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(54) Title: COSMETIC PROCESS FOR COATING KERATIN MATERIAL

(57) Abstract: The present invention relates to a cosmetic method for making up and/or non- therapeutically caring for keratin material comprising at least the application on said keratin material of a mixture comprising at least - one reactive functional MQ resin A, - one reactive organopolysiloxane compound B and - one catalyst for a hydrosilylation reaction, said mixture containing less than 5% by weight of volatile solvent(s) with respect to its total weight and at least one reactive organopolysiloxane compound, different or not from compound B, having a molecular weight lower than 4000g/mole and said MQ resin and reactive organopolysiloxane(s) being capable of interacting together by a hydrosilylation reaction in presence of said catalyst.



COSMETIC PROCESS FOR COATING KERATIN MATERIAL

The present invention relates to a cosmetic process for coating keratin materials, in particular a non-therapeutic process for making up or caring for keratin materials, which
5 consists in forming on said keratin materials a polymer film made from at least two silicone-based compounds which are capable of reacting together, by a hydrosilylation reaction.

Lipstick and foundation compositions are commonly used to give the lips or the skin, and especially the face, an aesthetic colour. These makeup products generally
10 contain fatty phases such as waxes and oils, pigments and/or fillers and optionally additives, for instance cosmetic or dermatological active agents.

When they are applied to the skin, conventional cosmetic compositions have the drawback of transferring, i.e. of becoming at least partially deposited, and leaving marks, on certain supports with which they may come into contact and especially a glass, a cup, a
15 cigarette, an item of clothing or the skin. This results in mediocre persistence of the applied film, making it necessary to regularly renew the application of the foundation or lipstick composition. Moreover, the appearance of these unacceptable marks, especially on blouse collars, may put certain women off using this type of makeup.

“Transfer-resistant” lip and skin makeup compositions are thus sought, which have
20 the advantage of forming a deposit that does not become at least partially deposited onto the supports with which they come into contact (glass, clothing, cigarette or fabric) and show good staying power.

To limit the transfer of cosmetic compositions, it is known practice to use volatile oils. However, these volatile oils present in large amount render the makeup product,
25 especially lipstick, uncomfortable for the user. The makeup deposit gives a sensation of drying-out and of tautness.

Regarding more particularly eyelash coating compositions or mascaras, it is known that formulated in the form of a dispersion of waxes in non-aqueous solvents, they show good resistance to water and/or to sebum. Unfortunately, the makeup film obtained after
30 applying these cosmetic compositions is not sufficiently resistant to water, for example when bathing or taking a shower, to tears or sweat, or to sebum. The mascara then has a

tendency to wear away over time: grains are worn off and unattractive marks appear around the eyes.

Accordingly there is still a need for cosmetic compositions dedicated to the skin, lips and keratin fibres, having improved transfer resistance but staying comfortable.

5 Thus, the aim of the present invention is to provide a new route for formulating cosmetic compositions, especially makeup compositions, which makes it possible to obtain in situ film forming, deposited on keratin materials, which combines a fast cure, a good adhesion to substrate, a low tack surface and which shows good transfer resistance and staying power properties over time, in particular resistance to water and rubbing, and a
10 comfortable deposit on the skin, the lips, the eyelashes or the nails.

The inventors have discovered that it is possible to achieve such properties by using a system comprising silicone compounds that polymerize in situ so as to adhere better to keratin materials.

More particularly, the inventors have discovered that by electing specific silicone-
15 based compounds it may be possible to avoid the use of volatile solvent as vehicle. For obvious reasons, that option is particularly advantageous with respect to the drying time of the corresponding coating when it is applied on a keratin material.

Thus, one subject of the instant invention is a cosmetic method for making up and/or non-therapeutically caring for keratin material comprising at least the application
20 on said keratin material of a mixture comprising at least

- one reactive functional MQ resin A,
- one reactive organopolysiloxane compound B and
- one catalyst for a hydrosilylation reaction,

said mixture containing less than 5% by weight of volatile solvent(s) with respect to its
25 total weight and at least one reactive organopolysiloxane compound, different or not from compound B, having a molecular weight lower than 4000 g/mole and said MQ resin and reactive organopolysiloxane(s) being capable of interacting together by a hydrosilylation reaction in presence of said catalyst.

According to the instant invention, the keratin material may be the skin, the lips,
30 the nails, the hair, the eyelashes and more particularly is the skin and the eyelashes.

According to the instant invention, “capable of interacting together” means that each compound is capable to interact in presence of said catalyst and generally at room temperature with at least one of the others compounds.

5 According to the instant invention, “the hydrosilylation reaction between the respective reactive functional groups of MQ resin A and organopolysiloxane(s) have for result to promote the transformation of the corresponding mixture in a coating on said keratin material.

Advantageously, said mixture, when applied on the keratin material, contains less than 2% by weight and more particularly less than 1% by weight of volatile solvent(s)
10 with respect to its total weight.

According to a specific variant, the reactive organopolysiloxane compound having a molecular weight lower than 4000 g/mole is the compound B.

According to another specific variant, the reactive organopolysiloxane compound having a molecular weight lower than 4000 g/mole is different from the compound B. In
15 such a case, the reactive organopolysiloxane compound having a molecular weight lower than 4000 g/mole, said also compound C, is also capable of interacting by a hydrosilylation reaction with said MQ resin A and/or compound B.

In a preferred embodiment, the process according to the invention may involve a MQ resin A with reactive alkylene groups, in mixture with at least two reactive
20 organopolysiloxanes B with at least one of them with reactive Si-H bonds and with at least one of them having a molecular weight lower than 4000 g/mole.

According to the invention, “reactive alkylene group” is used to designate a reactive alkylene group directly bonded to a silicon atom.

According to another embodiment, the mixture considered for hydrosilylation
25 contains at least

- one reactive functional MQ resin A having at least three (a) groups per molecule,
- one reactive organopolysiloxane compound B having at least two (b) groups per molecule, and optionally
- another one reactive organopolysiloxane compound different from the compound
30 B, said compound C, which is an organopolysiloxane having terminal (b) or (a) groups, with the groups (a) and (b) being either a reactive alkylene group directly bonded to a silicon atom (herein after called “SiAlk” group) or a reactive Si-bonded hydrogen group

(hereinafter called "SiH" group), provided that when (a) is SiAlk, (b) is SiH and when (a) is SiH, (b) is SiAlk.

Preferably, compounds A, B, and optionally C and the catalyst are in such quantity that $RH/Alk > 1.5$ wherein RH/Alk is the ratio of the number of reactive Si-bonded hydrogen groups with respect to the number of reactive alkylene groups.

The method according to the invention is particularly advantageous for providing a make-up and/or a care for keratin materials, in particular the skin, the lips, the eyelashes, the hair, the eyebrows or the nails.

The corresponding cosmetic product may be a make-up composition like a loose or compacted powder, a foundation, a makeup rouge, an eyeshadow, a concealer product, a blusher, a lipstick, a lip balm, a lip gloss, a lip pencil, an eye pencil, a mascara, an eyeliner, a body makeup product, a skin colouring product, a hair colouring product.

The corresponding cosmetic product may be also a care product for the eyelashes or the lips, or a care product for bodily and facial skin, especially a make-up removing compound, an antisen product or a care product for the hair like shampoo, hair conditioner or hair styling.

More particularly, the corresponding cosmetic product is dedicated to the make-up of the skin and the eyes.

In particular, it is a foundation or a mascara.

According to a specific embodiment said mixture is formed in situ on said keratin material.

Thus, another subject of the instant invention is a cosmetic method for making up and/or non-therapeutically caring for keratin material comprising at least the application on said keratin material of at least

(a) one first composition,

(b) one second composition,

with the first and second compositions comprising each less than 5% by weight of volatile solvent(s) and at least one of the first and second compositions containing at least one reactive functional MQ resin A, one reactive organopolysiloxane compound B, one catalyst for a hydrosilylation reaction, and at least one reactive organopolysiloxane compound, different or not from compound B, having a molecular weight lower than 4000

g/mole, said MQ resin A and reactive organopolysiloxane compound(s) being capable of interacting together by a hydrosilylation reaction in presence of said catalyst, provided that the compounds capable of interacting by a hydrosilylation reaction with each other and the catalyst are not present together in the same composition,

- 5 the application of (a) and (b) possibly being simultaneous and/or sequential in any order with the proviso that it is beneficial to the hydrosilylation of MQ resin A and said organopolysiloxane compound(s).

Another subject of the instant invention is a kit for coating keratin materials, comprising at least:

- 10 - one first composition and at least one second composition, the first and/or second composition comprising each less than 5% by weight of volatile solvent(s) with respect to their respective total weight and
- at least one reactive functional MQ resin A, one reactive organopolysiloxane compound B, one catalyst for a hydrosilylation reaction, and at least one reactive organopolysiloxane
- 15 compound, different or not from compound B, having a molecular weight lower than 4000g/mole, said MQ resin A and reactive organopolysiloxane compound(s) being capable of interacting together by a hydrosilylation reaction in presence of said catalyst, provided that the compounds capable of interacting by hydrosilylation with each other and the catalyst are not present together in the same composition,
- 20 said kit being dedicated to be a make-up composition for the skin, the eyes lashes, the lips, the nails or the hair or a care or cleaning cosmetic product for body and/or the hair.

In particular, the make-up composition may be a loose or compacted powder, a foundation, a makeup rouge, an eyeshadow, a concealer product, a blusher, a lipstick, a lip balm, a lip gloss, a lip pencil, an eye pencil, a mascara, an eyeliner, a body makeup

25 product, a hair colouring product.

In particular, the care cosmetic product may be a care or cleaning product for the eyelashes or the lips, or a care or cleaning product for bodily and facial skin. By way of non limiting examples, cosmetic care products may include any product intended to moisturize the skin; to cleanse, to nourish, and/or to maintain the skin and/or the hair; to

30 deodorize the skin; to prepare the skin for exposure to the sun, especially an antisen product; to reinforce the elasticity of the skin; and/or to enhance the softness of the skin, or a care product for the hair like shampoo, a hair conditioner or a hair styling.

According to a preferred variant, said kit is a make-up kit, more particularly dedicated to making-up the skin and the eyes and more particularly a foundation or a mascara.

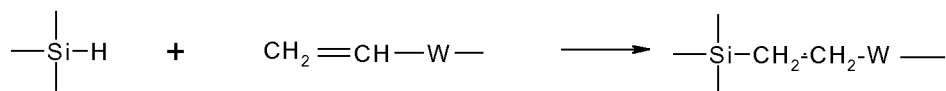
As used herein, "cosmetic treatment" means any treatment by means of a cosmetic product as defined above herein below.

As used herein, "cosmetic product" means any substance or preparation intended to be brought into contact with the various superficial parts of the human body (e.g., epidermis, body hair and hair system, lashes, nails, lips,) for the exclusive or main purpose of cleansing them, or of giving them a fragrant smell, of modifying their appearance, and/or of correcting body odors, and/or of protecting them, and/or of maintaining them in good condition (As set forth in cosmetic directive 76/768/EEC amended).

COSMETIC PROCESS

The cosmetic process for coating keratin materials, considered according to the invention comprises the application to the said keratin materials of one coat at least based on the reactional product of a mixture of specific compounds which are capable of interacting together *via* hydrosilylation.

This reaction may be represented schematically, in a simplified manner, as follows:



where W represents a silicon based chain containing one or several unsaturated aliphatic groups.

The so-obtained coating on the keratin materials, is an adherent film with good staying power.

According to one advantageous embodiment, the reactive compounds capable to interact by hydrosilylation and the catalyst are mixed together extemporaneously and the mixture is then applied to the keratin materials.

The cosmetic process for coating keratin materials described above preferably comprises the following steps:

a. extemporaneously mixing together:

- at least said first composition,
- at least said second composition,

the reactive compounds capable to interact by hydrosilylation, and the catalyst being contained in either one of said first and second compositions so that no hydrosilylation reaction occurs prior to said mixing of the first and second compositions, and then

b. applying to the said keratin materials at least one coat of the said mixture.

According to one variant the reactive compounds capable to interact by hydrosilylation and as defined hereafter and the catalyst are applied *via* at least two different compositions, each comprising at least one reactive compound and/or at least a catalyst.

According to a preferred variant, the reactive compounds capable to interact by hydrosilylation and the catalyst are applied *via* at least two different cosmetic compositions, one comprising at least one reactive compound and at least a catalyst, and the other one comprising at least the other reactive compound and optionally the compound capable to interact with it by hydrosilylation.

The terms first and second cosmetic compositions do not in any way determine the order of application of said compositions on the keratinous materials.

Several coats of each of the first and second cosmetic compositions may also be applied alternately to the keratin materials.

According to the invention, at least a catalyst, as defined below, is applied on the keratin materials to activate the reaction between the reactive compound(s) capable to react each with other *via* hydrosilylation.

For example, the catalyst may be present in one of the first or second cosmetic composition applied on the keratin materials, or in an additional composition, and the order of application of the composition does not matter.

According to a preferred embodiment, the first and second cosmetic compositions are as described above.

REACTIVE FUNCTIONAL MQ RESIN A

The reactive functional MQ resins A described in the present invention may also be designated "MQ" resins A.

The nomenclature of silicone resins is known under the name "MDTQ", the resin being described as a function of the various siloxane monomer units it comprises, each of the letters M, D, T and Q characterizing a type of unit.

5 The letter M represents the monofunctional unit of formula $(R)_3SiO_{1/2}$, the silicon atom being bonded to only one oxygen atom in the polymer comprising this unit.

The letter D means a difunctional unit $(R)_2SiO_{2/2}$ in which the silicon atom is bonded to two oxygen atoms.

The letter T represents a trifunctional unit of formula $(R)SiO_{3/2}$.

10 Finally, the letter Q means a tetrafunctional unit $SiO_{4/2}$ in which the silicon atom is bonded to four hydrogen atoms, which are themselves bonded to the rest of the polymer.

Accordingly, MQ resins are macromolecular polymers comprised primarily of $(R)_3SiO_{1/2}$ and $SiO_{4/2}$ units (the M and Q units, respectively) wherein R is a functional or nonfunctional, substituted or unsubstituted monovalent radical.

15 More particularly, in the units M, D and T defined above, R may be a hydrogen atom, a hydrocarbon-based radical, especially alkyl or alkylene group containing from 1 to 10 carbon atoms, a phenyl group or a hydroxyl group, with the proviso that at least three or more R are either hydrogen or an alkylene group with both type of groups being not simultaneously present in said MQ resin A.

20 The hydrocarbon group of R can be exemplified by groups such as methyl, ethyl, propyl, butyl, hexyl, octyl, decyl, vinyl, allyl, hexenyl and cyclohexyl.

More particularly, the MQ resin structure contains as R, methyl groups and at least two alkylene groups. The alkylene groups are preferably chosen among vinyl, allyl and hexenyl. More preferably, the alkylene groups are vinyl groups.

25 Those skilled in the art will appreciate that such resins may also include a limited number of $(R)_2SiO_{2/2}$ and $(R)SiO_{3/2}$ units, respectively referred to as D and T units.

In particular, the resin can also contain triorganosiloxy units (T units), for example 0.5 to 1 triorganosiloxy group for every $SiO_{4/2}$ unit, alternatively 0.6 to 0.9 triorganosiloxy group for every $SiO_{4/2}$ unit.

30 As used herein, the term "MQ resin" means that, on average, no more than about 20 mole percent of the resin molecules are comprised of D and T units. According to a specific variant, the MQ resin A is free of D and T units.

According to another specific variant, the MQ resin A has a ratio M/Q ranging from 0.01 to 1.

Typically, the MQ silicone resin may have a general formula (I)



wherein:

- n ranges from 1.1 to 1.6 and
- each R^1 is monovalent and independently selected from hydrogen, a C_1 to C_{10} alkyl group like for example methyl, ethyl, propyl, butyl, hexyl, octyl, decyl, or cyclohexyl; a
- 10 C_2 to C_{10} alkylene group like for example vinyl, allyl and hexenyl; a phenyl group, with the proviso that at least three or more R^1 are hydrogen or an alkylene group with both type of groups being not simultaneously present in said MQ resin A.

Subscript b in the above general formula (I) varies such that the group (R^2O) is 1 to 10 weight percent of the MQ resin A, alternatively 1 to 4 weight percent of the MQ resin

15 A. Each R^2 is hydrogen or a monovalent C_1 to C_4 alkyl group, more preferably an hydrogen atom.

According to a variant, the MQ resin A of formula (I) contains as R^1 methyl group and at least three hydrogen atoms and as R^2 hydrogen atoms.

More preferably, the MQ resin A of formula (I) contains as R^1 methyl group and at

20 least three alkylene groups and in particularly three vinyl groups and as R^2 hydrogen atoms.

MQ resins A convenient for the invention are chosen from MQ resins having sufficient reactive either Si-H bonds or preferably alkylene groups and more preferably

25 vinyl groups for formation of the polymer network.

Preferably, in one variant, such a MQ resin A comprises from 1% to 10% by weight of reactive alkylene groups and more preferably vinyl groups.

In particular, said MQ resin A may advantageously have reactive alkylene groups, especially C_2 - C_{10} alkylene groups and more particularly vinyl groups content ranging from

30 0.1 to 10 mol/1000g and in particular from about 0.5 to 3 mol/1000g.

As example of MQ resins A convenient for the invention, mention may be more particularly made of functional MQ resins having a number average molecular weight

(Mn) ranging from 1 500 to 10 000, in particular ranging from 3 000 to 10 000 and more particularly from 3 000 to 5 000.

MQ resins having reactive Si-H groups are in particularly disclosed in US 5,760,116 and MQ resins having reactive alkylene groups are in particularly disclosed
5 in US 3,436,366, US 4,041,010, US 4,587,137, EP 535 687, EP 1 057 476 and EP 1 800 864.

The amount in resin(s) MQ A is adjusted in regards of the amount in reactive organopolysiloxane(s) for allowing its total hydrosilylation. This adjustment is clearly from the knowledge of the man skilled in the art.

10 According to the instant invention, MQ resin(s) A may be used in an amount ranging from 20 to 60% by weight, and more particularly from 30 to 55% by weight, relative to the total weight of the reactive compounds present in the mixture and capable of interacting together by hydrosilylation

15 **REACTIVE ORGANOPOLYSILOXANE COMPOUNDS**

The term "organopolysiloxane compound" means a compound comprising at least two organosiloxane units, for example at least 5 organosiloxane units, notably at least 10 organosiloxane units.

For obvious reasons, one reactive organopolysiloxane is chosen for its capability to
20 react *via* a hydrosilylation reaction with the reactive MQ resin considered together. The reactive organopolysiloxane(s) considered according to the invention react *via* a hydrosilylation reaction with at least one MQ resin A at room temperature ($20\pm 5^{\circ}\text{C}$) and atmospheric pressure in the presence of a catalyst.

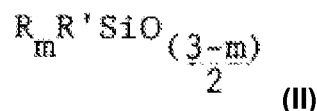
According to one variant, one compound B may be chosen from
25 organopolysiloxane compounds comprising at least two reactive alkylene groups per molecule such as $\text{C}_2\text{-C}_{10}$ alkylene groups.

For example, compound B may be a organopolysiloxane comprising a silicone main chain whose reactive alkylene groups are pendent on the main chain (side group) or located at the ends of the main chain of the compound (terminal group).

30 In the rest of the description, these particular compounds will be referred to as organopolysiloxanes containing reactive alkylene groups such as $\text{C}_2\text{-C}_{10}$ alkylene groups.

According to a more specific embodiment, compound B is chosen from organopolysiloxanes comprising at least two alkylene groups per molecule such as C₂-C₁₀ alkylene groups, for example two or more vinyl or allylic groups, each bonded to a silicon atom.

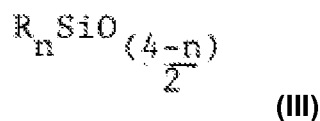
- 5 According to one advantageous embodiment, compound B is chosen from organopolysiloxanes comprising siloxane units of formula:



in which:

- R represents a linear or cyclic monovalent hydrocarbon-based group containing from 1 to 10 carbon atoms, preferably from 1 to 4, and better still from 1 to 2 carbon atoms, in particular a methyl radical, or a phenyl group, with R being preferably a methyl radical,
 - m is equal to 1 or 2, and
 - R' represents:
 - o a reactive alkylene group containing from 2 to 10 and preferably from 2 to 5 carbon atoms, for instance a vinyl group and/or an allylic groups; or
 - o an unsaturated cyclic hydrocarbon-based group containing from 5 to 8 carbon atoms, for instance a cyclohexenyl group.
- 20 Preferably, R' is an alkylene group, preferably a vinyl group.
 Preferably, R represents a methyl radical and R' is a vinyl group.

According to one particular embodiment, the organopolysiloxane also comprises units of formula:



- 25 in which R is a group as defined above, and n is equal to 2 or 3.

Preferably, compounds B comprise from 0.01% to 10% by weight of reactive alkylene groups.

Preferably, the organopolysiloxanes having reactive alkylene groups have from 0.00001 mol/g to 0.01 mol/g in particular from 0.00002 to 0.005 mol/g of alkylene groups, preferably vinyl groups, based on the total weight of the polymer.

When no specific molecular weight is specified, the organopolysiloxanes having
5 reactive alkylene groups preferably have viscosities on the order of about 3 mm²/s to about 600,000 mm²/s at 25°C.

The viscosity may be evaluated according to the method based on ASTM D 1084 or on ASTM D 445 as detailed here-after.

Thus, the viscosity in centipoises may be measured at 25 +/- 0.2 C using a
10 rotational viscometer such as a Brookfield Synchro-lectric viscometer or a Wells-Brookfield Cone/Plate viscometer. This method is based on ASTM D 1084 Method B (for cup/spindle) and ASTM D 4287 (for cone/plate).

The viscosity of liquids in centiStokes may be determined at 25 +/- 0.2 C. by measuring the time required for a fixed volume of samples to pass through a calibrated
15 glass capillary using "gravity-flow". The method is based on ASTM D-445, IP 71 and the results are reported in Stokes. A set of one of the following types viscosimeter are appropriate, Cannon Fenski., Ostwald, and Ubbelohde.

The choice of the convenient method may be easily performed by the man skilled in the art with respect to the texture of the specific polysiloxane to test.

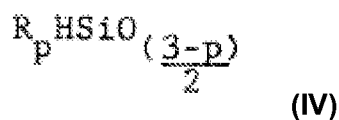
When no specific molecular weight is specified, the organopolysiloxanes having
20 reactive alkylene groups may have a weight-average molecular mass (Mw) ranging from 150 to 1 000 000, preferably from 200 to 800 000 and more preferably from 200 to 250 000.

As example of compounds B having vinyl groups, mention may be more
25 particularly made of:

- vinyl-terminated polydimethylsiloxane having a viscosity of 9000cP and a vinyl group content of 0.05 mol/1000g,
- vinyl-terminated polydimethylsiloxane having a viscosity of 60 000cP and a vinyl group content of 0.03 mol/1000g, and
- 30 - vinyl-terminated polydimethylsiloxane having a viscosity of 4,5cSt and a vinyl group content of 2,6 mol/1000g.

According to another variant, one reactive organopolysiloxane compound B may comprise at least two free Si-H groups (hydrogenosilane groups).

Such a organopolysiloxane may be chosen advantageously from organopolysiloxanes comprising at least one alkylhydrogenosiloxane unit having the following formula:



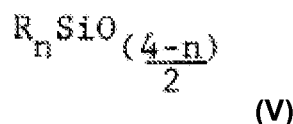
in which:

- p is equal to 1 or 2, and

- R represents a linear or cyclic monovalent hydrocarbon-based group containing from 1 to 10 carbon atoms, for instance an alkyl radical containing from 1 to 5 carbon atoms, preferably from 1 to 2, in particular a methyl radical, or alternatively a phenyl group.

Preferably, R is a hydrocarbon-based group, and more preferably is a methyl group.

These organopolysiloxane compounds containing alkylhydrogenosiloxane units may also comprise units of formula:



with n equal to 2 or 3 and R as defined above.

Advantageously, the radicals R represent a methyl group in formula (IV) and (V) above.

Preferably, these organopolysiloxanes B comprise terminal groups of formula $(\text{CH}_3)_3\text{SiO}_{1/2}$.

Advantageously, the organopolysiloxanes B comprise at least two alkylhydrogenosiloxane units of formula $-(\text{H}_3\text{C})(\text{H})\text{SiO}-$ and $-(\text{H}_3\text{C})_2\text{SiO}-$ units.

Polysiloxanes having silicon bonded hydrogen can also form cyclics, for example tetramethylcyclotetrasiloxane (or 2,4,6,8-tetramethylcyclotetrasiloxane, having CAS

Number 2370-88-9), or pentamethylcyclopentasiloxane (or 2,4,6,8, 10-pentamethylcyclopentasiloxane, having CAS number 6166-86-5).

Preferably, these organopolysiloxane compounds B comprise from 0.01% to 60% by weight of Si-H groups.

5 Preferably, the organopolysiloxanes having silicon bonded hydrogen atoms have from 0.0001 mol/g to 0.02 mol/g, preferably from 0.001 to 0.02mol/g and more particularly from 0.002 to 0.02mol/g of reactive Si-H group based on the total weight of the polymer.

10 When no specific molecular weight is specified, the organopolysiloxanes having silicon bonded hydrogen atoms preferably have viscosities on the order of from about 1 mm²/s to about 1000 mm²/s.

When no specific molecular weight is specified, the organopolysiloxanes having silicon bonded hydrogen atoms may have a weight-average molecular mass (Mw) ranging from 200 to 1 000 000, preferably 300 to 800 000 and more preferably from 500 to 15 250 000.

Such organopolysiloxane compounds containing hydrogenosilane groups are described, for example, in document EP 0 465 744.

As example of compounds B having Si-H groups, mention may be more particularly made of:

- 20 - methyl hydrogencyclopolsiloxane having a viscosity of 1cst and a Si-H group content of 1,7 mol/100g,
- dimethyl methylhydrogen polysiloxane having viscosity of 5cst and Si-H group content of 0,8 mol/100g
- Dimethylhydrogen-terminated polydimethylsiloxane having viscosity of 25 10cst and Si-H group content of 0,2 mol/100g and,
- methyl hydrogenpolysiloxane having a viscosity of 30cst and a Si-H group content of 1,5 mol/100g.

When the mixture used in the process according to the invention contains at least 30 two or more compounds B, at least one of them is capable of interacting by hydrosilylation reaction with said MQ resin A.

When only one of them is capable react with the compound A, the other one(s) are also capable to react *via* a hydrosilylation but with the other compound(s) B.

As specified previously, the mixture considered for the hydrosilylation includes at least one reactive organopolysiloxane compound having a molecular weight lower than 4000 g/mole.

The reactive organopolysiloxane compound having a molecular weight lower than 4000 g/mol, has preferably a molecular weight lower than 2500 g/mol, more preferably lower than 1500 g/mol.

The reactive organopolysiloxane compound having a molecular weight lower than 4000 g/mol, has preferably a molecular weight greater than 118 g/mol,

Advantageously, such organopolysiloxane compound(s) having a molecular weight lower than 4000g/mol is in an amount preferably greater than 30%, more preferably greater than 40%, and more preferably greater than 50% by weight of the dry solid content of the mixture applied on keratin material.

As example of reactive organopolysiloxane having a molecular weight lower than 4000 g/mole, mention may be more particularly made of:

- methylhydrogen cyclopolsiloxane having a viscosity of 1cst and a Si-H group content of 1,7 mol/100 g, and
- dimethyl methylhydrogen polysiloxane having viscosity of 5cst and Si-H group content of 0,8 mol/100 g.

According to a specific variant, the reactive organopolysiloxane having a molecular weight lower than 4000 g/mole is the compound B.

According to another specific variant, the reactive organopolysiloxane having a molecular weight lower than 4000 g/mole is different from the compound B. In such a case, the silicone compound having a molecular weight lower than 4000 g/mole is also capable of interacting by a hydrosilylation reaction with said resin A and/or compound B.

More particularly, the process according to the invention is performed in a way wherein the compounds are applied *via* at least a first and a second cosmetic compositions

to be mixed either extemporaneously prior to application on the keratinous materials or upon application on said keratinous materials, the compounds being contained in either one of said first and second cosmetic compositions so that no hydrosilylation reaction occurs prior to said mixing of the first and second cosmetic compositions.

5 The compounds with alkylene group and more particularly vinyl groups and the compounds with silicon bonded hydrogen are applied in such a way that the hydrosilylation reaction occurs at least in part on the keratinous material to be treated and/or made up.

10 According to a specific variant, the compound with reactive alkylene groups is at least the MQ resin A.

For example, in one embodiment, the process according to the invention may involve a MQ resin A with reactive alkylene groups, in mixture with only one compound B with reactive Si-H bonds and having a molecular weight lower than 4000.

15 In another embodiment, the process according to the invention may involve a MQ resin A with reactive alkylene groups in mixture with two or more compounds B said compounds B being such that at least one of them has reactive Si-H bonds and at least one of them has a molecular weight lower than 4000. The other organopolysiloxane(s) may have either alkylene groups or Si-H bonds.

20 In still another embodiment, the process according to the invention may involve a MQ resin A with reactive alkylene groups, in mixture with at least two compounds B having reactive Si-H bonds and with one of them having a molecular weight lower than 4000.

25 In still another embodiment, the process according to the invention may involve a MQ resin A with reactive alkylene groups, in mixture with at least two reactive organopolysiloxanes with reactive alkylene groups and one organopolysiloxane having reactive Si-H bonds with at least one of these organopolysiloxanes having a molecular weight lower than 4000g/mol.

30 According to another embodiment, the mixture contains at least - at least one reactive functional MQ resin A having at least three (a) groups per molecule,

- at least one organopolysiloxane compound B having at least two (b) groups per molecule, and optionally

- at least another organopolysiloxane compound different from the previous compound B, said C which is a organopolysiloxane having terminal (b) or (a) groups,

5 the groups (a) and (b) being either a reactive alkylene group, i.e. an alkylene group directly bonded to a silicon atom (herein after called "SiAlk" group) or a Si-bonded hydrogen group (hereinafter called "SiH" group), provided that when (a) is SiAlk, (b) is SiH and when (a) is SiH, (b) is SiAlk.

10 Preferably, compounds A, B, and optionally C and the catalyst are in such quantity that: $RH/Alk > 1.5$ wherein the term "RH/Alk" corresponds to the ratio of the number of SiH moles with respect to the number of Si-Alkylene moles in the mixture considered for the hydrosilylation.

Preferably, $RH/Alk > 2$, preferably $RH/Alk > 2.5$, more preferably $RH/Alk > 3$.

15 When the compounds A, B, and optionally C and the catalyst meet these requirements of RH/Alk , they are able to cure quickly as a film on a substrate.

CATALYST

20 The hydrosilylation reaction is advantageously performed in the presence of a catalyst that may be present in one of the compositions comprising the compounds with vinyl groups and/or the compounds with silicon bonded hydrogen or in a separate composition, the catalyst preferably being platinum-based or rhodium-based.

Examples that may be mentioned include platinum- or rhodium-based catalysts deposited on a support of silica gel or charcoal (coal) powder, platinum chloride, platinum salts and chloroplatinic acids.

25 Chloroplatinic acids in hexahydrate or anhydrous form, which are readily dispersible in organosilicone media, are preferably used.

Mention may also be made of platinum complexes in particular such as those based on chloroplatinic acid hexahydrate and on divinyltetramethyldisiloxane.

30 The catalyst may be present in the composition(s) in a content ranging from 0.0001% to 20% by weight relative to the total weight of the composition comprising it.

When the compounds with vinyl groups, the compounds with silicon bonded hydrogen, and the catalyst of the invention are mixed, they cure at room temperature ($20 \pm 5^\circ \text{C}$) within 10 minutes or, more preferably, within five minutes or less.

5 In order to achieve satisfactory cure it is important that the ratio of silicon-bonded hydrogen atoms of the polysiloxanes to all groups reactive therewith in the cosmetic composition(s) (e.g., the unsaturated groups) is appropriate to affect the desired cure. The curing time is dependent on various factors including the type and proportion of other component materials present in the formulation.

10 Polymerization inhibitors, and more particularly catalyst inhibitors, may also be introduced into the cosmetic compositions of the invention, in order to increase the stability of the composition over time or to retard the polymerization. Non-limiting examples that may be mentioned include cyclic polymethylvinylsiloxanes, in particular tetravinyl tetramethyl cyclotetrasiloxane, acetylenic alcohols, preferably volatile, such as methylisobutynol.

15 The presence of ionic salts in one and/or the other of the compositions may have an influence on the rate of polymerization of the compounds.

The ratio between the compounds with reactive alkylene groups and the compounds with reactive silicon bonded hydrogen may be varied so as to modify the rate of reaction and thus the rate of formation of the film or so as to adapt the properties of the
20 formed film according to the desired use.

KIT

Each composition may be packaged separately in the same packaging article.

25 Each composition may also be packaged in the same packaging article, the mixing of the at least two compositions being performed at the end(s) of the packaging article during the delivery of each composition.

Alternatively, each of the first, second and optionally third compositions may be packaged in a different packaging article.

30 Indeed, the reactive compounds capable to interact by hydrosilylation and the catalyst can either be separated into a plurality of containers to inhibit curing prior to spreading or can be packaged into a unique container wherein the hydrosilylation catalyst

is temporarily inhibited, wherein the temporary inhibition is obtained by encapsulating the hydrosilylation catalyst or by adding transient inhibitors.

In case of one part system in which the catalyst is encapsulated or temporarily inhibited, an external factor triggers the cure (i.e. by the hydrosilylation reaction) by releasing the catalyst. For instance, such factors can be, but are not limited to elevated
5 temperature (e.g. body or skin temperature, hair dryer), shearing effect or evaporation of certain formulation additives (e.g. liquid fatty or aqueous phase).

The formulation of the invention can be applied by spreading the formulation onto the desired site, wherein said spreading can cause mixing the formulation or the mixing of
10 the formulation is achieved prior spreading the formulation.

The activation of the catalyst can occur prior to spread the formulation, or can be caused by spreading the formulation, or can be caused by mixing the formulation, or can occur after spreading the formulation.

After spreading, the formulation cures in situ on the desired site to form a film.

15 According to the method of the invention, the compounds, and the catalyst, and any other optional components, are delivered and spread onto the desired site in a manner which causes mixing of the component materials. The formulation cures after being applied and results in a film suitable for cosmetic applications.

The delivery herein is performed by conventional techniques known in the art. For
20 instance the delivery systems include, but not limited to can, tube, sachet, syringe, stick, pencil, brush, sponge, wet stamp and roll-on as known in the art. These delivery devices can comprise one or more than one chamber according to the need to separate the components of the formulation.

Whichever of the above means of delivery is chosen, the formulation components
25 are delivered and spread to the desired site. Mixing of the formulation components can occur either in the delivery packaging, during the delivery or during the spreading onto the desired site.

For instance, a mixing chamber can be built into the delivery packaging such that as the formulation components are drawn or forced out of their separate containers they
30 are mixed prior to being delivered.

In an embodiment the formulation components are separated by fragile walls which can easily be broken to allow the formulation components for getting in contact

together. The mixing then occurs by hand kneading or with a mixing tool as known in the art.

In another embodiment the formulation components are forced into a mixing device such as a static mixer and then delivered to the site.

5 In still another embodiment, the formulation components can be delivered sequentially and then be mixed on the desired site.

A subject of the invention is also the use of a kit as described above for obtaining a film deposited on keratin materials, which shows improved staying power and/or comfort properties.

10 Needless to say, the composition comprises a cosmetically acceptable medium, i.e. a non-toxic medium that may be applied to human keratin materials and that has a pleasant appearance, odor and feel.

Thus, the composition(s) according to the invention can comprise a liquid fatty or aqueous phase to adjust the viscosity and the comfort of the resulting film after curing.

15 The liquid fatty or aqueous phase which may be employed includes volatile and non volatile fluids such as silicone volatiles, silicone fluids, hydrocarbons, alcohols, ketones, esters and any other liquid material.

However, the compositions contain advantageously less than 5% by weight of volatile solvent(s). The volatile organic solvent(s) and volatile oils of the invention are
20 volatile organic solvents and cosmetic oils that are liquid at room temperature, with a non-zero vapor 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).

25

Liquid fatty phase

For the purposes of the present invention, the term "liquid fatty phase" means a fatty phase that is liquid at room temperature (25°C) and atmospheric pressure (760 mmHg), composed of one or more mutually compatible non-aqueous fatty substances
30 that are liquid at room temperature, also known as organic solvents or oils.

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

The oil may be present in a content ranging from 1% to 90% by weight and preferably from 5% to 50% by weight relative to the total weight of the composition.

It is noticed that the previous content in oils do not include the content in MQ resin(s) and/or organopolysiloxane(s) as previously disclosed.

5

The term "non-volatile oil" means an oil that remains on the skin or the keratin materials at room temperature and atmospheric pressure for at least several hours and that especially has a vapor pressure of less than 10^{-3} mmHg (0.13 Pa).

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

10

The term "hydrocarbon-based oil" means an oil mainly containing hydrogen and carbon atoms and optionally oxygen, nitrogen, sulfur or phosphorus atoms.

According to one advantageous embodiment, at least one of the first and second compositions used in the process according to the invention comprises at least one non-volatile oil, chosen in particular from non-volatile hydrocarbon-based oils and/or silicone oils and/or fluoro oils.

15

Non-volatile hydrocarbon-based oils that may especially be mentioned include:

- hydrocarbon-based oils of plant origin, such as triesters of fatty acids and of glycerol, the fatty acids of which may have varied chain lengths from C_4 to C_{24} , these chains possibly being linear or branched, and saturated or unsaturated; these oils are especially wheatgerm oil, sunflower oil, grapeseed oil, sesame seed oil, corn oil, apricot oil, castor oil, shea oil, avocado oil, olive oil, soybean oil, sweet almond oil, palm oil, rapeseed oil, cottonseed oil, hazelnut oil, macadamia oil, jojoba oil, alfalfa oil, poppyseed oil, pumpkin oil, marrow oil, blackcurrant oil, evening primrose oil, millet oil, barley oil, quinoa oil, rye oil, safflower oil, candlenut oil, passionflower oil or musk rose oil; or caprylic/capric acid triglycerides, for instance those sold by the company Stéarineries Dubois or those sold under the names Miglyol 810, 812 and 818 by the company Dynamit Nobel;

25

- synthetic ethers containing from 10 to 40 carbon atoms;

- apolar hydrocarbon-based oils, for instance squalene, linear or branched hydrocarbons such as liquid paraffin, liquid petroleum jelly and naphthalene oil, hydrogenated or partially hydrogenated polyisobutene, isoeicosane, squalane,

30

decene/butene copolymers and polybutene/polyisobutene copolymers, especially Indopol L-14, and polydecenes such as Puresyn 10, and mixtures thereof;

- synthetic esters, for instance oils of formula R_1COOR_2 in which R_1 represents a linear or branched fatty acid residue containing from 1 to 40 carbon atoms and R_2 represents a hydrocarbon-based chain, which is especially branched, containing from 1 to 40 carbon atoms, on condition that $R_1 + R_2 \geq 10$, for instance Purcellin oil (cetostearyl octanoate), isopropyl myristate, isopropyl palmitate, C_{12} to C_{15} alkyl benzoates, hexyl laurate, diisopropyl adipate, isononyl isononanoate, 2-ethylhexyl palmitate, isostearyl isostearate, alcohol or polyalcohol octanoates, decanoates or ricinoleates, for instance propylene glycol dioctanoate; hydroxylated esters, for instance isostearyl lactate or diisostearyl malate; and pentaerythritol esters;

- fatty alcohols that are liquid at room temperature with a branched and/or unsaturated carbon-based chain containing from 12 to 26 carbon atoms, for instance octyldodecanol, isostearyl alcohol, oleyl alcohol, 2-hexyldecanol, 2-butyloctanol or 2-undecylpentadecanol;

- higher fatty acids such as oleic acid, linoleic acid or linolenic acid;
- and mixtures thereof.

The non-volatile silicone oils may be:

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

According to one embodiment, the liquid fatty phase comprises an ester oil. This ester oil may be chosen from the esters of monocarboxylic acids with monoalcohols and polyalcohols.

Advantageously, the said ester corresponds to formula (VI) below:



where R_1 represents a linear or branched alkyl radical of 1 to 40 carbon atoms and preferably of 7 to 19 carbon atoms, optionally comprising one or more ethylenic double bonds, and optionally substituted,

R_2 represents a linear or branched alkyl radical of 1 to 40 carbon atoms, preferably of 3 to 10
30 carbon atoms and better still of 3 to 20 carbon atoms, optionally comprising one or more ethylenic double bonds, and optionally substituted.

The term "optionally substituted" means that R_1 and/or R_2 can bear one or more substituent chosen, for example, from groups comprising one or more hetero atoms chosen from O, N and S, such as amino, amine, alkoxy and hydroxyl.

15 Preferably, the total number of carbon atoms of $R_1 + R_2$ is ≥ 9 .

R_1 may represent the residue of a linear or, preferably, branched fatty acid, preferably a higher fatty acid, containing from 1 to 40 and even better from 7 to 19 carbon atoms, and R_2 may represent a linear or, preferably, branched hydrocarbon-based chain containing from 1 to 40, preferably from 3 to 30 and even better from 3 to 20 carbon
20 atoms. Once again, preferably the number of carbon atoms of $R_1 + R_2 \geq 9$.

Examples of groups R_1 are those derived from fatty acids chosen from the group consisting of acetic acid, propionic acid, butyric acid, caproic acid, caprylic acid, pelargonic acid, capric acid, undecanoic acid, lauric acid, myristic acid, palmitic acid, stearic acid, isostearic acid, arachidic acid, behenic acid, oleic acid, linolenic acid, linoleic
25 acid, oleostearic acid, arachidonic acid and erucic acid, and mixtures thereof.

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

30 Advantageously, the esters are chosen from the compounds of formula (IV) above, in which R_1 represents an unsubstituted linear or branched alkyl group of 1 to 40 carbon atoms and preferably of 7 to 19 carbon atoms, optionally comprising one or more

ethylenic double bonds, and R_2 represents an unsubstituted linear or branched alkyl group of 1 to 40 carbon atoms, preferably of 3 to 30 carbon atoms and even better of 3 to 20 carbon atoms, optionally comprising one or more ethylenic double bonds.

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

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

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

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

The non-volatile oil may be present in a content ranging from 0.1% to 80% by weight, preferably from 1% to 60% by weight, better still from 5% to 50% by weight and even better still from 14% to 40% by weight relative to the total weight of each composition or relative to the total weight of the composition when all compounds A and B are present in the same composition.

The compositions according to the invention may also include at least one fatty substance that is solid at room temperature, chosen especially from waxes and mixtures thereof. These fatty substances may be of animal, plant, mineral or synthetic origin.

Thus, at least one of the first and second compositions according to the invention may comprise a wax or a mixture of waxes.

The wax under consideration in the context of the present invention is in general a lipophilic compound, which is solid at room temperature (25°C), with a reversible

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

Hydrocarbon-based waxes, for instance beeswax, lanolin wax or Chinese insect wax; rice wax, carnauba wax, candelilla wax, ouricury wax, esparto grass wax, cork fibre wax, sugarcane wax, Japan wax and sumach wax; montan wax, microcrystalline waxes, paraffins and ozokerite; polyethylene waxes, the waxes obtained by Fisher-Tropsch synthesis and waxy copolymers, and also esters thereof, may especially be used.

Mention may also be made of waxes obtained by catalytic hydrogenation of animal or plant oils containing linear or branched C₈-C₃₂ fatty chains.

Among these waxes that may especially be mentioned are hydrogenated jojoba oil, isomerized jojoba oil such as the trans-isomerized partially hydrogenated jojoba oil manufactured or sold by the company Desert Whale under the commercial reference Iso-Jojoba-50[®], hydrogenated sunflower oil, hydrogenated castor oil, hydrogenated coconut oil, hydrogenated lanolin oil and bis(1,1,1-trimethylolpropane) tetrastearate sold under the name Hest 2T-4S by the company Heterene, bis(1,1,1-trimethylolpropane) tetrabeheenate sold under the name Hest 2T-4B by the company Heterene.

The nature and amount of the wax(es) depend on the desired mechanical properties and textures. As a guide, the waxes may represent from 0.1% to 70% by weight, better still from 1% to 40% and even better still from 5% to 30% by weight relative to the total weight of the composition.

The compositions according to the invention may also advantageously comprise at least one dyestuff.

It may be present in a content ranging from 0.01% to 50% by weight and preferably from 0.01% to 30% by weight relative to the weight of each first and second composition or relative to the total weight of their mixture.

The pigments that are useful in the present invention may be in the form of powder or of pigmentary paste.

The term “dyes” should be understood as meaning compounds, generally organic, which are soluble in at least one oil or in an aqueous-alcoholic phase.

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

The term “nacres” or nacreous pigments 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 else synthesized, and which have a colour effect *via* optical interference.

5 The pigment may be an organic pigment. The term “organic pigment” means any pigment that satisfies the definition in Ullmann’s encyclopaedia in the chapter on organic pigments. The organic pigment may especially be chosen from nitroso, nitro, azo, xanthene, quinoline, anthraquinone, phthalocyanin, metal complex, isoindolinone, isoindoline, quinacridone, perinone, perylene, diketopyrrolopyrrole, thioindigo, dioxazine, triphenylmethane and quinophthalone compounds.

10 The organic pigment(s) may be chosen, for example, from carmine, carbon black, aniline black, melanin, azo yellow, quinacridone, phthalocyanin blue, sorghum red, the blue pigments codified in the Color Index under the references CI 42090, 69800, 69825, 73000, 74100 and 74160, the yellow pigments codified in the Color Index under the references CI 11680, 11710, 15985, 19140, 20040, 21100, 21108, 47000 and 47005, the green pigments codified in the Color Index under the references CI 61565, 61570 and 74260, the orange pigments codified in the Color Index under the references CI 11725, 15510, 45370 and 71105, the red pigments codified in the Color Index under the references CI 12085, 12120, 12370, 12420, 12490, 14700, 15525, 15580, 15620, 15630, 15800, 15850, 15865, 15880, 17200, 26100, 45380, 45410, 58000, 73360, 73915 and 75470, and the pigments obtained by oxidative polymerization of indole or phenolic derivatives as described in patent FR 2 679 771.

15 These pigments may also be in the form of composite pigments as described in patent EP 1 184 426. These composite pigments may be composed especially of particles comprising an inorganic nucleus at least partially coated with an organic pigment and at least one binder to fix the organic pigments to the nucleus.

20 The pigment may also be a lake. The term “lake” means insolubilized dyes adsorbed onto insoluble particles, the assembly thus obtained remaining insoluble during use.

30 The inorganic substrates onto which the dyes are adsorbed are, for example, alumina, silica, calcium sodium borosilicate or calcium aluminium borosilicate, and aluminium.

Among the organic dyes, mention may be made of cochineal carmine. Mention may also be made of the products known under the following names: D&C Red 21 (CI 45 380), D&C Orange 5 (CI 45 370), D&C Red 27 (CI 45 410), D&C Orange 10 (CI 45 425), D&C Red 3 (CI 45 430), D&C Red 4 (CI 15 510), D&C Red 33 (CI 17 200),
5 D&C Yellow 5 (CI 19 140), D&C Yellow 6 (CI 15 985), D&C Green (CI 61 570), D&C Yellow 1 O (CI 77 002), D&C Green 3 (CI 42 053), D&C Blue 1 (CI 42 090).

An example of a lake that may be mentioned is the product known under the following name: D&C Red 7 (CI 15 850:1).

The pigment may also be a pigment with special effects. The term “pigments with
10 special effects” means pigments that generally create a non-uniform coloured appearance (characterized by a certain shade, a certain vivacity and a certain lightness) that changes as a function of the conditions of observation (light, temperature, observation angles, etc.). They thus contrast with white or coloured pigments that afford a standard uniform opaque, semi-transparent or transparent shade.

The pigment may be a mineral pigment. The term “mineral pigment” means any
15 pigment that satisfies the definition in Ullmann’s encyclopaedia in the chapter on inorganic pigments. Among the mineral pigments that are useful in the present invention, mention may be made of zirconium oxide or cerium oxide, and also iron oxide or chromium oxide, manganese violet, ultramarine blue, chromium hydrate, ferric blue and
20 titanium dioxide. The following mineral pigments may also be used: Ta_2O_5 , Ti_3O_5 , Ti_2O_3 , TiO , ZrO_2 as a mixture with TiO_2 , ZrO_2 , Nb_2O_5 , CeO_2 , ZnS .

The pigment may also be a nacreous pigment such as white nacreous pigments, for example mica coated with titanium or with bismuth oxychloride, coloured nacreous pigments such as mica coated with titanium and with iron oxides, mica coated with
25 titanium and especially with ferric blue or chromium oxide, mica coated with titanium and with an organic pigment as defined above, and also nacreous pigments based on bismuth oxychloride. Examples that may be mentioned include the Cellini pigments sold by Engelhard (Mica- TiO_2 -lake), Prestige sold by Eckart (Mica- TiO_2) or Colorona sold by Merck (Mica- TiO_2 - Fe_2O_3).

In addition to nacles on a mica support, multilayer pigments based on synthetic
30 substrates such as alumina, silica, calcium sodium borosilicate or calcium aluminium borosilicates, and aluminium, may be envisaged.

The size of the pigment that is useful in the context of the present invention is generally between 10 nm and 200 μm , preferably between 20 nm and 80 μm and more preferentially between 30 nm and 50 μm .

5 **Cosmetic agents**

The compositions according to the invention may also contain one cosmetic agent(s) commonly used in cosmetics, such as fillers, thickeners, pasty compounds, gelling agents, film-forming polymers, surfactants, fibres, or mixtures thereof.

10 The proportion of cosmetic agent in the composition may vary widely depending on the intended site of application and the use of the composition. For example, the compositions may contain from 0.01% to 95% by weight of such additives.

15 The cosmetic compositions according to the invention may also comprise any cosmetic active agent, such as active agents chosen from antioxidants, preserving agents, fragrances, bactericidal or antiperspirant active agents, neutralizers, emollients, moisturizers, vitamins and screening agents, in particular sunscreens.

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

Formulations

The first and/or second compositions may be advantageously anhydrous.

25 According to the instant invention, the term “anhydrous” means that said composition contains less than 5% by weight, preferably less than 2% and more preferably is free from water.

30 The process according to the invention may be advantageously used for making up the skin, the lips, the eyelashes and/or the nails depending on the nature of the ingredients used. In particular, the compositions in the process according to the invention may be, independently, in the form of a solid foundation, a lipstick wand or paste, a concealer product, an eye contour product, an eyeliner, a mascara, an eyeshadow, a body makeup product or a skin colouring product.

According to another embodiment, the first and second, and where appropriate third, compositions are compositions for coating the eyelashes or the eyebrows and more particularly mascaras. When the mixture of the reactive compounds is applied on the eyelash, for example with a brush, the mixture could be stretched over the length of the eyelashes before complete curing of the said mixture.

According to another embodiment, the first and second, and where appropriate third, compositions are compositions for coating bodily or facial skin, more particularly compositions for making up bodily or facial skin, for instance foundations or body makeup compositions.

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

The invention is illustrated in greater detail by the examples described below.

Unless otherwise mentioned, the amounts indicated are expressed as mass percentages and all viscosities are at 25°C.

The viscosity of the different raw materials was assessed using either one of the following, as previously disclosed.

EXAMPLE 1:

Make-up product for foundation:

Description	Mol. Weight Mn (g/mol)	Viscosity	vinyl (mol/g x 1000)	H as SiH (mol/g x 100)	%	First composition	Second composition
Vinyl-functional MQ resin A	[3,000-5,000]	NA (powder)	1.1	-	36,67	39,46	33,88
Vinyl-terminated polydimethylsiloxane		4,5 cSt	2.6	-	28,19	39,46	16,89
Vinyl-terminated polydimethylsiloxane		60,000 cP	0.03	-	9,65	19,31	
Methylhydrogen siloxane		30 cSt	-	1.5	24,61		49,23
Platinum, divinyltetramethyldisiloxane complex		400 cSt	0.8	-	0,88	1,78	

5% of iron oxide are then added to the first and second compositions and dispersed using three-roll-mill.

When applied to the skin, the mixture of the first and second composition is easy to spread and the so-formed film is quickly dried. The formulation leads to a film, which is not tacky and has a good adhesion to the skin.

EXAMPLE 2:

Make-up product for eyelashes:

Description	Mol. Weight Mn (g/mol)	Viscosity	vinyl (mol/g x 1000)	H as SiH (mol/g x 100)	%	First composition	Second composition
Vinyl-functional MQ resin A	[3,000-5,000]	NA (powder)	1.1	-	36,67	39,46	33,88
Vinyl-terminated polydimethylsiloxane		4,5 cSt	2.6	-	28,19	39,46	16,89
Vinyl-terminated polydimethylsiloxane		60,000 cP	0.03	-	9,65	19,31	
Methylhydrogen siloxane		30 cSt	-	1.5	24,61		49,23
Platinum, divinyltetramethyldisiloxane complex		400 cSt	0.8	-	0,88	1,78	

4% of black iron oxide and 10% of silica dimethyl silylate (AEROSIL[®] R 972 from Evonik Degussa) is then added to the first and to the second composition and dispersed using three-roll-mill.

5 The mixture of the first and second compositions is applied to the eyelashes using a mascara brush. When applied to the eyelashes, the mixture of the first and second composition leads to a film which is quickly dried. The formulation leads to a film, which is not tacky and has a good adhesion to the eyelashes.

CLAIMS

1. A cosmetic method for making up and/or non-therapeutically caring for keratin material comprising at least the application on said keratin material of a mixture
5 comprising at least

- one reactive functional MQ resin A,
- one reactive organopolysiloxane compound B and
- one catalyst for a hydrosilylation reaction,

said mixture containing less than 5% by weight of volatile solvent(s) with respect to its
10 total weight and at least one reactive organopolysiloxane compound, different or not from compound B, having a molecular weight lower than 4000g/mole and said MQ resin and reactive organopolysiloxane(s) being capable of interacting together by a hydrosilylation reaction in presence of said catalyst.

2. The cosmetic method according to claim 1 wherein said mixture contains
15 less than 2% by weight and more particularly less than 1% by weight of volatile solvent(s) with respect to its total weight.

3. The cosmetic method according to claim 1 or 2 wherein said mixture contains at least

- one reactive functional MQ resin A having at least three (a) groups per
20 molecule,
- one reactive organopolysiloxane compound B having at least two (b) groups per molecule, and optionally
- another one reactive organopolysiloxane compound different from the compound B, said compound C, which is an organopolysiloxane having
25 terminal (b) or (a) groups,

with the groups (a) and (b) being either a reactive alkylene group directly bonded to a silicon atom (herein after called "SiAlk" group) or a reactive Si-bonded hydrogen group (hereinafter called "SiH" group), provided that when (a) is SiAlk, (b) is SiH and when (a) is SiH, (b) is SiAlk.

4. The cosmetic method according to anyone of previous claims wherein said
30 mixture is formed in situ on said keratin material.

5. The cosmetic method according to anyone of previous claims comprising at least the application on said keratin material of at least

(a) one first composition,

(b) one second composition,

5 with the first and second compositions comprising each less than 5% by weight of volatile solvent(s) and at least one of the first and second compositions containing at least one reactive functional MQ resin A, one reactive organopolysiloxane compound B, one catalyst for a hydrosilylation reaction, and at least one reactive organopolysiloxane compound, different or not from compound B, having a molecular weight lower than
10 4000g/mole, said MQ resin A and reactive organopolysiloxane compound(s) being capable of interacting together by a hydrosilylation reaction in presence of said catalyst, provided that the compounds capable of interacting by a hydrosilylation reaction with each other and the catalyst are not present together in the same composition, the application of (a) and (b) possibly being simultaneous and/or sequential in any order
15 with the proviso that it is beneficial to the hydrosilylation of MQ resin A and said organopolysiloxane compound(s).

6. The cosmetic method according to anyone of the previous claims wherein the reactive organopolysiloxane compound having a molecular weight lower than 4000g/mole is the compound B.

20 7. The cosmetic method according to anyone of claims 1 to 5 wherein the reactive organopolysiloxane compound having a molecular weight lower than 4000g/mole is different from the compound B and is capable of interacting by a hydrosilylation reaction with said MQ resin A and/or compound B.

8. The cosmetic method according to anyone of the previous claims wherein
25 the reactive organopolysiloxane compound having a molecular weight lower than 4000g/mol, has a molecular weight lower than 2500g/mol, more preferably lower than 1500g/mol.

9. The cosmetic method according to anyone of the previous claims wherein
30 the reactive organopolysiloxane compound having a molecular weight lower than 4000g/mol, is in an amount greater than 30%, more preferably greater than 40%, and more preferably greater than 50% by weight of the dry solid content of the mixture applied on the keratin material.

10. The cosmetic method according to anyone of the previous claims wherein the reactive functional MQ resin A has C₂-C₁₀ alkylene groups, and more particularly vinyl groups content ranging from 0.1 to 10 mol/1000g and in particular from 0.5 to 3 mol/1000g.

5 11. The cosmetic method according to anyone of the previous claims wherein the reactive functional MQ resin A has a number average molecular weight (M_n) ranging from 1 500 to 10 000, in particular ranging from 3 000 to 10 000 and more particularly from 3 000 to 5000.

10 12. The cosmetic method according to anyone of the previous claims wherein the reactive functional MQ resin(s) A is/are used in an amount ranging from 20 to 60% by weight and more particularly from 30 to 55% by weight, relative to the total weight of the reactive compounds present in the mixture and capable of interacting together by hydrosilylation.

15 13. The cosmetic method according to anyone of the previous claims wherein the compound B is at least one organopolysiloxane having reactive alkylene groups which has a weight-average molecular mass (M_w) ranging from 150 to 1 000 000, preferably from 200 to 800 000 and more preferably from 200 to 250 000.

20 14. The cosmetic method according to anyone of the previous claims wherein the compound B is at least one organopolysiloxane having reactive alkylene groups which has from 0.00001 to 0.01mol/g in particular from 0.00002 to 0.005 mol/g of alkylene groups, preferably vinyl groups, based on the total weight of the polymer.

15 15. The cosmetic method according to the previous claims wherein the compound B is at least one organopolysiloxane having reactive alkylene groups which has a viscosity on the order of about 3 mm²/s to about 600,000 mm²/s at 25° C.

25 16. The cosmetic method according to anyone of the previous claims wherein the compound B is at least one organopolysiloxane having silicon bonded hydrogen atoms which has from 0.0001 to 0.02 mol/g, preferably from 0.001 to 0.02mol/g and more particularly from 0.002 to 0.02mol/g of reactive Si-H group based on the total weight of the polymer.

30 17. The cosmetic method according to anyone of the previous claims wherein the compound B is at least one organopolysiloxane having silicon bonded hydrogen atoms which has a viscosity on the order of from about 1 mm²/s to about 1000 mm²/s.

18. The cosmetic method according to anyone of the previous claims wherein the compound B is at least one organopolysiloxane having silicon bonded hydrogen atoms which has a weight-average molecular mass (Mw) ranging from 200 to 1 000 000, preferably 300 to 800 000 and more preferably from 500 to 250 000.

5 19. The cosmetic method according to anyone of the previous claims wherein the hydrosilylation reaction involves a MQ resin A with reactive alkylene groups, in mixture with at least two reactive organopolysiloxanes with reactive alkylene groups and one organopolysiloxanes having reactive Si-H bonds with at least one of these organopolysiloxane having a molecular weight lower than 4000g/mol.

10 20. The cosmetic method according to anyone of the previous claims wherein the catalyst is a platinum based catalyst.

21. Kit for coating keratin materials, comprising at least:

- one first composition and at least one second composition, the first and/or second composition comprising each less than 5% by weight of volatile solvent(s) with
15 respect to their respective total weight and

- at least one reactive functional MQ resin A, one reactive organopolysiloxane compound B, one catalyst for a hydrosilylation reaction, and at least one reactive organopolysiloxane compound, different or not from compound B, having a molecular weight lower than 4000g/mole, said MQ resin A and reactive
20 organopolysiloxane compound(s) being capable of interacting together by a hydrosilylation reaction in presence of said catalyst,

provided that the compounds capable of interacting by hydrosilylation with each other and the catalyst are not present together in the same composition,

said kit being dedicated to be a make-up composition for the skin, the eyes lashes, the lips,
25 the nails or the hair or a care or cleaning cosmetic product for body and/or the hair.

22. Kit according to the previous claim wherein said MQ resin A is as defined in anyone of claims 10 to 12.

23. Kit according to claim 21 or 22 wherein said compound B is as defined in anyone of claims 13 to 18.

30 24. Kit according to anyone of claims 21 to 23 dedicated to be a foundation or a mascara.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2009/052906

A. CLASSIFICATION OF SUBJECT MATTER INV. A61K8/891 A61K8/895 A61Q1/00 A61Q1/04 A61Q1/10 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A61K A61Q		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, CHEM ABS Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/159970 A1 (WILLEMIN CLAUDIE [FR]) 3 July 2008 (2008-07-03) the whole document -----	1-24
X	WO 2007/071885 A2 (OREAL [FR]; JAEGER LEZER NATHALIE [FR]) 28 June 2007 (2007-06-28) the whole document -----	1-24
A	WO 2008/074859 A1 (OREAL [FR]; BLIN XAVIER [FR]; SCHVENT ALEXANDRA [FR]) 26 June 2008 (2008-06-26) the whole document -----	1-24
A	EP 0 865 787 A1 (DOW CORNING SA [FR]) 23 September 1998 (1998-09-23) the whole document -----	1-24
-/--		
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
Date of the actual completion of the international search 28 April 2010		Date of mailing of the international search report 11/05/2010
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Donovan-Beermann, T

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 2009/090242 A1 (OREAL [FR]; KERGOSIEN GUILLAUME [FR]; THOMAS XAVIER [FR]; GARAUD JEAN-) 23 July 2009 (2009-07-23) the whole document	1
E	WO 2009/090243 A1 (OREAL [FR]; KERGOSIEN GUILLAUME [FR]; THOMAS XAVIER [FR]; GARAUD JEAN-) 23 July 2009 (2009-07-23) the whole document	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2009/052906

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2008159970	A1	03-07-2008	NONE	
WO 2007071885	A2	28-06-2007	EP 1971318 A2	24-09-2008
			EP 1968534 A2	17-09-2008
			WO 2007071706 A2	28-06-2007
			JP 2009520002 T	21-05-2009
			JP 2009520009 T	21-05-2009
			KR 20080077410 A	22-08-2008
			KR 20080082995 A	12-09-2008
			US 2009214455 A1	27-08-2009
WO 2008074859	A1	26-06-2008	NONE	
EP 0865787	A1	23-09-1998	DE 69806988 D1	12-09-2002
			DE 69806988 T2	09-10-2003
			FR 2760971 A1	25-09-1998
			JP 10265370 A	06-10-1998
WO 2009090242	A1	23-07-2009	NONE	
WO 2009090243	A1	23-07-2009	NONE	