, plant extracts or essential oils, protective or restructuring agents, refreshing agents such as menthol and derivatives thereof, emollients, moisturizers, antiwrinkle active agents and essential fatty acids, and mixtures thereof.

The amounts of each of these various ingredients are those conventionally used in the fields under consideration, and range, for example, from 0.01% to 10% by weight relative to the total weight of the composition.

According to a preferred embodiment, a composition in accordance with the invention may comprise at least one sunscreen, chosen from ethylhexyl salicylate and ethylhexyl methoxycinnamate, and mixtures thereof.

According to a preferred embodiment, a composition in accordance with the invention comprises at least one of the additional compounds chosen from dyestuffs, pasty fatty substances, film-forming polymers, fillers, active agents and sunscreens.

Needless to say, those 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 composition according to the invention are not, or are not substantially, adversely affected by the envisaged addition.

The composition according to the invention is in solid form.

5 In particular, it may be a cosmetic product for making up the skin or the lips, preferably the lips.

Preferably, it is a lip balm and/or a lipstick.

This product may preferably be in the form of a stick or cast in a dish or in a jar.

10 According to one preferred embodiment, it is a lipstick or a lip balm in stick form.

Protocol for measuring the hardness

The hardness of the composition is measured according to the following protocol:

The lipstick is stored at 20°C for 24 hours before measuring the hardness.

15 The hardness may be measured at 20°C via the “cheese wire” method, which consists in transversely cutting a wand of product, which is preferably a circular cylinder, by means of a rigid tungsten wire 250 µm in diameter, by moving the wire relative to the stick at a speed of 100 mm/minute.

20 The hardness of the samples of compositions of the invention, expressed in Nm^{-1} , is measured using a DFGS2 tensile testing machine from the company Indelco-Chatillon.

The measurement is repeated three times and then averaged. The average of the three values read using the tensile testing machine mentioned above, noted Y, is given in grams. This average is converted into newtons and then divided by L which represents the longest distance through which the wire passes. In the case of a cylindrical wand, L is
25 equal to the diameter (in metres).

The hardness is converted into Nm^{-1} by the equation below:

$$(Y \times 10^{-3} \times 9.8)/L$$

For a measurement at a different temperature, the stick is stored for 24 hours at this new temperature before the measurement.

30 According to this measuring method, the composition according to the invention has, according to this first embodiment, a hardness at 20°C and at atmospheric pressure preferably greater than or equal to 40 Nm^{-1} .

35 According to one particular mode, the hardness at 20°C and at atmospheric pressure is greater than or equal to 60 Nm^{-1} .

Preferably, the composition according to the invention especially has, according to this first embodiment, a hardness at 20°C of less than 500 Nm^{-1} , especially less than 400 Nm^{-1} and preferably less than 300 Nm^{-1} .

Preferably, the composition has a hardness of between 60 and 150 Nm⁻¹.

The terms "between" and "ranging from" should be understood as including the limits.

5 The examples below are given as non-limiting illustrations.

Unless otherwise mentioned, the values in the example below are expressed as % by weight relative to the total weight of the composition.

10 **Example 1: Lipstick in stick form**

The following compositions of lipsticks in stick form were prepared.

Ingredients	Comparative composition	Invention composition
Polydimethylsiloxane (viscosity: 100 cSt; Belsil DM 100 sold by Wacker)	20	20
Trimethylpentaphenyltrisiloxane (viscosity: 175 cSt; Dow Corning PH-1555 HRI Cosmetic Fluid sold by the company Dow Corning)	20	20
Hydrogenated polyisobutene (Parleam Lite sold by the company NOF)	12	10
Hydrogenated polydecene (viscosity: 54 cPs; Puresyn 6 sold by the company ExxonMobil Chemical)	6	5
2-Octyldodecyl neopentanoate (Elefac I-205 sold by the company Bernel Chemical)	10	9
Polymethylene wax with a melting point of 80°C (Cirebelle 108 sold by the company Cirebelle)	7	7
Hydrocarbon mineral wax (C20/C60) (Ozokerite Wax SP 1020 P sold by the company Strahl & Pitsch)	2	2
Stearyl heptanoate/caprylate (Dub Solide sold by the company Stéarinerie Dubois)	5	5
Styrene-ethylene/butylene-styrene block copolymer (Kraton G1657M sold by the company Kraton Polymers)	2.50	2.50
Hydrogenated styrene/methylstyrene/indene copolymer (Regalite R1100 CG Hydrocarbon Resin sold by the company Eastman Chemical)	6	6
Oxyethylenated polydimethylsiloxane (DP: 70 - viscosity: 500 cSt; KF6017 sold by the company Shin-Etsu)	-	4
Nacres	6.5	6.5
Pigments	3	3

Composition preparation protocol:

1. The waxes, the pasty compound, the hydrocarbon-based oils, the surfactant, the block copolymer and the resin (predispersed beforehand with warming in part of the hydrocarbon-based oils) are placed in a beaker and the temperature is raised to 100°C, homogenizing the whole using a Rayneri blender.
2. When the mixture is smooth and homogeneous, the mixture of silicone oils is gradually added while increasing the stirring very considerably, and stirring is continued for 10 minutes.
3. The pigments, ground beforehand in at least part of the polar oil, are then added to the resulting mixture.
4. The temperature is lowered to 90°C.
5. The composition is poured into a pre-siliconized mould at 42°C.
6. The product is stripped from the mould at 4°C.

Evaluation

The surfactant-free formulation has a silicone edging at the centre and on the contours, showing the mutual incompatibility of the various constituents, this incompatibility prohibiting the production of a correct product.

Each composition (according to the invention and comparative composition) was applied on a half-lip.

After two hours, it was apparent that the color of the half-lip coated with the comparative composition was less intense than with the composition according to the invention.

Consequently, the composition according to the invention improves the wear of color.

CLAIMS

1. Solid cosmetic composition, preferably for making up and/or caring for the skin and/or the lips, comprising, in a physiologically acceptable medium,
5 * at least one hydrocarbon-based phase comprising:
- at least one hydrocarbon-based resin with a number-average molecular weight of less than or equal to 10 000 g/mol,
- at least one hydrocarbon-based block polymer,
10 - at least one non-volatile apolar hydrocarbon-based oil,
* at least one silicone phase comprising at least one non-volatile silicone oil that is incompatible with the hydrocarbon-based phase, and
* at least one surfactant.
2. Composition according to the preceding claim, characterized in that the
15 said resin is an indene hydrocarbon-based resin, which is preferably hydrogenated, preferably derived from the polymerization of an indene monomer and of a monomer chosen from styrene, methylindene and methylstyrene, and mixtures thereof.
3. Composition according to either of the preceding claims, characterized in that the hydrocarbon-based resin is an indene resin chosen from hydrogenated
20 indene/methylstyrene/styrene copolymers.
4. Composition according to any one of the preceding claims, characterized in that the hydrocarbon-based resin is present in a content ranging from 1% to 45% by weight, preferably 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.
- 25 5. Composition according to any one of the preceding claims, characterized in that the said hydrocarbon-based block copolymer is an amorphous copolymer formed by polymerization of ethylenic carbide monomers, especially containing one or two ethylenic unsaturations, containing from 2 to 5 carbon atoms.
6. Composition according to the preceding claim, characterized in that the
30 hydrocarbon-based block copolymer comprises at least one styrene block and at least one block comprising units chosen from butadiene, ethylene, propylene, butylene and isoprene or a mixture thereof.
7. Composition according to any one of the preceding claims, characterized in that the hydrocarbon-based block copolymer is chosen from styrene-
35 ethylene/propylene, styrene-ethylene/butadiene, styrene-ethylene/butylene diblock copolymers, which are optionally hydrogenated, and styrene-ethylene/butadiene-styrene, styrene-butylene/ethylene-styrene, styrene-isoprene-styrene and styrene-butadiene-styrene triblock copolymers, which are optionally hydrogenated, and mixtures thereof.

8. Composition according to any one of the preceding claims, characterized in that the hydrocarbon-based block copolymer is a mixture of styrene-butylene/ethylene-styrene triblock hydrogenated copolymer and of styrene-ethylene/butylene diblock copolymer.

5 9. Composition according to any one of the preceding claims, characterized in that the hydrocarbon-based block copolymer is present in the composition in a content ranging from 0.1% to 15% by weight and preferably ranging from 0.5% to 10% by weight relative to the total weight of the composition.

10 10. Composition according to any one of the preceding claims, characterized in that the weight ratio of the hydrocarbon-based resin to the hydrocarbon-based block copolymer is between 1 and 10, more particularly between 1 and 8 and preferably between 1 and 5.

11. Composition according to any one of the preceding claims, characterized in that the apolar hydrocarbon-based non-volatile oil is chosen from:

- 15 - liquid paraffin or derivatives thereof,
- squalane,
- isoeicosane,
- naphthalene oil,
- polybutenes,
20 - polyisobutenes,
- hydrogenated polyisobutenes,
- decene/butene copolymers and polybutene/polyisobutene copolymers,
- polydecenes and hydrogenated polydecenes,
- and mixtures thereof.

25 12. Composition according to any one of the preceding claims, characterized in that the apolar hydrocarbon-based non-volatile oil is chosen from polybutenes; hydrogenated or non-hydrogenated polyisobutenes; hydrogenated or non-hydrogenated polydecenes; and mixtures thereof.

30 13. Composition according to any one of the preceding claims, characterized in that the content of non-volatile apolar hydrocarbon-based oil(s) ranges from 5% to 70% by weight relative to the weight of the composition, preferably from 10% to 60% by weight and preferably from 10% to 50% by weight relative to the weight of the composition.

35 14. Composition according to any one of the preceding claims, characterized in that the silicone oil(s) that are incompatible with the hydrocarbon-based phase are chosen from phenylated or non-phenylated non-volatile silicones, optionally bearing a dimethicone fragment.

15. Composition according to any one of the preceding claims, characterized in that the silicone phase comprises at least two silicone oils chosen such that the mixture is incompatible with the hydrocarbon-based phase, preferably comprises at least one

phenylated non-volatile silicone oil not comprising a dimethicone fragment and at least one phenylated or non-phenylated silicone oil comprising a dimethicone fragment.

16. Composition according to any one of the preceding claims, characterized in that the content of non-volatile silicone oil(s) represents from 10% to 50% by weight
5 relative to the weight of the composition and preferably from 15% to 50% by weight relative to the weight of the composition.

17. Composition according to any one of the preceding claims, characterized in that the content of phenylated or non-phenylated non-volatile oil, comprising a dimethicone fragment, is at least 5% by weight relative to the weight of the composition.

10 18. Composition according to any one of the preceding claims, characterized in that the surfactant is chosen from nonionic silicone surfactants.

19. Composition according to the preceding claim, characterized in that the surfactant content is between 0.1% and 20% by weight and preferably between 0.5% and 15% by weight relative to the weight of the composition, and even more particularly
15 between 1% and 10% by weight relative to the total weight of the composition.

20. Composition according to any one of the preceding claims, characterized in that it comprises an additional hydrocarbon-based oil chosen from polar hydrocarbon-based oils.

21. Cosmetic process for making up and/or caring for the skin and/or the lips,
20 comprising the application to the skin and/or the lips of a composition as defined in any one of the preceding claims.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2014/066060

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K8/31 A61Q1/06 A61Q19/00 A61K8/81 A61K8/891
A61K8/90

ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K A61Q

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

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

EPO-Internal, CHEM ABS Data, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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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

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

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

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