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(54) Title: POWDERY COSMETIC COMPOSITION

(57) Abstract: The present invention relates to a powdery cosmetic composition comprising a pulverulent phase, a liquid fatty phase and a film-forming polymer. The pulverulent phase comprises at least one first particle(s) being treated with a surface treatment agent comprising at least one fluorine-containing compound, and at least one second particle(s) different from the first particle(s). The amount of the first particle(s) is 10% or more by weight in relation to the total weight of the composition. The powdery cosmetic composition according to the present invention can provide long-lasting cosmetic effects, such as long-lasting matte effects and/or color-keeping effects, and/or good texture, as well as good makeup finish and good texture.



DESCRIPTION

POWDERY COSMETIC COMPOSITION

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TECHNICAL FIELD

The present invention relates to a powdery cosmetic composition for the skin, in particular the face.

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BACKGROUND ART

Skin make up cosmetics may commonly be used to give an attractive color to the skin, such as the face, but also to mask skin imperfections, such as redness, marks and wrinkles.

15 Certain makeup cosmetics may be in the form of a powdery cosmetic composition. A powdery cosmetic composition generally comprises a high content of powders, for example, at least about 70% by weight of powders, in relation to the total weight of the composition, as shown in, for example, US-A-2005/276776.

20 However, some conventional powdery cosmetic compositions do not sufficiently provide long-lasting cosmetic effects on the skin. For example, if a conventional powdery cosmetic composition is used over a long time period or is used under hot and/or humid conditions, for example, during summer, it could be difficult for the conventional powdery cosmetic composition to keep the skin matte and/or to keep the color of the skin unchanged, for a long
25 period of time. In view of good usability, a long-lasting cosmetic effect is desired for powdery cosmetic compositions. In addition, good make-up finish is also required for powdery cosmetic compositions.

DISCLOSURE OF INVENTION

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An objective of the present invention is to provide a powdery cosmetic composition which can provide long-lasting cosmetic effects, such as color-keeping effects, and better color-keeping effects and long-lasting matte effects, as well as good makeup finish and good texture.

35 The above objective of the present invention can be achieved by a powdery cosmetic composition comprising:

(a) a pulverulent phase comprising

(i) at least one first particle being treated with a surface treatment agent comprising at least one fluorine-containing compound, and

40 (ii) at least one second particle different from the first particle(s),,

(b) a liquid fatty phase, and

(c) at least one film-forming polymer,

wherein the amount of the first particle(s) is 10% by weight or more in relation to the total weight of the composition.

45

It is preferable that the second particle(s) comprise spherical fillers.

It is preferable that the spherical filler(s) be present in an amount of 5% by weight or more, more preferably 8% by weight or more, and even more preferably 10% by weight or more in relation
50 to the total weight of the powdery cosmetic composition.

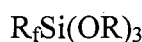
The second particle(s) may comprise at least one spherical filler selected from the group consisting of organopolysiloxane elastomer powder, polyamide powder, (meth)acrylic or (meth)acrylate powder, polyurethane powder, silica microspheres, polyacrylonitrile, and a mixture thereof, and preferably at least one organopolysiloxane elastomer powder.

According to the present invention, 40% by weight or more, preferably 45% by weight or more, and more preferably 50% by weight or more of the spherical filler(s) in the second particle(s) may be organopolysiloxane elastomer powder. The organopolysiloxane elastomer powder may comprise at least one elastomeric organopolysiloxane powder which has been coated with at least one silicone resin. Furthermore, the organopolysiloxane elastomer powder may comprise at least one hybrid silicone functionalized with at least one phenyl group.

It is preferable that the first particle(s) comprise non-spherical particles (e.g., lamellar particles).

The first particle(s) may be selected from the group consisting of talc, mica, silica, kaolin, sericite, calcinated talc, calcinated mica, calcinated sericite, synthetic mica, lauroyl lysine, metal soap, bismuth oxychloride, barium sulfate, boron nitride, calcium carbonate, magnesium carbonate, magnesium hydrogen carbonate, iron oxide, hydroxyapatite, pigments, and a mixture thereof, and preferably is selected from talc, mica, iron oxide, and a mixture thereof.

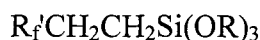
According to the present invention, the fluorine-containing compound(s) may comprise at least one fluorosilane. The fluorosilane(s) may be represented by the formula:



wherein

R_f is a C_4 - C_{16} hydrocarbyl having at least one fluorine atom, and
 R is a C_1 - C_6 hydrocarbyl.

It is preferable that the fluorosilane(s) be represented by the formula:



wherein

R_f' is a C_4 - C_{14} perfluoro hydrocarbyl, and
 R is methyl or ethyl.

According to the present invention, the film-forming polymer(s) may be selected from the group consisting of silicone resins, polyamide silicone block polymers, block ethylenic polymers, vinyl polymers comprising at least one carbosiloxane dendrimer derivative, copolymers comprising carboxylate groups and polydimethylsiloxane groups, lipodispersible polymers in the form of a non-aqueous dispersion of polymer particles, olefin copolymers selected from amorphous olefin copolymers and olefin copolymers with controlled and moderate crystallization, hydrocarbon-based resins having a number-average molecular weight of less than or equal to 10,000 g/ml, and a mixture thereof.

According to the present invention, the amount of the film-forming polymer may be from 0.1% to 15% by weight, preferably 0.5% to 10% by weight, and more preferably from 1.0% to 5% by weight in relation to the total weight of the composition.

According to the present invention, the ratio of the (a)-(i) first particle(s) and the (a)-(ii) second particles is from 20:1 to 1:10, preferably from 10:1 to 1:5, and more preferably from 5:3 to 2:7.

According to the present invention, the first particle(s) may be present in an amount of from 10% to 70% by weight, preferably from 20% to 60% by weight, and more preferably from 30% to 55% by weight, in relation to the total weight of the powdery cosmetic composition.

The powdery cosmetic composition according to the present invention may be in the form of a compacted powder or a loose powder.

The present invention also relates to a cosmetic process including a step of applying the powdery cosmetic composition according to the present invention to the skin, in particular the face.

BEST MODE FOR CARRYING OUT THE INVENTION

After diligent research, the inventors have discovered that it is possible to provide a cosmetic composition which can provide long lasting cosmetic effects, such as long lasting matte effects and/or color keeping effects, as well as good makeup finish and good texture.

Thus, the present invention relates to a powdery cosmetic composition comprising:

(i) a pulverulent phase comprising

(a) at least one first particle being treated with a surface treatment agent comprising at least one fluorine-containing compound, and

(b) at least one second particle different from the first particle,

(ii) a liquid fatty phase, and

(iii) at least one film-forming polymer,

wherein the amount of the first particle(s) is 10% by weight or more in relation to the total weight of the powdery cosmetic composition.

The powdery cosmetic composition according to the present invention can provide long lasting cosmetic effects. Therefore, for example, the matt appearance of the skin is maintained for a long period of time, and the color on the skin does not substantially change for a long period of time. In addition, the powdery cosmetic composition according to the present invention can provide good makeup finish and good texture. Therefore, for example, skin imperfections, such as redness, marks, pores and wrinkles on the skin, in particular the face, can be masked for a long period of time. Furthermore, the make-up provided by the powdery cosmetic composition according to the present invention can be well adhered onto the skin for a long period of time.

Hereinafter, the cosmetic composition according to the present invention will be explained in a more detailed manner.

(I) Pulverulent Phase

The powdery cosmetic composition according to the present invention comprises a pulverulent phase. The pulverulent phase comprises at least one first particle and at least one second particle different from the first particle(s). The first particle is treated with a surface treatment agent comprising at least one fluorine-containing compound.

The powdery composition according to the present invention advantageously has a pulverulent phase content of 40% by weight or more, preferably 50% by weight or more, more preferably from 60% to 98% by weight, and still more preferably from 70% to 95% by weight in relation to the total weight of the powdery cosmetic composition.

In the present invention, the term "particles" should be understood as meaning fillers and coloring agents.

Fillers

The term "fillers" should be understood as meaning colorless or white solid particles of any form, which are in a form that is insoluble and dispersed in the medium of the powdery cosmetic composition. Mineral or organic in nature, they make it possible to confer softness, mattness and uniformity of makeup on the powdery cosmetic powdery cosmetic composition. The fillers used in the compositions according to the present invention may be non-spherical fillers, in particular lamellar fillers, or spherical fillers (globular fillers). The fillers may also include fiber(s). The fillers according to the present invention may or may not be surface-coated.

Non-spherical fillers

Non-spherical fillers are preferably selected from non-spherical mineral fillers. Among the non-spherical mineral fillers that may be used in the powdery cosmetic compositions according to the present invention, mention may be made of talc, mica, silica, magnesium aluminium silicate, kaolin, bentone, calcium carbonate, magnesium hydrogen carbonate, hydroxyapatite, boron nitride, perlite powders, fluorophlogopite, sericite, calcinated talc, calcinated mica, calcinated sericite, synthetic mica, lauroyl lysine, metal soap, bismuth oxychloride, barium sulfate, magnesium carbonate, and mixtures thereof.

Spherical fillers

Among spherical fillers that may be used, mention may be made of spherical mineral fillers and spherical organic fillers. By "spherical fillers," one must understand the fillers or particles comprising at least one generally rounded portion, preferably defining at least a portion of a sphere, possibly internally defining a concavity or depression.

(Spherical mineral fillers)

Among spherical mineral fillers that may be used, mention may be made of silica microspheres, for example, of open porosity, such as hollow silica microspheres, including the products "Silica Beads SP 700/HA(R)" and "Silica Beads SB 700(R)" from Maprecos, glass or ceramic microcapsules, silica-based fillers, for instance Aerosil 200 or Aerosil 300; Sunsphere H-33 and Sunsphere H-51 sold by Asahi Glass; Chemicelen sold by Asahi Chemical; composites of silica and of titanium dioxide, for instance the TSG series sold by Nippon Sheet Glass.

(Spherical organic fillers)

Among spherical organic fillers that may be used, mention may be made of (meth)acrylic or (meth)acrylate powders, for example, polymethylmethacrylate powders; polyacrylonitrile powders; organopolysiloxane powders, polyamide powders (Nylon® Orgasol from Atochem), poly-β-alanine powders and polyethylene powders, polytetrafluoroethylene powders (Teflon®), lauroyllysine, starch, tetrafluoroethylene polymer powders, hollow polymer microspheres, for example comprising an (alkyl)acrylate, such as Expancel® (Nobel Industrie), metal soaps derived from organic carboxylic acids 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, magnesium myristate, Polypore® L200 (Chemdal Corporation), silicone resin microbeads (for example Tospearl® from Toshiba), polyurethane powders, in particular powders of crosslinked polyurethane comprising a copolymer, the said copolymer comprising trimethylol

hexyl lactone, for instance the hexamethylene diisocyanate/trimethylol hexyl lactone polymer sold under the name Plastic Powder D-400® or Plastic Powder D-800® by the company Toshiki, carnauba microwaxes, such as the product sold under the name Micro Care 350® by the company Micro Powders, synthetic microwaxes, such as the product sold under the name
5 MicroEase 114S® by the company Micro Powders, microwaxes formed from a mixture of carnauba wax and polyethylene wax, such as those sold under the name of Micro Care 300® and 310® by the company Micro Powders, microwaxes formed from a mixture of carnauba wax and of synthetic wax, such as the product sold under the name Micro Care 325® by the company Micro Powders, polyethylene microwaxes, such as those sold under the names Micropoly 200®,
10 220®, 220L® and 250S® by the company Micro Powders.

Fibers

Among fibers that may be used, mention may be made of fibers of synthetic or natural, mineral
15 or organic origin. They may be short or long, individual or organized, for example braided, and hollow or solid. They may have any shape and may especially have a circular or polygonal (square, hexagonal or octagonal) cross section depending on the specific application envisaged. In particular, their ends are blunted and/or polished to prevent injury. The fibres have a length ranging from 1 µm to 10 mm, preferably from 0.1 mm to 5 mm and better still from 0.3 mm to 3
20 mm. Their cross section may include in a circle with a diameter ranging from 2 nm to 500 µm, preferably ranging from 100 nm to 100 µm and better still from 1 µm to 50 µm. As fibers that can be used in the powdery cosmetic compositions according to the present invention, mention may be made of non-rigid fibres such as polyamide (Nylon®) fibres or rigid fibres such as polyimideamide fibres, for instance those sold under the names Kermel® and Kermel Tech® by
25 the company Rhodia or poly(p-phenyleneterephthalamide) (or aramid) fibres sold especially under the name Kevlar® by the company DuPont de Nemours, and mixtures thereof.

The amount of the fillers may be from 40% to 90% by weight, preferably from 50% to 85% by weight, and more preferably from 60% to 80% by weight in relation to the total weight of the
30 powdery cosmetic composition according to the present invention.

Coloring agents

The term "coloring agents" should be understood as encompassing pigment, nacre, and reflective
35 particles, and mixtures thereof. The coloring agent may be represented as dyestuff.

Pigments

The term "pigments" should be understood as meaning white or colored, mineral or organic
40 particles of any shape, which are insoluble in the physiological medium, and which are intended to color the composition. The pigments may be white or colored, and mineral and/or organic.

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

The organic pigments may be chosen from the materials below, and mixtures thereof:

- cochineal carmine,
- 50 - organic pigments of azo dyes, anthraquinone dyes, indigoid dyes, xanthene dyes, pyrene dyes, quinoline dyes, triphenylmethane dyes and fluorane dyes.

Among the organic pigments, mention may be made especially of the D&C certified pigments known under the following names: D&C Blue No. 4, D&C Brown No. 1, D&C Green No. 5, D&C Green No. 6, D&C Orange No. 4, D&C Orange No. 5, D&C Orange No. 10, D&C Orange No. 11, D&C Red No. 6, D&C Red No. 7, D&C Red No. 17, D&C Red No. 21, D&C Red No. 22, D&C Red No. 27, D&C Red No. 28, D&C Red No. 30, D&C Red No. 31, D&C Red No. 33, D&C Red No. 34, D&C Red No. 36, D&C Violet No. 2, D&C Yellow No. 7, D&C Yellow No. 8, D&C Yellow No. 10, D&C Yellow No. 11, FD&C Blue No. 1, FD&C Green No. 3, FD&C Red No. 40, FD&C Yellow No. 5, and FD&C Yellow No. 6.

The chemical materials corresponding to each of the organic dyestuffs mentioned previously are mentioned in the publication "International Cosmetic Ingredient Dictionary and Handbook", 1997 edition, pages 371 to 386 and 524 to 528, published by The Cosmetic, Toiletries and Fragrance Association, the content of which is incorporated into the present patent application by reference.

The amount of pigments may be from 0% to 40% by weight, preferably from 3% to 35% by weight, and more preferentially from 5% to 25% by weight, in relation to the total weight of the powdery cosmetic composition according to the present invention.

Nacres

The term "nacres" should be understood as meaning colored 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 color effect via optical interference.

Examples of nacres that may be mentioned include nacreous pigments such as titanium mica coated with an iron oxide, mica coated with bismuth oxychloride, titanium mica coated with chromium oxide, and 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. The nacres may more particularly have a yellow, pink, red, bronze, orange, brown, gold and/or coppery color or glint.

As illustrations of nacres that may be introduced into the composition, mention may be made of the gold-colored 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 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 (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 Xirona Silver, and the golden-green pink-orange nacres sold especially by the company Merck under the name Indian summer (Xirona), and mixtures thereof.

As further examples of nacres, mention may also be made of particles comprising a borosilicate substrate coated with titanium oxide.

Particles having a glass substrate coated with titanium oxide are especially sold under the name Metashine MC1080RY by the company Toyol.

Finally, examples of nacres that may also be mentioned include polyethylene terephthalate flakes, especially those sold by the company Meadowbrook Inventions under the name Silver 1P 0.004X0.004 (silver flakes).

The amount of the nacres may be, if present, from 0.01% to 60% by weight, preferably from 0.1% to 40% by weight, and more preferably from 1% to 30% by weight, in relation to the total weight of the powdery cosmetic composition according to the present invention.

The amount of the nacres may be, if present, from 0.01% to 70% by weight, preferably from 0.1% to 60% by weight and more preferably from 1% to 50% by weight, in relation to the total weight of coloring agents.

Reflective particles

The term "reflective particles" denotes particles whose size, structure, especially the thickness of the layer(s) of which they are made and their physical and chemical nature, and surface state, allow them to reflect incident light. This reflection may, where appropriate, have an intensity sufficient to create at the surface of the composition or of the mixture, when it is applied to the support to be made up, points of overbrightness that are visible to the naked eye, i.e. more luminous points that contrast with their environment by appearing to sparkle.

The reflective particles may be selected so as not to significantly alter the coloration effect generated by the coloring agents with which they are combined, and more particularly so as to optimize this effect in terms of color yield. They may more particularly have a yellow, pink, red, bronze, orange, brown, gold and/or coppery color or tint.

These particles may have varied forms and may especially be in platelet or globular form, in particular in spherical form.

The reflective particles, whatever their form, may or may not have a multilayer structure and, in the case of a multilayer structure, may have, for example, at least one layer of uniform thickness, in particular of a reflective material.

When the reflective particles do not have a multilayer structure, they may be composed, for example, of metal oxides, especially titanium or iron oxides obtained synthetically.

When the reflective particles have a multilayer structure, they may comprise, for example, a natural or synthetic substrate, especially a synthetic substrate at least partially coated with at least one layer of a reflective material, especially of at least one metal or metallic material. The substrate may be made of one or more organic and/or inorganic materials.

More particularly, it may be chosen from glasses, ceramics, graphite, metal oxides, aluminas, silicas, silicates, especially aluminosilicates and borosilicates, and synthetic mica, and mixtures thereof, this list not being limiting.

- 5 The reflective material may comprise a layer of metal or of a metallic material.

Reflective particles are described especially in documents JP-A-09188830, JP-A-10158450, JP-A-10158541, JP-A-07258460 and JP-A-05017710.

- 10 Again as an example of reflective particles comprising a mineral substrate coated with a layer of metal, mention may also be made of particles comprising a silver-coated borosilicate substrate.

- 15 Particles with a silver-coated glass substrate, in the form of platelets, are sold under the name Microglass Metashine REFSX 2025 PS by the company Toyal. Particles with a glass substrate coated with nickel/chromium/molybdenum alloy are sold under the name Crystal Star GF 550 and GF 2525 by this same company.

- 20 Use may also be made of particles comprising a metallic substrate such as silver, aluminium, iron, chromium, nickel, molybdenum, gold, copper, zinc, tin, manganese, steel, bronze or titanium, said substrate being coated with at least one layer of at least one metal oxide such as titanium oxide, aluminium oxide, iron oxide, cerium oxide, chromium oxide or silicon oxides, and mixtures thereof.

- 25 Examples that may be mentioned include aluminium powder, bronze powder or copper powder coated with SiO_2 sold under the name Visionaire by the company Eckart.

The weight ratio of the first particle to the second particle may be from 20/1 to 1/10, preferably from 10/1 to 1/5, and still more preferably from 5/3 to 2/7.

- 30 The weight ratio of the first filler to the second filler may be from 10/1 to 1/5, preferably from 5/1 to 1/2 and more preferably from 3/1 to 1/1.

- 35 The weight ratio of the first coloring agent to the second coloring agent may be from 2/1 to 1/20, preferably from 1/1 to 1/15, and more preferably from 1/2 to 1/10.

First Particle

- 40 The pulverulent phase comprises at least one first particle. The first particle is treated with a surface treatment agent comprising at least one fluorine-containing compound.

- 45 A single type of particles or a combination of different types of particles may be used as the first particle. The first particle(s) may be selected from the group consisting of fillers, or "first fillers", and coloring agents, or "first coloring agents", both surface-treated with fluorine compound, preferably with at least one fluorosilane compound and in particular with at least one perfluorooctyltriethoxysilane compound.

- 50 It is preferable that the first fillers have a non-spherical form, which may be of any form other than spherical, for example, platelet-shaped, lamellar, and oblong, irrespective of their crystallographic form (for example, lamellar, cubic, hexagonal, and orthorhombic). In a preferable embodiment, the first fillers may be lamellar fillers. Preferably, the non-spherical filler has a high aspect ratio of 10 or more. The aspect ratio may be 20 or more or 50 or more.

The aspect ratio can be determined by the average thickness and the average length according to the formula: aspect ratio = length/thickness.

The material of the non-spherical fillers used as first particles, or "first non-spherical fillers", is not limited, but is selected from the "non-spherical fillers" as described above, and more preferably be selected from talc, mica, and a mixture thereof.

The material of the coloring agents used as first particles, or "first coloring agents" is not limited, but is preferably selected from pigments as described above, and preferably from metallic oxides such as iron oxides.

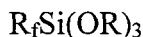
According to the present invention, the first particle(s) has (have) been surface-treated with a surface treatment agent comprising at least one fluorine-containing compound. It is preferable that the fluorine-containing compound include at least one fluorosilane. Thus, it is preferable that the first filler be coated with at least one fluorosilane.

The term "fluorosilane" according to the present invention refers to a silicon-containing compound having a hydrocarbyl group substituted by at least one fluorine atom and a reactive hydrocarbyloxy group capable of displacement by a nucleophile.

The term "hydrocarbyl" according to the present invention refers to a linear, branched and cyclic group containing carbon and hydrogen, such as an alkane, an alkene, an alkyne and an aryl group. The hydrocarbyl group may be additionally interrupted and/or substituted by one or more of the following: a halogen, a cyano, a keto, an ester, hydroxyl, carboxyl, oxygen, sulfur, or nitrogen.

The term "perfluoro hydrocarbyl" according to the present invention refers to a fully fluorinated hydrocarbyl group.

The fluorosilane can be represented by the formula:

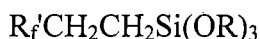


wherein

R_f is a C_4 - C_{16} hydrocarbyl having at least one fluorine atom, and

R is a C_1 - C_6 hydrocarbyl.

A preferable fluorosilane can be represented by the formula:



wherein

R'_f is a C_4 - C_{14} perfluoro hydrocarbyl, and

R is methyl or ethyl.

An example of the preferred fluorosilane is tridecafluorooctyltriethoxy silane represented by the formula: $CF_3CF_2CF_2CF_2CF_2CF_2CH_2CH_2Si(OCH_2CH_3)_3$.

Tridecafluorooctyltriethoxy silane is available from Sivent, Piscataway, N.J., under the trade name DYNASILANE® F 8261.

The amount of fluorine-containing agent (i.e., coating agent) such as fluorosilane in relation to the total coated first particle may be 0.01% to 10.0% by weight, preferably 0.5% to 7.0% by

weight, and the amount of the first particle before being coated by the fluorine-containing agent may be 90.0% to 99.99% by weight, preferably 93.0% to 99.5% by weight, in relation to the total weight of the coated first particle.

- 5 The amount of the first particles may be 10% by weight or more, preferably from 10% to 70% by weight, more preferably 20% to 60% by weight, and still more preferably 30% to 55% by weight, in relation to the total weight of the pulverulent phase.

- 10 The amount of the first filler may be 10% by weight or more, preferably from 15% to 80% by weight, more preferably 20% to 75% by weight, and still more preferably 25% to 70% by weight, in relation to the total weight of the pulverulent phase.

- 15 The amount of the first coloring agents, and in particular pigments, preferably metallic oxides, such as iron oxides may be 0.1% by weight or more preferably from 0.5% to 10% by weight, more preferably 1.0% to 7.5% by weight, and still more preferably 1.5% to 5.0% by weight, in relation to the total weight of the pulverulent phase.

- 20 The amount of the first particles is 10% by weight or more, preferably from 10% to 70% by weight, more preferably from 20% to 60% by weight, and still more preferably from 30% to 55% by weight, in relation to the total weight of the powdery cosmetic composition.

- 25 The amount of the first filler(s) may be 10% by weight or more, preferably from 15% to 70% by weight, more preferably 20% to 65% by weight, and still more preferably 25% to 60% by weight, in relation to the total weight of the composition.

- 30 The amount of the first coloring agents, and in particular pigments, preferably metallic oxides, such as iron oxides may be 0.1% or more, preferably from 0.3% to 10% by weight, more preferably 0.5% to 7.5% by weight, and still more preferably 1.0% to 5.0% by weight, in relation to the total weight of the composition.

- 35 The amount of the first non-spherical fillers may be from 10% to 70%, preferably from 20% to 60%, and more preferably from 30% to 55% by weight in relation to the total weight of the powdery cosmetic composition according to the present invention.

- 40 Preferably the first particle(s) may comprise a coloring agent such as a pigment, in particular inorganic pigment, more specifically metallic (poly)oxide. The amount of the coloring agent in the first particle(s) may be preferably from 0.1% to 10%, more preferably from 0.5% to 7%, and still more preferably from 1% to 5% by weight in relation to the total weight of the powdery cosmetic composition.

- 45 Preferably the first particle(s) may comprise a combination of fillers (preferably lamellar fillers) and pigments. The ratio of the fillers and the pigments in the first particle(s) may be preferably from 4/1 to 100/1, more preferably from 8/1 to 50/1 and still more preferably from 10/1 to 30/1.

45 **Second Particle**

The pulverulent phase comprises at least one second particle, different from the first particle.

- 50 The second particles may be uncoated or surface-treated, such as with silicones, amino acids, fluoro derivatives, different from the surface-treatment of the first particles.

A single type of particles or a combination of different types of particles may be used as the second particle.

The second particle(s) may be selected from fillers, or "second fillers", coloring agents, or "second coloring agents", and a mixture thereof.

In particular the second fillers may be non-spherical fillers, spherical fillers or a mixture thereof.

The amount of the second particle(s) may be 10% by weight or more, in relation to the total weight of the composition, preferably from 10% to 70% by weight, more preferably from 15% to 60% by weight, and still more preferably from 30% to 55% by weight, in relation to the total weight of the powdery cosmetic composition according to the present invention.

Preferably, the second particle(s) may be selected from fillers, or "second fillers", particularly from non-spherical fillers or spherical fillers. More preferably the second particles contain at least one spherical filler and still more preferably a combination of at least one spherical filler and at least one lamellar filler. More preferably, the spherical filler(s) are selected from the group consisting of methyl methacrylate crosspolymer, nylon-12, vinyl dimethicone/methicone silsesquioxane crosspolymer, diphenyl dimethicone/vinyl diphenyl dimethicone/silsesquioxane crosspolymer. The amount of the second fillers may be from 5% to 50% by weight, preferably from 10% to 40% by weight, and more preferably from 15% to 30% by weight, in relation to the total weight of the powdery cosmetic composition according to the present invention.

Preferably the powdery cosmetic composition according to the present invention contains at least one second particle(s) selected from coloring agents, preferably selected from nacles, pigments, and a mixture thereof.

The total amount of the second filler(s) (i.e., total of second non-spherical filler(s) and second spherical filler(s)) may be 5% by weight or more, in relation to the total weight of the powdery cosmetic composition. For example, the amount of the second filler(s) may be 5% to 80% by weight, preferably from 10% to 70% by weight, and more preferably from 15% to 50% by weight, in relation to the total weight of the powdery cosmetic composition.

(Second non-spherical filler)

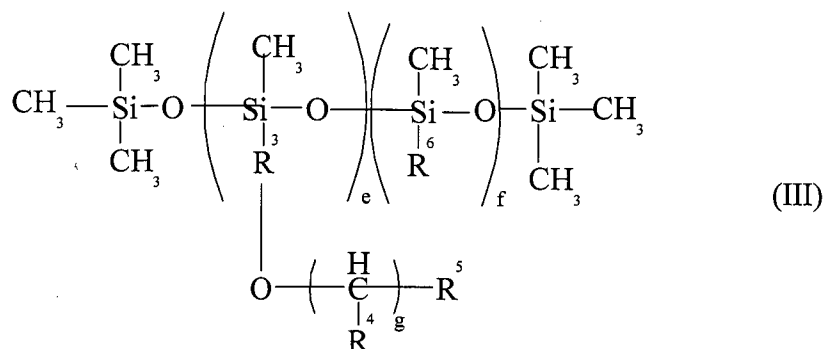
The second fillers may be non-spherical fillers, or "second non-spherical fillers". The material of the second non-spherical fillers is not limited, but the "non-spherical fillers" as described above may be used, and are preferably talc, mica, or a mixture thereof.

According to a particular embodiment of the present invention, the second non-spherical filler may be surface-treated with a surface treatment agent comprising at least one silicone oil or at least one non-silicone oil.

The silicone oil may be selected from polydialkylsiloxanes such as polydimethylsiloxane, polyalkylarylsiloxanes such as polymethylphenylsiloxane, polydiarylsiloxanes such as polydiphenylsiloxane, polyalkylhydrogensiloxanes such as methylhydrogenpolysiloxane, and modified-polysiloxanes.

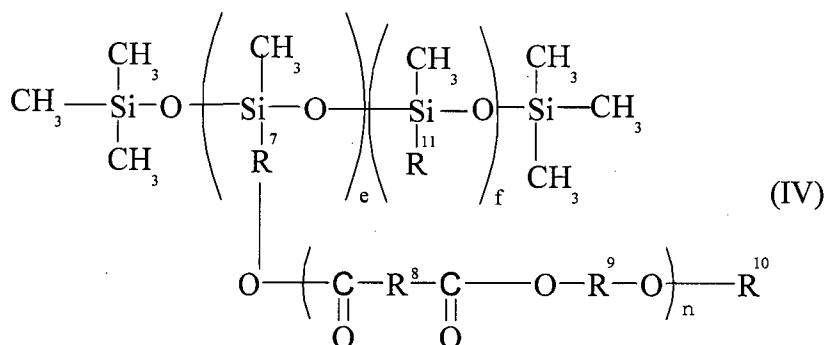
The modified-polysiloxanes may be chosen from the following formulae:

-(a¹) modified polysiloxanes bearing polyethers, chosen from compounds of formula (III):



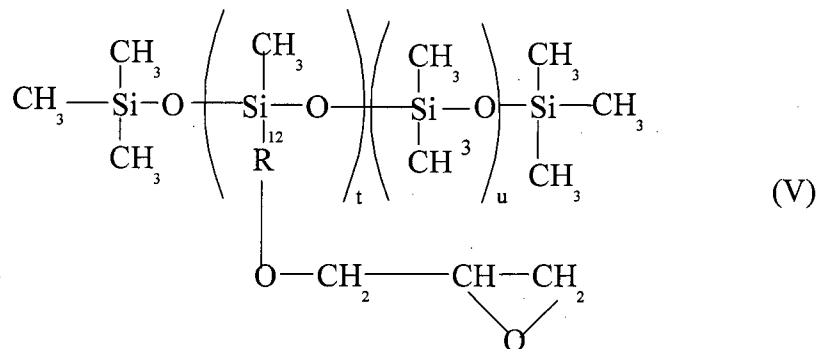
wherein

- R^3 comprises $-(\text{CH}_2)_h-$;
- R^4 comprises $-(\text{CH}_2)_i-\text{CH}_3$;
- 5 - R^5 is chosen from $-\text{OH}$, $-\text{COOH}$, $-\text{CH}=\text{CH}_2$, $-\text{C}(\text{CH}_3)=\text{CH}_2$ and $-(\text{CH}_2)_j-\text{CH}_3$;
- R^6 comprises $-(\text{CH}_2)_k-\text{CH}_3$;
- g and h independently range from 1 to 15;
- j and k independently range from 0 to 15;
- e ranges from 1 to 50; and
- 10 - f ranges from 1 to 300;
- (a^2) modified polysiloxanes bearing polyesters, chosen from compounds of formula (IV):



wherein

- R^7 , R^8 and R^9 are independently chosen from $-(\text{CH}_2)_q-$;
- 15 - R^{10} is chosen from $-\text{OH}$, $-\text{COOH}$, $-\text{CH}=\text{CH}_2$, $-\text{C}(\text{CH}_3)=\text{CH}_2$ and $-(\text{CH}_2)_r-\text{CH}_3$;
- R^{11} comprises $-(\text{CH}_2)_s-\text{CH}_3$;
- n and q independently range from 1 to 15;
- r and s independently range from 0 to 15;
- e ranges from 1 to 50; and
- 20 - f ranges from 1 to 300;
- (a^3) modified polysiloxanes bearing epoxy radicals, chosen from compounds of formula (V):



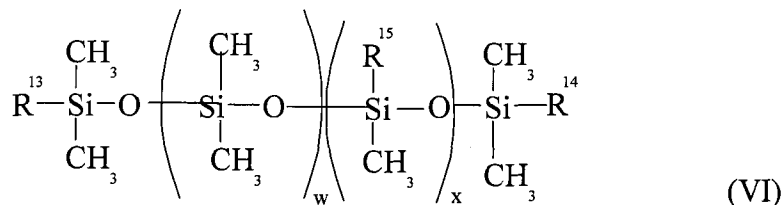
wherein

- R^{12} comprises $-(\text{CH}_2)_v-$;
- 25 - v ranges from 1 to 15;

- t ranges from 1 to 50; and
- u ranges from 1 to 300;
- and
- mixtures thereof.

5

Alternatively, the modified-polysiloxane may be chosen from compounds of formula (VI):



wherein

- R^{13} and R^{14} are independently chosen from $-\text{OH}$, R^{16}OH and R^{17}COOH ;
- R^{15} is chosen from $-\text{CH}_3$ and $-\text{C}_6\text{H}_5$;
- R^{16} and R^{17} comprise $-(\text{CH}_2)_y-$;
- y ranges from 1 to 15;
- w ranges from 1 to 200; and
- x ranges from 0 to 100.

15

It is preferable that the silicone oil is a polydialkylsiloxane such as polydimethylsiloxane or a mixture of polydialkylsiloxanes.

20

The surface treatment agent for the second non-spherical filler may comprise at least one silicone oil, in particular dimethylpolysiloxane.

According to one embodiment of the present invention, the surface treatment for the second non-spherical filler may be chosen from the following treatments:

- PEG-silicone treatments, for instance, the AQ surface treatment sold by LCW;
- methicone treatments, for instance, the SI surface treatment sold by LCW; and
- dimethicone treatments, for instance, the Covasil 3.05 surface treatment sold by LCW, or the SA surface treatments sold by Miyoshi Kasei, and in particular the product SA-TA-13R sold by Miyoshi Kasei (INCI Name Talc and dimethicone).

30

In a preferred embodiment, dimethicone treated talc may be used.

As the non-silicone oil, a vegetable oil, preferably a vegetable oil solid at ambient temperature, may be used. In a preferred embodiment, the non-silicone oil is a hydrogenated vegetable oil. In a preferred embodiment, the hydrogenated vegetable oil is a hydrogenated palm oil. The surface treatment agent for the second non-spherical filler may also comprise, in addition to the non-silicone oil, at least one silicone oil.

35

It is preferable that the surface treatment agent for the second non-spherical filler comprise a silicone oil, in particular dimethylpolysiloxane, in addition to the non-silicone oil. It is most preferable that the surface treatment agent for the second non-spherical filler consists of a silicone oil, in particular dimethylpolysiloxane, and a hydrogenated oil, in particular a hydrogenated palm oil.

40

According to one embodiment of the present invention, the surface treatment for the second non-spherical filler may be chosen from the following treatments:

45

- hydrogenated palm oil treatments,

- methicone/hydrogenated palm oil treatments, for instance, the SNVI surface treatment sold by Miyoshi Kasei; in particular talc treated with methicone/hydrogenated palm oil (SNVI-TA-46R) sold by Miyoshi Kasei or synthetic mica treated with methicone/hydrogenated palm oil (SNVI-Synthetic mica PDM-8W) sold by Miyoshi Kasei.

In a preferred embodiment, talc treated by methicone/ hydrogenated palm oil sold by Miyoshi Kasei under the name SNVI-TA-46R may be preferable.

According to a particular embodiment of the present invention, the second non-spherical filler may have been surface-treated with a surface treatment agent comprising at least one amino acid and/or a derivative thereof.

The amino acid may preferably be selected from the group consisting of proline, hydroxyproline, alanine, glycine, sarcosine, aspartic acid, and glutamic acid.

The amino acids may be L-isomers or a mixture of L-isomers and D-isomers.

It is preferable that the second non-spherical filler has been coated with:

- (a) at least one selected from proline, hydroxyproline and derivatives thereof; and/or
- (b) at least one selected from alanine, glycine, sarcosine and derivatives thereof; and/or
- (c) at least one selected from aspartic acid, glutamic acid and derivatives thereof.

The derivatives of the amino acids may be selected from salts of the amino acids, and N-acylated amino acids and salts thereof.

It is preferable that two of the components (a) to (c) be used together, and it is more preferable that all of the components (a) to (c) be used together. If two or more of the components (a) to (c) are used, the type of the derivatives and/or salts may be the same or different.

The N-acyl group of the N-acylated amino acid may be a linear or branched, saturated or unsaturated acyl group with C₈-C₂₂ carbon atoms, preferably C₁₂-C₁₈ carbon atoms. It is preferable that the N-acyl group is a linear saturated acyl group, such as a palmitoyl group.

The salt of the amino acid or the N-acylated amino acid is not limited but may be in the form of a metal salt with a metal element such as Na, K, Ba, Zn, Ca, Mg, Fe, Zr, Co, Al, Ti and the like; an onium salt such as an ammonium salt; and a salt with an organic alkanolamine such as monoethanolamine, diethanolamine, triethanolamine, 2-amino-2-methylpropanol, 2-amino-2-methyl-1,3-propanediol, and triisopropanolamine. It is preferable that the salt is a metal salt with Na, K, Ca, Mg or Al.

It is more preferable that the second non-spherical filler has been coated with a mixture (referred to as "lipo-amino acid composition") of at least one fatty acid, such as a C₁₂-C₁₈ fatty acid, and/or a salt of the fatty acid, and

- (a) at least one selected from proline, hydroxyproline and derivatives thereof; and/or
- (b) at least one selected from alanine, glycine, sarcosine and derivatives thereof; and/or
- (c) at least one selected from aspartic acid, glutamic acid and derivatives thereof.

As the fatty acid, a linear, branched or cyclic fatty acid, preferably C₁₂-C₁₈, can be used. A plurality of fatty acids may be used. As examples of the fatty acid, mention may be made of lauric acid, myristic acid, isomyristic acid, palmitic acid, isopalmitic acid, stearic acid, isostearic acid, oleic acid, myristoleic acid, elaidic acid, linoleic acid, and linolenic acid. As example of the salt of the fatty acid, mention may be made of a metal salt with a metal element such as Na,

K, Ba, Zn, Ca, Mg, Fe, Zr, Co, Al, Ti or the like. Lauric acid, myristic acid, palmitic acid and stearic acid as well as a metal salt thereof with Na, K, Ca, Al or Mg are preferable. Lauric acid, myristic acid and palmitic acid are more preferable. Palmitic acid is most preferable.

5 In the lipo-amino acid composition, each of the fatty acid (or a salt thereof) and any of the components (a) to (c) may represent 0.5% by weight or more, preferably 5% by weight or more, more preferably 10% by weight or more, in relation to the total weight of the lipo-amino acid composition.

10 It is most preferable that the lipo-amino acid composition comprise all of the components (a) to (c) as well as at least one fatty acid, such as a C₁₂-C₁₈ fatty acid, and/or a salt of the fatty acid.

For example, a mixture of palmitic acid, palmitoyl proline, palmitoyl sarcosinate, and palmitoyl glutamate can be used as the lipo-amino acid composition. A mixture of palmitic acid,
15 palmitoyl proline, sodium palmitoyl sarcosinate, and magnesium palmitoyl glutamate is more preferable.

In the lipo-amino acid composition comprising all of the components (a) to (c), each of the fatty acid (or a salt thereof) and any of the components (a) to (c) may represent 0.5% by weight or
20 more, preferably 5% by weight or more, more preferably 10% by weight or more, in relation to the total weight of the lipo-amino acid composition. It is possible that the lipo-amino acid composition comprises 5-50% by weight of the component (a), 5-50% by weight of the component (b), 5-25% by weight of the component (c) and 5-50% by weight of the fatty acid (or a salt thereof), in relation to the total weight of the lipo-amino acid composition.

25 The lipo-amino acid composition can be prepared by a known method. For example, it is possible to prepare the lipo-amino acid composition in accordance with the methods described in WO 98/09611, WO 99/04757, JP-A-2000-191426 and the like. The above lipo-amino acid composition is also marketed in the name of Sepifeel One sold by Seppic in France.

30 The surface-treated second non-spherical filler can be prepared by coating the filler with any of the components (a) to (c), a mixture of two or more of the components (a) to (c), or the lipo-amino acid composition described above.

35 The coating can be performed by a known method. For example, the second non-spherical filler can be added into a solution of any of the components (a) to (c), a mixture of two or more of the components (a) to (c), or the lipo-amino acid composition described above; the second non-spherical filler is dispersed in the solution; and the dispersion is filtered, washed and dried. The solvent of the solution may be selected from water, aqueous solvents such as methanol and
40 ethanol, and non-aqueous solvents such as ethyl acetate, depending on the nature of the components (a) to (c) and the like.

The amount of the coating depends on the type of the second non-spherical filler, and can be from 0% to 30% by weight, and preferably from 1.0% to 10% by weight, in relation to the total
45 weight of the second non-spherical filler.

The second non-spherical filler may preferably be pre-coated with at least one oxide or hydroxide of a metal element such as aluminum, calcium, magnesium, cerium, silicon, zirconium, titanium, zinc, iron, cobalt, manganese, nickel, and tin. Aluminum hydroxide is more
50 preferable. Further, the second non-spherical filler may preferably be pre-coated with a silicone compound, a fatty acid, a metal soap, a fluorine-based compound, a silane-coupling agent, and the like.

In one embodiment, the second non-spherical filler coated with the lipo-amino acid composition comprising at least one fatty acid, such as a C₁₂-C₁₈ fatty acid, and/or a salt of the fatty acid, and the components (a) to (c) is/are available from the market.

For example, mica coated with palmitoyl proline, sodium palmitoyl sarcosinate, magnesium palmitoyl glutamate or palmitic acid has been marketed by Miyoshi Kasei Inc. in Japan.

In another embodiment, second non-spherical fillers which have been surface-treated as follows are available from the market:

- a PEG-silicone treatment, for instance, the AQ surface treatment sold by LCW;
- a lauroyllysine treatment, for instance, the LL surface treatment sold by LCW;
- a lauroyllysine dimethicone treatment, for instance, the LL/SI surface treatment sold by LCW;
- a disodium stearyl glutamate treatment, for instance, the NAI surface treatment sold by Miyoshi;
- a dimethicone/disodium stearyl glutamate treatment, for instance, the SA/NAI surface treatment sold by Miyoshi;
- a microcrystalline cellulose and carboxymethylcellulose treatment, for instance, the AC surface treatment sold by Daito;
- an acrylate copolymer treatment, for instance, the APD surface treatment sold by Daito;
- a sodium dilauramidoglutamide lysine treatment, for instance, the ASL treatment sold by Daito; and
- a sodium dilauramidoglutamide lysine/isopropyl titanium triisostearate treatment, for instance, the ASL treatment sold by Daito.

The second non-spherical fillers that have been surface-treated beforehand, which are useful in the context of the present invention, may be chosen from non-spherical fillers that have totally or partially undergone a surface treatment chosen from chemical, electronic, electrochemical, mechanochemical, and mechanical surface treatments, with at least one surface treatment agent such as those described above before being dispersed in the composition in accordance with the present invention.

For the purposes of the present invention, the surface treatment is such that a surface-treated filler conserves its intrinsic pretreatment filling properties.

In at least one embodiment, the surface-treated second fillers that are useful in the context of the present invention may also have been treated with a mixture of these compounds and/or may have undergone several surface treatments.

The surface-treated second fillers that are useful in the context of the present invention may be prepared according to surface-treatment techniques that are known to those skilled in the art, or may be commercially available in the required form.

The surface treatment agent with which the second fillers are treated may be deposited on the fillers by any known method, for example, evaporation of solvent, chemical reaction between the molecules of the surface treatment agent or creation of a covalent bond between the surface treatment agent and the fillers.

The surface treatment may thus be performed, for example, by chemical reaction of the surface treatment agent with the surface of the fillers and creation of a covalent bond between the surface treatment agent and the fillers. This method is described, for example, in U.S. Pat. No. 4,578,266.

The surface treatment agent may be present in the composition in an amount ranging from 0.1% to 50% by weight, for example, from 0.5% to 30% by weight, or from 1% to 10% by weight in relation to the total weight of the surface-treated fillers.

5 It is preferable that the total amount of second non-spherical filler(s) be 1% by weight or more, preferably from 1% to 30 % by weight, more preferably from 5 % to 25% by weight, and still more preferably 10% to 20% by weight, in relation to the total weight of the pulverulent phase.

10 It is preferable that the total amount of second non-spherical filler(s) be 1% by weight or more, preferably from 1% to 25% by weight, more preferably from 5% to 20% by weight, and still more preferably from 10% to 18% by weight, in relation to the total weight of the powdery cosmetic composition.

15 (Second spherical Filler)

The second fillers may be spherical fillers, or "second spherical fillers". The spherical second fillers may be mineral or organic. The spherical mineral fillers and spherical organic fillers are as described above. It is preferable that the spherical filler be chosen from organic spherical
20 fillers.

In some embodiments, the organic spherical fillers are not film-forming, i.e., they do not form a continuous film when deposited onto keratin layers such as the skin.

25 The organic spherical filler may be chosen, for example, from: (meth)acrylic or (meth)acrylate powders, for example, polymethylmethacrylate powders; polyacrylonitrile powders; polyurethane powders; polyamide powders; organopolysiloxane powders; and the like, as well as a mixture thereof.

30 According to one embodiment, the composition may comprise at least one spherical filler of polymethylmethacrylate.

The polymethylmethacrylate powder may be in the form of hollow or solid white spherical particles generally with a number-average size of micrometer order, for example, ranging from 3
35 to 15 microns and, further, for example, ranging from 3 to 10 microns. As used herein, the expression "number-average size" means the size given by the statistical particle size distribution to half of the population, referred to as D50.

40 It is also possible to characterize the polymethylmethacrylate particles by their density, which can vary, for example, as a function of the size of the spherical cavity of the particles.

In accordance with the embodiments disclosed herein, this density is assessed according to the following protocol, referred to as the packed density: m=40 g of powder is poured into a measuring cylinder; the measuring cylinder is then placed on a Stav 2003 machine from Stampf
45 Volumeter; the measuring cylinder is then subjected to 1500 packing motions; the final volume V_f of packed powder is then measured directly on the measuring cylinder. The packed density is determined by the ratio m/V_f , in this instance, $40/V_f$ (V_f being expressed in cm^3 and m in g).

50 For example, the density of the polymethylmethacrylate powder that may be used in the embodiments disclosed herein may range, for example, from 0.3 to 1.5, further, for example, from 0.5 to 1.5 and, even further, for example, from 1 to 1.5.

As non-limiting illustrations of the polymethylmethacrylate powder that is suitable for use in the composition disclosed herein, mention may be made, for example, of the polymethylmethacrylate particles sold by the company Matsumoto Yushi Co. under the name "Micropearl M100", by the company LCW under the name "Covabead LH 85" and those sold by the company Nihon Junyaku under the name "Jurymer MB1".

The polymethylmethacrylate powder may be present in an amount ranging from 1% to 10% by weight, for example, ranging from 1.5% to 8% by weight and further, for example, ranging from 2% to 5% by weight, in relation to the total weight of the composition.

According to one embodiment, the composition may comprise at least one spherical filler of polyacrylonitrile.

The polyacrylonitrile powder may be chosen from acrylonitrile homopolymer powders and acrylonitrile copolymer powders, and, for example, expanded hollow particles of acrylonitrile homopolymer or copolymer. For example, the powders may be made of any expanded acrylonitrile homopolymer or copolymer that is non-toxic and a non-irritant to the skin.

For example, the mass per unit volume of the particles is chosen in the range from 15 kg/m³ to 200 kg/m³, for example, from 40 kg/m³ to 120 kg/m³ and even further, for example, from 60 kg/m³ to 80 kg/m³. To obtain this low mass per unit volume, expanded polymer or copolymer particles, for example, based on acrylonitrile and on an acrylic or styrene monomer and/or on vinylidene chloride, may be used.

It is possible to use, for example, a copolymer comprising: from 0% to 60% of units derived from vinylidene chloride, from 20% to 90% of units derived from acrylonitrile and from 0% to 50% of units derived from an acrylic or styrene monomer, wherein the sum of the percentages (by weight) is equal to 100. The acrylic monomer may, for example, be a methyl or ethyl acrylate or methacrylate. The styrene monomer may, for example, be α -methylstyrene or styrene.

In one embodiment, the powders used in the composition disclosed herein are chosen from hollow particles of an expanded copolymer of vinylidene chloride and of acrylonitrile or of vinylidene chloride and of acrylonitrile and of methacrylate. These powders may be dry or hydrated.

The powders may be obtained, for example, according to the processes disclosed in Patent and Patent Application Nos. EP 56219, EP 348372, EP 486080, EP 320473, EP 112807 and U.S. Pat. No. 3,615,972.

The internal cavity of the powder particles in principle comprises at least one gas, which may be chosen from air, nitrogen, and hydrocarbons, such as isobutane and isopentane.

In some embodiments, the powder particles disclosed herein have a particle size ranging from 1 μ m to 80 μ m, for example, ranging from 10 μ m to 50 μ m and from 10 μ m to 30 μ m.

The powder particles may be chosen, for example, from expanded terpolymer microspheres of vinylidene chloride, of acrylonitrile and of methacrylate, sold under the brand name Expancel by the company Expancel under the references 551 DE 50 (particle size of 40 μ m), 551 DE 20 (particle size of 30 μ m and mass per unit volume of 65 kg/m³), 551 DE 12 (particle size of 12 μ m), 551 DE 80 (particle size of 80 μ m) and 461 DE 50 (particle size of 50 μ m). It is also possible to use microspheres formed from the same expanded terpolymer having a particle size

of 8 μm and a mass per unit volume of 70 kg/m^3 , referred to hereinbelow as EL 23, or having a particle size of 34 μm and a mass per unit volume of 20 kg/m^3 , referred to hereinbelow as EL 43.

The acrylonitrile powder may be present in the composition disclosed herein in an amount ranging from 0.02% to 2% by weight, for example, ranging from 0.1% to 1.5% by weight, and, further, for example, ranging from 0.1% to 1.2% by weight, in relation to the total weight of the composition.

According to one embodiment, the composition may comprise at least one spherical filler of polyurethane.

The polyurethane powder may be a powder of a copolymer of hexamethylene diisocyanate and trimethylol hexyl lactone. Such a polyurethane powder is sold, for example, under the names "Plastic Powder D-400" and "Plastic Powder D-800" by the company Toshiki. Other polyurethane powders that may be used include the product sold under the name "Plastic Powder CS-400" by the company Toshiki.

The polyurethane powder may be present in the composition disclosed herein in an amount ranging from 1% to 20% by weight, for example, ranging from 2% to 15% by weight and, further, for example, ranging from 3% to 10% by weight, in relation to the total weight of the composition.

According to one embodiment, the composition may comprise at least one second spherical filler of polyamide.

Polyamide powders useful in the present invention may be those listed under the CTFA name of "Nylon 12" or "Nylon 6". A mixture of particles and, for example, a mixture of Nylon-6 and Nylon-12 may be used.

The polyamide powder particles used in the present invention include those sold under the name "Orgasol" by the company Atochem. The process for obtaining these particles is, for example, the process described in document FR-A-2 619 385 or in document EP-A-303 530. These polyamide powder particles are moreover known according to their various physicochemical properties under the name "polyamide 12" or "polyamide 6".

Particles useful in the present invention may also include those sold under the name SP500 by the company TORAY.

The polyamide powder may be present in the composition disclosed herein in an amount ranging from 1% to 10% by weight, for example, ranging from 1.5% to 8% by weight and, further, for example, ranging from 2% to 5% by weight, in relation to the total weight of the composition.

According to a preferred embodiment, the composition may comprise at least one second spherical filler of organopolysiloxane.

The organopolysiloxane may be elastomeric or non-elastomeric. It is preferable to use elastomeric organopolysiloxane powder or organopolysiloxane elastomer powder.

The elastomeric organopolysiloxane may, for example, be crosslinked and may be obtained via a crosslinking addition reaction of diorganopolysiloxane comprising at least one hydrogen linked to silicon and of diorganopolysiloxane comprising at least one ethylenically unsaturated group linked to silicon, preferably, in the presence, for example, of a platinum catalyst; or

via a dehydrogenation crosslinking condensation reaction between a diorganopolysiloxane comprising at least one hydroxyl end group and a diorganopolysiloxane comprising at least one hydrogen linked to silicon, preferably, in the presence of, for example, an organotin compound; or

via a crosslinking condensation reaction of a diorganopolysiloxane comprising at least one hydroxyl end group and of a hydrolysable organopolysilane; or

via thermal crosslinking of organopolysiloxane, preferably, in the presence of, for example, an organoperoxide catalyst; or

via crosslinking of organopolysiloxane by high-energy radiation such as gamma rays, ultraviolet rays or an electron beam.

In one embodiment, the elastomeric organopolysiloxane powder is crosslinked and is obtained via a crosslinking addition reaction of a diorganopolysiloxane (B2) comprising at least two hydrogens, each linked to a silicon, and of a diorganopolysiloxane (A2) comprising at least two ethylenically unsaturated groups linked to silicon, preferably, in the presence of, for example, a platinum catalyst (C2), for instance, as described in Patent Application No. EP-A-295886.

For example, the organopolysiloxane may be obtained via a reaction of dimethylpolysiloxane comprising dimethylvinylsiloxy end groups and of methylhydrogenopolysiloxane comprising trimethylsiloxy end groups, in the presence of a platinum catalyst.

Compound (A2) is the base reagent for the formation of elastomeric organopolysiloxane and the crosslinking takes place via an addition reaction of compound (A2) with compound (B2) in the presence of the catalyst (C2).

Compound (A2) may, for example, be a diorganopolysiloxane comprising at least two lower alkenyl groups (for example C2-C4); the lower alkenyl group may be chosen from vinyl, allyl and propenyl groups. These lower alkenyl groups may be located in any position of the organopolysiloxane molecule, but in one embodiment are located at the ends of the organopolysiloxane molecule. The organopolysiloxane (A2) may have a branched-chain, linear-chain, cyclic or network structure; in one embodiment, the linear-chain structure may be used. Compound (A2) may have a viscosity ranging from the liquid state to the gum state. For example, compound (A2) may have a viscosity of at least 100 centistokes at 25°C.

The organopolysiloxanes (A2) may be chosen from methylvinylsiloxanes, methylvinylsiloxane-dimethylsiloxane copolymers, dimethylpolysiloxanes comprising dimethylvinylsiloxy end groups, dimethylsiloxane-methylphenylsiloxane copolymers comprising dimethylvinylsiloxy end groups, dimethylsiloxane-diphenylsiloxane-methylvinylsiloxane copolymers comprising dimethylvinylsiloxy end groups, dimethylsiloxane-methylvinylsiloxane copolymers comprising trimethylsiloxy end groups, dimethylsiloxane-methylphenylsiloxane-methylvinylsiloxane copolymers comprising trimethylsiloxy end groups, methyl(3,3,3-trifluoropropyl)polysiloxane comprising dimethylvinylsiloxy end groups, and dimethylsiloxane-methyl(3,3,3-trifluoropropyl)siloxane copolymers comprising dimethylvinylsiloxy end groups.

Compound (B2) may, for example, be an organopolysiloxane comprising at least two hydrogens linked to silicon in each molecule and is thus the crosslinking agent for the compound (A2).

In one embodiment, the sum of the number of ethylenic groups per molecule of compound (A2) and the number of hydrogen atoms linked to silicon per molecule of compound (B2) is at least 4.

Compound (B2) may be of any molecular structure. In one embodiment, compound (B2) is of

linear-chain or branched-chain structure or cyclic structure.

Compound (B2) may have a viscosity at 25°C ranging from 1 to 50000 centistokes, for example, in order to have good miscibility with compound (A2).

In one embodiment, compound (B2) may be added in an amount such that the molecular ratio between the total amount of hydrogen atoms linked to silicon in compound (B2) and the total amount of all the ethylenically unsaturated groups in compound (A2) is within the range from 1:1 to 20:1.

Compound (B2) may be chosen from methylhydrogenopolysiloxanes comprising trimethylsiloxy end groups, dimethylsiloxane-methylhydrogenosiloxane copolymers comprising trimethylsiloxy end groups, and cyclic dimethylsiloxane-methylhydrogenosiloxane copolymers.

Compound (C2) is the crosslinking reaction catalyst, and may, for example, be chosen from chloroplatinic acid, chloroplatinic acid-olefin complexes, chloroplatinic acid-alkenylsiloxane complexes, chloroplatinic acid-diketone complexes, platinum black, and platinum on a support.

The catalyst (C2) may, for example, be added in an amount ranging from 0.1 to 1000 parts by weight and, further, for example, from 1 to 100 parts by weight, as clean platinum metal, per 1000 parts by weight of the total amount of compounds (A2) and (B2).

Other organic groups may be linked to silicon in the organopolysiloxanes (A2) and (B2) described previously, for example, alkyl groups, such as methyl, ethyl, propyl, butyl or octyl; substituted alkyl groups, such as 2-phenylethyl, 2-phenylpropyl or 3,3,3-tri-fluoropropyl; aryl groups, such as phenyl, tolyl or xylyl; substituted aryl groups, such as phenylethyl; and substituted monovalent hydrocarbon-based groups, such as an epoxy group, a carboxylate ester group or a mercapto group.

In some embodiments, the at least one elastomeric organopolysiloxane powder may, for example, be chosen from non-emulsifying elastomers. As used herein, the term "non-emulsifying" means organopolysiloxane elastomers not comprising a hydrophilic chain, such as polyoxyalkylene or polyglycerolated units.

Spherical elastomeric organopolysiloxanes are, for example, described in Patent Application Nos. JP-A-61-194 009, EP-A-242 219, EP-A-295 886 and EP-A-765 656, the contents of which are incorporated by reference.

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

The elastomeric organopolysiloxane powder may, for example, be chosen from elastomeric organopolysiloxane powders coated with at least one silicone resin, for example, with silsesquioxane resin, as described, for example, in U.S. Pat. No. 5,538,793, the content of which is incorporated by way of reference. Such elastomeric powders are sold under the names "KSP-100", "KSP-101", "KSP-102", "KSP-103", "KSP-104" and "KSP-105" by the company Shin-Etsu, and have the INCI name: vinyl dimethicone/methicone silsesquioxane crosspolymer.

Other elastomeric organopolysiloxanes in the form of spherical powders may be powders of hybrid silicone functionalized with fluoroalkyl groups, sold, for example, under the name "KSP-200" by the company Shin-Etsu and powders of hybrid silicones functionalized with

phenyl groups, sold, for example, under the name "KSP-300" by the company Shin-Etsu.

In one embodiment, the composition may, for example, comprise at least two powders of elastomeric organopolysiloxane chosen from elastomeric organopolysiloxane powders coated with silicone resin, for example, with silsesquioxane resin, as described previously.

In some embodiments, the composition disclosed herein may comprise at least one elastomeric organopolysiloxane spherical powder chosen from elastomeric organopolysiloxane spherical powders coated with at least one silicone resin, for example, with silsesquioxane resin, in an amount ranging from 1% to 12% by weight, for example, from 1.5% to 10% by weight, further, for example, ranging from 2% to 8% by weight and, even further, for example, ranging from 3% to 6% by weight, in relation to the total weight of the composition.

The composition disclosed herein may comprise a mixture of at least one elastomeric organopolysiloxane spherical powder chosen from elastomeric organopolysiloxane spherical powders coated with silicone resin, for example, with silsesquioxane resin, and uncoated elastomeric organopolysiloxane spherical powders. In such a mixture, the elastomeric organopolysiloxane spherical powders coated with silicone resin, for example, with silsesquioxane resin, may be present in an amount ranging from 1% to 12% by weight, for example, ranging from 1.5% to 10% by weight and, further, for example, ranging from 2% to 8% by weight, in relation to the total weight of the composition; the uncoated elastomeric organopolysiloxane spherical powders may be present in an amount ranging from 1% to 12% by weight, for example, ranging from 1.5% to 10% by weight and, further, for example, ranging from 2% to 8% by weight, in relation to the total weight of the composition.

It is preferable that the second filler(s) comprise at least one second spherical filler selected from the group consisting of organopolysiloxane elastomer powder, polyamide powder, (meth)acrylic or (meth)acrylate powder, polyurethane powder, silica microspheres, preferably organopolysiloxane elastomer powder, polyamide powder, polyacrylonitrile, and a mixture thereof, and more preferably at least one organopolysiloxane elastomer powder.

The elastomeric organopolysiloxane powder may be present in the second second filler(s) in an amount of 40% by weight or more, preferably 45% weight or more, and more preferably 50% by weight or more, in relation to the total weight of the second filler(s). For example, the elastomeric organopolysiloxane powder may be present in the second filler(s) in an amount ranging from 40% to 100% by weight, for example, ranging from 50% to 90% by weight and, further, for example, ranging from 50% to 80% by weight, in relation to the total weight of the spherical filler(s).

The amount of the second spherical filler(s) may be 11% by weight or more, preferably from 11% to 28% by weight, more preferably from 11 % to 22% by weight, and still more preferably from 11% to 17% by weight, in relation to the total weight of the pulverulent phase.

It is preferable that the total amount of the second spherical filler(s) be 5% by weight or more, preferably 8% by weight or more, and more preferably 10% by weight or more, in relation to the total weight of the composition. Thus, for example, the amount of the second spherical filler(s) may be from 10% to 25% by weight, preferably from 10% to 20% by weight, and more preferably from 10% to 15% by weight, in relation to the total weight of the powdery cosmetic composition.

According to a preferred embodiment of a composition according to the invention, the pulverulent phase comprises:

- from 20 to 80% by weight of the first particles,
- from 10 to 70% by weight of the second particles.

According to a preferred embodiment of a composition according to the invention, the powdery cosmetic composition comprises:

- from 10 to 70% by weight of the first particles,
- from 10 to 70% by weight of the second particles.

According to a preferred embodiment of the powdery cosmetic composition according to the invention, the powdery cosmetic composition comprises:

- from 15 to 70% by weight of the first fillers,
- from 0.3 to 10% by weight of the first coloring agents,
- from 5 to 40% by weight of the second fillers,
- from 3 to 25% by weight of the second coloring agents.

According to a preferred embodiment of the powdery cosmetic composition according to the invention, the powdery cosmetic composition comprises:

- from 15 to 70% of first lamellar fillers, preferably selected from
- from 0.3 to 10% of first coloring agents, preferably selected from iron oxides,
- from 2 to 20% of second non spherical fillers, preferably selected from talc and mica,
- from 2 to 20% of second coloring agents, preferably selected from pigments, naces and mixture thereof,
- from 2 to 20% of second spherical fillers, preferably selected from organopolysiloxane elastomer powder, polyamide powder, (meth)acrylic or (meth)acrylate powder, polyurethane powder, silica microspheres, preferably organopolysiloxane elastomer powder, polyamide powder, polyacrylonitrile, and a mixture thereof, and more preferably at least one organopolysiloxane elastomer powder.

(II) Liquid Fatty Phase

The powdery cosmetic composition according to the present invention comprises at least one liquid fatty phase. This liquid fatty phase may advantageously serve as binder for the said pulverulent phase. The liquid fatty phase preferably comprises at least one non-volatile oil and/or silicone oil, more preferably at least one non-volatile silicone oil, and still more preferably a combination of non-volatile silicone oils.

The term "liquid" refers to a composition that is liquid at room temperature (25°C) and atmospheric pressure (760 mmHg).

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" means an oil that remains on the skin or keratin fibers at room temperature and pressure. More precisely, a non-volatile oil has an evaporation rate strictly less than 0.01 mg/cm²/min.

The powdery cosmetic composition according to the present invention advantageously has a content of liquid fatty phase, and in particular of non-volatile oil(s), still more preferably of non-volatile silicone oil(s), of 0.5% by weight or more, in particular 1% by weight or more, more particularly from 1.5% to 10% by weight and better still from 2% to 8% by weight in relation to the total weight of the powdery cosmetic composition.

The powdery cosmetic composition according to the present invention preferably comprises at least one non-volatile silicone oil, preferably at least one phenylated silicone oil and at least one non-phenylated silicone oil.

5 *Hydrocarbon-based non-volatile oil*

A liquid fatty phase preferably comprises at least one non-volatile hydrocarbon-based oil. A composition according to the present invention may comprise one or more non-volatile hydrocarbon-based oils.

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

- hydrocarbon-based oils of plant origin, such as phytostearyl esters, such as phytostearyl oleate, phytostearyl isostearate and lauroyl/octyldodecyl/phytostearyl glutamate; triglycerides formed from fatty acid esters of glycerol, in particular whose fatty acids may have chain lengths ranging from C18 to C36, these oils possibly being linear or branched, and saturated or unsaturated; these oils may especially be heptanoic or octanoic triglycerides, shea oil, alfalfa oil, poppy oil, pumpkin oil, millet oil, barley oil, quinoa oil, rye oil, candlenut oil, passionflower oil, shea butter oil, aloe oil, sweet almond oil, peach stone oil, groundnut oil, argan oil, avocado oil, baobab oil, borage oil, broccoli oil, calendula oil, camellina oil, carrot oil, safflower oil, hemp oil, rapeseed oil, cottonseed oil, coconut oil, marrow seed oil, wheatgerm oil, jojoba oil, lily oil, macadamia oil, corn oil, meadowfoam oil, St-John's wort oil, monoi oil, hazelnut oil, apricot kernel oil, walnut oil, olive oil, evening primrose oil, palm oil, blackcurrant pip oil, kiwi seed oil, grape seed oil, pistachio oil, pumpkin oil, quinoa oil, musk rose oil, sesame oil, soybean oil, sunflower oil, castor oil and watermelon oil, and mixtures thereof, or alternatively caprylic/capric acid triglycerides, such as those sold by the company Stéarineries Dubois or those sold under the names Miglyol 810®, 812® and 818® by the company Dynamit Nobel;
- synthetic ethers containing from 10 to 40 carbon atoms;
- synthetic esters, for instance the oils of formula R_1COOR_2 , in which R_1 represents at least one linear or branched fatty acid residue comprising 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 $R_1 + R_2$ is greater than or equal to 10. The esters may be chosen especially from fatty acid esters of alcohols, for instance cetostearyl octanoate, isopropyl alcohol esters, such as isopropyl myristate, isopropyl palmitate, ethyl palmitate, 2-ethylhexyl palmitate, isopropyl stearate, isopropyl isostearate, isostearyl isostearate, octyl stearate, hydroxylated esters, for instance isostearyl lactate, octyl hydroxystearate, diisopropyl adipate, heptanoates, and especially isostearyl heptanoate, alcohol or polyalcohol octanoates, decanoates or ricinoleates, for instance propylene glycol dioctanoate, cetyl octanoate, tridecyl octanoate, 2-ethylhexyl 4-diheptanoate, 2-ethylhexyl palmitate, alkyl benzoates, polyethylene glycol diheptanoate, propylene glycol 2-diethylhexanoate, and mixtures thereof, hexyl laurate, neopentanoic acid esters, for instance isodecyl neopentanoate, isotridecyl neopentanoate, isostearyl neopentanoate, octyldodecyl neopentanoate, isononanoic acid esters, for instance isononyl isononanoate, isotridecyl isononanoate, octyl isononanoate, hydroxylated esters, for instance isostearyl lactate and diisostearyl malate;
- polyol esters and pentaerythritol esters, for instance dipentaerythrityl tetrahydroxystearate/tetraisostearate;
- esters of diol dimers and of diacid dimers;
- copolymers of diol dimer and of diacid dimer and esters thereof, such as dilinoleyl diol dimer/dilinoleic dimer copolymers, and esters thereof;
- copolymers of polyols and of diacid dimers, and esters thereof;
- 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 2-octyldodecanol, isostearyl alcohol, oleyl alcohol, 2-hexyldecanol, 2-butyloctanol and 2-undecylpentadecanol;

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

- dialkyl carbonates, the two alkyl chains possibly being identical or different, such as dicaprylyl carbonate;

- oils with a molar mass of between about 400 and about 10 000 g/mol, in particular about 650 to about 10 000 g/mol, in particular from about 750 to about 7500 g/mol and more particularly ranging from about 1000 to about 5000 g/mol; mention may be made especially, alone or as a mixture, of (i) lipophilic polymers such as polybutylenes, polyisobutylenes, for example hydrogenated, polydecenes and hydrogenated polydecenes, vinylpyrrolidone copolymers, such as the vinylpyrrolidone/1-hexadecene copolymer, and polyvinylpyrrolidone (PVP) copolymers, such as the copolymers of a C₂-C₃₀ alkene, such as C₃-C₂₂, and combinations thereof; (ii) linear fatty acid esters containing a total carbon number ranging from 35 to 70, for instance pentaerythrityl tetrapelargonate; (iii) hydroxylated esters such as polyglyceryl-2 triisostearate; (iv) aromatic esters such as tridecyl trimellitate; (v) esters of fatty alcohols or of branched C₂₄-C₂₈ fatty acids, such as those described in patent US 6 491 927 and pentaerythritol esters, and especially triisoarachidyl citrate, pentaerythrityl tetraisononanoate, glyceryl triisostearate, glyceryl 2-tridecyltetradecanoate, pentaerythrityl tetraisostearate, poly(2-glycerol) tetraisostearate or pentaerythrityl 2-tetradecyltetradecanoate; (vi) diol dimer esters and polyesters, such as esters of diol dimer and of fatty acid, and esters of diol dimer and of diacid.

Non-volatile silicone oils

According to one preferred embodiment of the present invention, the powdery cosmetic compositions according to the present invention comprise at least one non-volatile silicone oil.

The non-volatile silicone oil that may be used in the present invention may be chosen from silicone oils with a viscosity at 25°C of greater than or equal to 2 centistokes (cSt) ($2 \times 10^{-6} \text{ m}^2/\text{s}$) and less than 800 000 cSt, preferably between 3 and 600 000 cSt and preferably between 4 and 500 000 cSt. The viscosity of this silicone may be measured according to standard ASTM D-445.

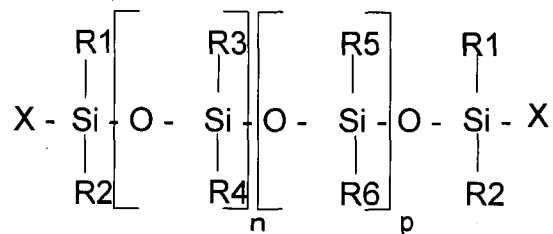
Among these silicone oils, two types of oil may be distinguished, according to whether or not they contain phenyl.

Representative examples of these non-volatile linear silicone oils that may be mentioned include polydimethylsiloxanes; alkyl dimethicones; vinyl methyl methicones; and also silicones modified with optionally fluorinated aliphatic groups, or with functional groups such as hydroxyl, thiol and/or amine groups.

Thus, non-phenyl non-volatile silicone oils that may be mentioned include:

- PDMSs comprising alkyl or alkoxy groups, which are pendent and/or at the end of the silicone chain, these groups each containing from 2 to 24 carbon atoms,
- PDMSs comprising aliphatic groups, or functional groups such as hydroxyl, thiol and/or amine groups,
- polyalkylmethylsiloxanes optionally substituted with a fluorinated group, such as 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 particular embodiment, the powdery cosmetic composition according to the present invention contains at least one non-phenyl linear silicone oil. The non-phenyl linear silicone oil may be chosen especially from the silicones of formula:



in which:

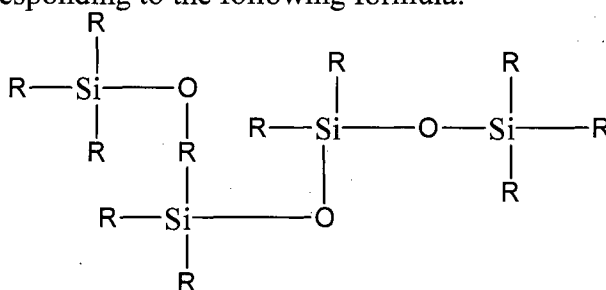
- R₁, R₂, R₅ and R₆ are, together or separately, an alkyl radical containing 1 to 6 carbon atoms,
- R₃ and R₄ are, together or separately, an alkyl radical containing from 1 to 6 carbon atoms, a vinyl radical, an amine radical or a hydroxyl radical,
- X is an alkyl radical containing from 1 to 6 carbon atoms, a hydroxyl radical or an amine radical,
- n and p are integers chosen so as to have a fluid compound.

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

- the substituents R₁ to R₆ and X represent a methyl group, and p and n are such that the viscosity is 500 000 cSt, such as 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 by the company Dow Corning,
 - the substituents R₁ to R₆ and X represent a methyl group, and p and n are such that the viscosity is 60 000 cSt, such as the product sold under the name Dow Corning 200 Fluid 60000 CS by the company Dow Corning, and the product sold under the name Wacker Belsil DM 60 000 by the company Wacker,
 - the substituents R₁ to R₆ and X represent a methyl group, and p and n are such that the viscosity is 350 cSt, such as the product sold under the name Dow Corning 200 Fluid 350 CS by the company Dow Corning,
 - the substituents R₁ to R₆ represent a methyl group, the group X represents a hydroxyl group, and n and p are such that the viscosity is 700 cSt, such as the product sold under the name Baysilone Fluid T0.7 by the company Momentive.
- According to one preferred embodiment variant, a composition according to the invention contains at least one phenyl silicone oil.

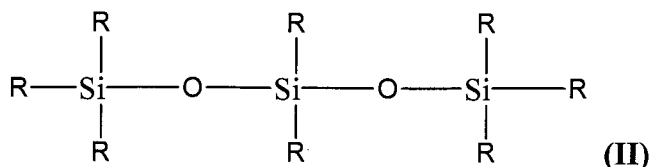
Representative examples of these non-volatile phenyl silicone oils that may be mentioned include:

- the phenyl silicone oils corresponding to the following formula:



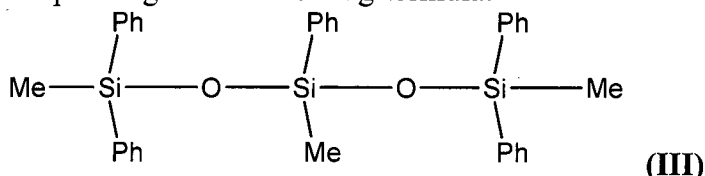
in which in formula (I) the groups R represent, independently of each other, a methyl or a phenyl, with the proviso that at least one group R represents a phenyl. Preferably, in this formula, the phenyl silicone oil comprises at least three phenyl groups, for example at least four, at least five or at least six.

- the phenyl silicone oils corresponding to the following formula:



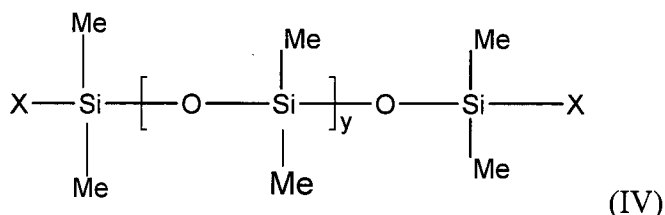
in which in formula (II) the groups R represent, independently of each other, a methyl or a phenyl, with the proviso that at least one group R represents a phenyl. Preferably, in this formula, the said organopolysiloxane comprises at least three phenyl groups, for example at least four or at least five. Mixtures of the phenyl organopolysiloxanes described previously may be used. Examples that may be mentioned include mixtures of triphenyl, tetraphenyl or pentaphenyl organopolysiloxanes.

- the phenyl silicone oils corresponding to the following formula:



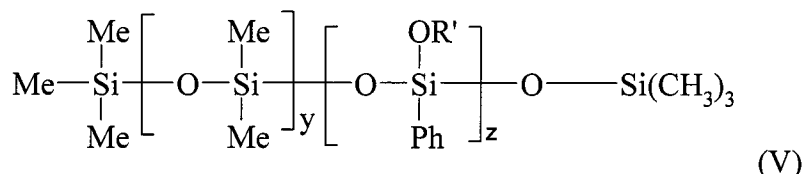
in which in formula (III) Me represents methyl, and Ph represents phenyl. Such a phenyl silicone is especially manufactured by Dow Corning under the reference PH-1555 HRI or Dow Corning 555 Cosmetic Fluid (chemical name: 1,3,5-trimethyl-1,1,3,5,5-pentaphenyl trisiloxane; INCI name: trimethyl pentaphenyl trisiloxane). The reference Dow Corning 554 Cosmetic Fluid may also be used.

- the phenyl silicone oils corresponding to the following formula:



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

- the phenyl silicone oils corresponding to formula (V) below:

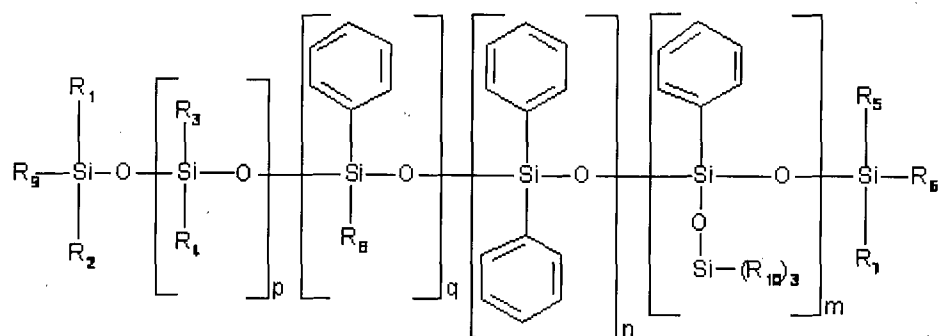


in which in formula (V) Me is methyl and Ph is phenyl, OR' represents a group $-\text{OSiMe}_3$ and y is 0 or ranges between 1 and 1000, and z ranges between 1 and 1000, such that compound (V) is a non-volatile oil.

According to a first embodiment, y ranges between 1 and 1000. Use may be made, for example, of trimethyl siloxyphenyl dimethicone, especially under the reference Belsil PDM 1000 sold by the company Wacker.

According to a second embodiment, y is equal to 0. Use may be made, for example, of phenyl trimethylsiloxy trisiloxane, sold especially under the reference Dow Corning 556 Cosmetic Grade Fluid,

- the phenyl silicone oils corresponding to formula (VI) below, and mixtures thereof:



(VI)

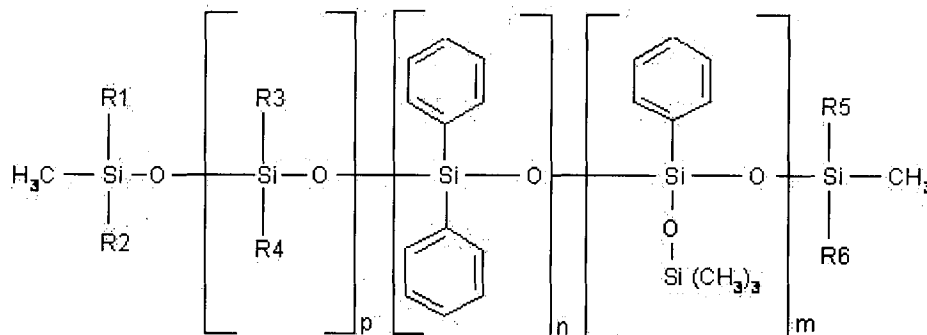
in which in formula (VI):

- R₁ to R₁₀, independently of each other, are saturated or unsaturated, linear, cyclic or branched C₁-C₃₀ 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.

Preferably, the sum m+n+q is between 1 and 100. Preferably, the sum m+n+p+q is between 1 and 900 and better still between 1 and 800. Preferably, q is equal to 0.

- the phenyl silicone oils corresponding to formula (VII) below, and mixtures thereof:



(VII)

in which in formula (VII):

- R₁ to R₆, independently of each other, are saturated or unsaturated, linear, cyclic or branched C₁-C₃₀ hydrocarbon-based radicals,

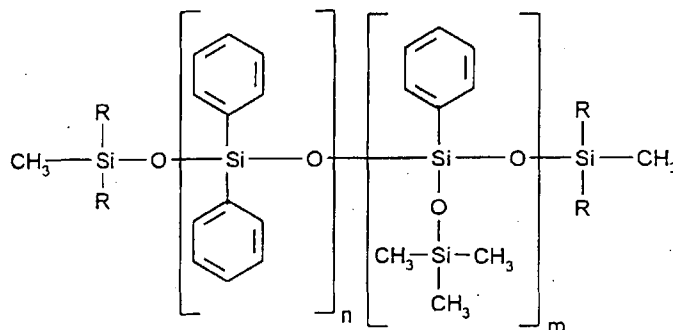
- m, n and p are, independently of each other, integers between 0 and 100, with the proviso that the sum n+m is between 1 and 100.

Preferably, R₁ to R₆, independently of each other, represent a saturated, linear or branched C₁-C₃₀ and especially C₁-C₁₂ hydrocarbon-based radical and in particular a methyl, ethyl, propyl or butyl radical.

R₁ to R₆ may especially 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 may apply, in formula (VII).

- the phenyl silicone oils corresponding to formula (VIII), and mixtures thereof:



(VIII)

in which in formula (VIII):

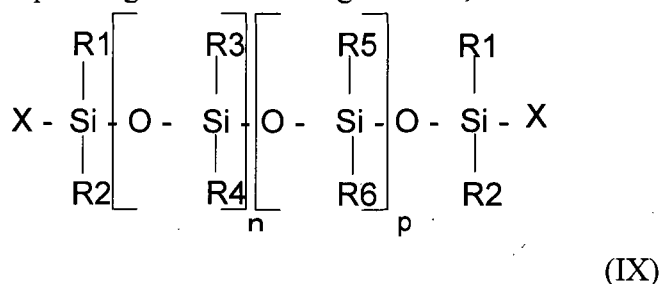
- R is a C₁-C₃₀ alkyl radical, an aryl radical or an aralkyl radical, preferably R is CH₃,
 - n is an integer ranging from 0 to 100, and
 - m is an integer ranging from 0 to 100, with the proviso that the sum n+m ranges from 1 to 100.
 In particular, the radicals R of formula (VIII) and R₁ to R₁₀ defined previously may each
 5 represent a linear or branched, saturated or unsaturated alkyl radical, especially of C₂-C₂₀, in
 particular C₃-C₁₆ and more particularly C₄-C₁₀, or a monocyclic or polycyclic C₆-C₁₄ and
 especially C₁₀-C₁₃ aryl radical, or an aralkyl radical whose aryl and alkyl residues are as defined
 previously.

Preferably, R of formula (VIII) and R₁ to R₁₀ may each represent a methyl, ethyl, propyl,
 10 isopropyl, decyl, dodecyl or octadecyl radical, or alternatively a phenyl, tolyl, benzyl or
 phenethyl 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 As phenyl silicone oils of formula (VIII), it is especially possible to use phenyl trimethicones
 such as DC556 from Dow Corning (22.5 cSt), the oil Silbione 70663V30 from Rhône-Poulenc
 (28 cSt) or diphenyl dimethicones such as Belsil oils, especially Belsil PDM1000 (1000 cSt),
 Belsil PDM 200 (200 cSt) and Belsil PDM 20 (20 cSt) from Wacker. The values in parentheses
 represent the viscosities at 25°C.

20 - the phenyl silicone oils corresponding to the following formula, and mixtures thereof:



in which in formula (IX):

- R₁, R₂, R₅ and R₆ are, together or separately, an alkyl radical containing 1 to 6 carbon atoms,
 - R₃ and R₄ are, together or separately, an alkyl radical containing from 1 to 6 carbon atoms or an
 25 aryl radical,
 - X is an alkyl radical containing from 1 to 6 carbon atoms, a hydroxyl radical or a vinyl radical,
 - n and p being chosen so as to give the oil a weight-average molecular mass of less than
 200 000 g/mol, preferably less than 150 000 g/mol and more preferably less than 100 000 g/mol.

30 The phenyl silicones that are most particularly suitable for use in the invention are those
 corresponding to formulae (II) and especially to formulae (III), (V) and (VIII) hereinabove.
 More particularly, the phenyl silicones are chosen from phenyl trimethicones, phenyl
 dimethicones, phenyl-trimethylsiloxydiphenylsiloxanes, diphenyl dimethicones,
 diphenylmethyl-diphenyltrisiloxanes and 2-phenylethyl trimethylsiloxysilicates, and mixtures
 35 thereof.

Preferably, the weight-average molecular weight of the non-volatile phenyl silicone oil according
 to the invention ranges from 500 to 10 000 g/mol.

It should be noted that, among the silicone compounds according to the invention, phenyl
 40 silicone oils prove to be particularly advantageous.

Volatile oil

The liquid fatty phase may optionally comprise at least one volatile oil. The term "volatile oil"
 45 means an oil (or non-aqueous medium) that can evaporate on contact with the skin in less than
 one hour, at room temperature and atmospheric pressure. The volatile oil is a cosmetic volatile

oil, which is liquid at room temperature. More specifically, a volatile oil has an evaporation rate of between 0.01 and 200 mg/cm²/min, limits included.

To measure this evaporation rate, 15 g of oil or of oil mixture to be tested are placed in a crystallizing dish 7 cm in diameter, which is placed on a balance in a large chamber of about 0.3 m³ that is temperature-regulated, at a temperature of 25°C, and hygrometry-regulated, at a relative humidity of 50%. The liquid is allowed to evaporate freely, without stirring it, while providing ventilation by means of a fan (Papst-Motoren, reference 8550 N, rotating at 2700 rpm) placed in a vertical position above the crystallizing dish containing said oil or said mixture, the blades being directed towards the crystallizing dish, 20 cm away from the bottom of the crystallizing dish. The mass of oil remaining in the crystallizing dish is measured at regular intervals. The evaporation rates are expressed in mg of oil evaporated per unit of area (cm²) and per unit of time (minutes).

This volatile oil may be a hydrocarbon-based oil, silicone oil or fluoro oil. It is preferably a hydrocarbon-based oil.

The term "hydrocarbon-based oil" means an oil mainly containing hydrogen and carbon atoms.

The term "silicone oil" means an oil containing at least one silicon atom, and especially containing Si-O groups. According to one embodiment, the said composition comprises less than 10% by weight of non-volatile silicone oil(s), in relation to the total weight of the powdery cosmetic composition, better still less than 5% by weight, or even is free of silicone oil.

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

The oils may optionally comprise oxygen, nitrogen, sulfur and/or phosphorus atoms, for example in the form of hydroxyl or acid radicals.

The volatile oils may be chosen from hydrocarbon-based oils containing from 8 to 16 carbon atoms, and especially C₈-C₁₆ branched alkanes (also known as isoparaffins), for instance isododecane, isodecane and isohexadecane.

The volatile hydrocarbon-based oil may also be a linear volatile alkane containing from 7 to 17 carbon atoms, in particular from 9 to 15 carbon atoms and more particularly from 11 to 13 carbon atoms. Mention may be made especially of n-nonadecane, n-decane, n-undecane, n-dodecane, n-tridecane, n-tetradecane, n-pentadecane and n-hexadecane, and mixtures thereof.

Preferably, the powdery cosmetic composition is free of volatile oil. Such an absence of volatile oil makes it possible, where appropriate, to dispense with a perfectly leaktight conditioning assembly for the said composition.

(III) Film-Forming Polymer

The powdery cosmetic composition according to the present invention comprises at least one film-forming polymer.

For the purposes of the present invention, the term "polymer" means a compound corresponding to the repetition of one or more units (these units being derived from compounds known as monomers). This or these units(s) are repeated at least twice and preferably at least three times.

The term "film-forming polymer" means a polymer that is capable of forming, by itself or in the presence of an auxiliary film-forming agent, a macroscopically continuous film that adheres to a support, especially to keratin materials, preferably a cohesive film, and better still a film whose cohesion and mechanical properties are such that the said film may be isolable and manipulable in isolation, for example, when the said film is prepared by pouring onto a non-stick surface, for instance, a Teflon-coated or silicone-coated surface.

The film-forming polymer used in the powdery cosmetic composition according to the present invention may preferably be a hydrophobic film-forming polymer. For the purposes of the present invention, the term "hydrophobic film-forming polymer" is intended to denote a film-forming polymer that has no affinity for water and, in this respect, does not lend itself to formulation in the form of a solute in an aqueous medium. In particular, the term "hydrophobic polymer" means a polymer with a solubility in water at 25°C of less than 1% by weight.

In one preferred embodiment, the film-forming polymer is a polymer chosen from the group comprising:

- film-forming polymers that are soluble in an organic solvent medium, in particular liposoluble polymers; this means that the polymer is soluble or miscible in the organic medium and will form a single homogeneous phase when it is incorporated into the medium;
- film-forming polymers that are dispersible in an organic solvent medium; this means that the polymer forms an insoluble phase in the organic medium, the polymer remaining stable and/or compatible once incorporated into this medium. In particular, such polymers may be in the form of non-aqueous dispersions of polymer particles, preferably dispersions in silicone-based or hydrocarbon-based oils; in one embodiment, the non-aqueous dispersions of polymer comprise polymer particles stabilized on their surface with at least one stabilizer; these non-aqueous dispersions are often referred to as "NADs"; and
- film-forming polymers in the form of aqueous dispersions of polymer particles; this means that the polymer forms an insoluble phase in water, the polymer remaining stable and/or compatible once incorporated into the water, the polymer particles possibly being stabilized at their surface with at least one stabilizer. These polymer particles are often referred to as "latices"; in this case, the composition must comprise an aqueous phase.

The amount of the film-forming polymer may be from 0.1% to 15% by weight, preferably from 0.5% to 10% by weight, and more preferably from 1.0% to 5% by weight in relation to the total weight of the powdery cosmetic composition according to the present invention.

It is preferable that the film-forming polymer be selected from the group consisting of polyamide-silicone block polymers, block ethylenic polymers, vinyl polymers comprising at least one carboxiloxane dendrimer derivative, copolymers comprising carboxylate groups and polydimethylsilixane groups, silicone resins, lipodispersible polymers in the form of a non-aqueous dispersion of polymer particles, olefin copolymers selected from amorphous olefin copolymers and olefin copolymers with controlled and moderate crystallization, hydrocarbon-based resins having a number-average molecular weight of less than or equal to 10,000 g/ml, and a mixture thereof, more preferably from silicone resins.

(1) Polyamide-silicone block polymer

According to one embodiment, the cosmetic composition according to the present invention comprises, as a film-forming polymer, at least one polyamide-silicone block polymer, also known as a silicone polyamide.

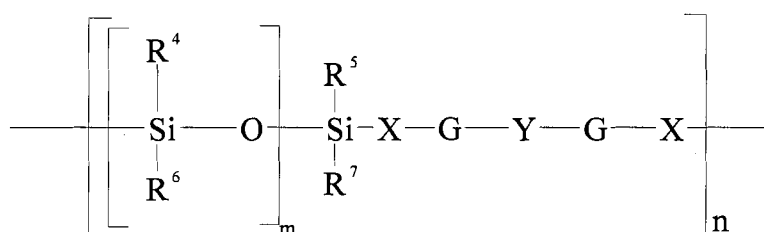
The silicone polyamides are preferably solid at room temperature (25°C) and atmospheric pressure (760 mmHg).

The silicone polyamides may be polymers of the polyorganosiloxane type, for instance, those described in documents US-A-5 874 069, US-A-5 919 441, US-A-6 051 216 and US-A-5 981 680. According to the present invention, the silicone polymers may belong to the following two families:

- (a) polyorganosiloxanes comprising at least two amide groups, these two groups being located in the polymer chain, and/or
- (b) polyorganosiloxanes comprising at least two amide groups, these two groups being located on grafts or branches.

According to a first variant, the silicone polymers are polyorganosiloxanes as defined above in which the units capable of establishing hydrogen interactions are located in the polymer chain.

The silicone polymers may more particularly be polymers comprising at least one unit corresponding to the general formula I:



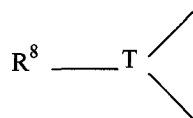
(I)

in which:

- R^4 , R^5 , R^6 and R^7 , which may be identical or different, represent a group chosen from
- linear, branched or cyclic, saturated or unsaturated, C_1 to C_{40} hydrocarbon-based groups, possibly containing in their chain one or more oxygen, sulfur and/or nitrogen atoms, and possibly being partially or totally substituted with fluorine atoms,
 - C_6 - C_{10} aryl groups, optionally substituted with one or more C_1 - C_4 alkyl groups,
 - polyorganosiloxane chains possibly containing one or more oxygen, sulfur and/or nitrogen atoms,

the groups X, which may be identical or different, represent a linear or branched C_1 to C_{30} alkylenediyl group, possibly containing in its chain one or more oxygen and/or nitrogen atoms; Y is a saturated or unsaturated C_1 to C_{50} linear or branched alkylene, arylene, cycloalkylene, alkylarylene or arylalkylene divalent group, which may comprise one or more oxygen, sulfur and/or nitrogen atoms and/or which may bear as a substituent one of the following atoms or groups of atoms: fluorine, hydroxyl, C_3 to C_8 cycloalkyl, C_1 to C_{40} alkyl, C_5 to C_{10} aryl, phenyl optionally substituted with 1 to 3 of C_1 to C_3 alkyl, C_1 to C_3 hydroxyalkyl and C_1 to C_6 aminoalkyl groups, or

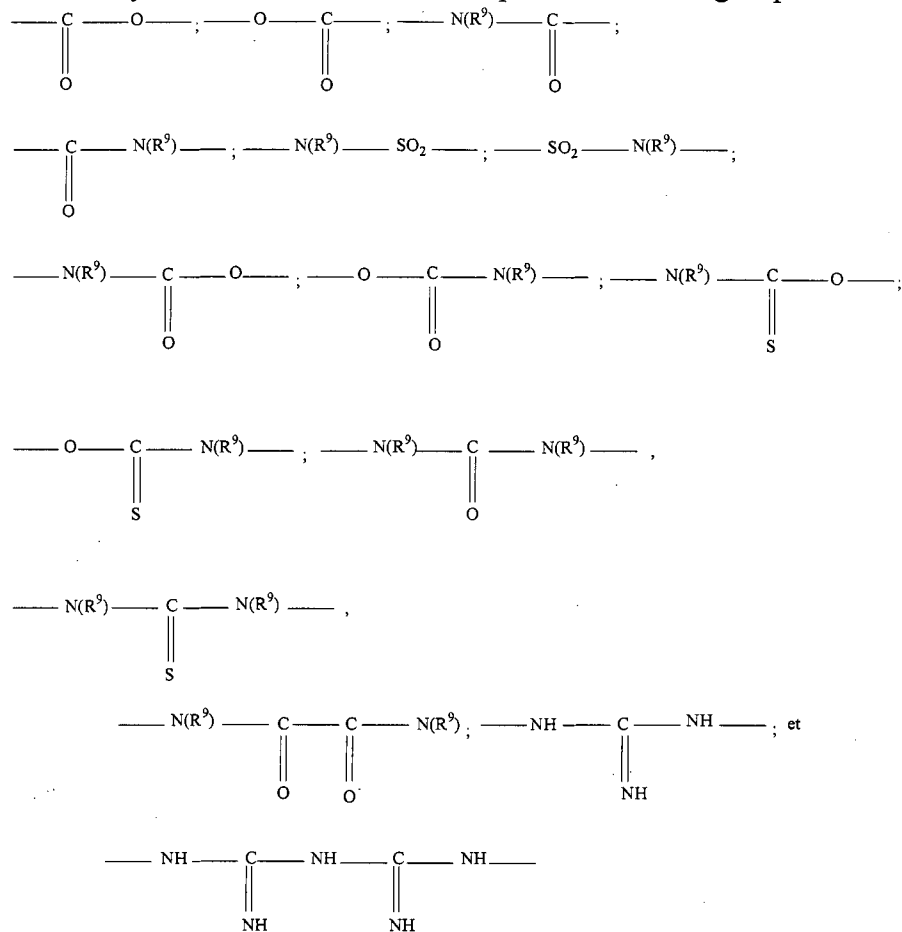
Y represents a group corresponding to the formula:



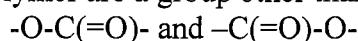
in which:

T represents a linear or branched, saturated or unsaturated, C_3 to C_{24} trivalent or tetravalent hydrocarbon-based group optionally substituted with a polyorganosiloxane chain, and possibly containing one or more atoms chosen from O, N and S, or T represents a trivalent atom chosen from N, P and Al, and

R^8 represents a linear or branched C_1 to C_{50} alkyl group or a polyorganosiloxane chain, possibly comprising one or more ester, amide, urethane, thiocarbamate, urea, thiourea and/or sulfonamide groups, which may possibly be linked to another chain of the polymer;
the groups G , which may be identical or different, represent divalent groups chosen from:



in which R^9 represents a hydrogen atom or a linear or branched C_1 to C_{20} alkyl group, on condition that at least 50% of the groups R^9 of the polymer represent a hydrogen atom and that at least two of the groups G of the polymer are a group other than



and

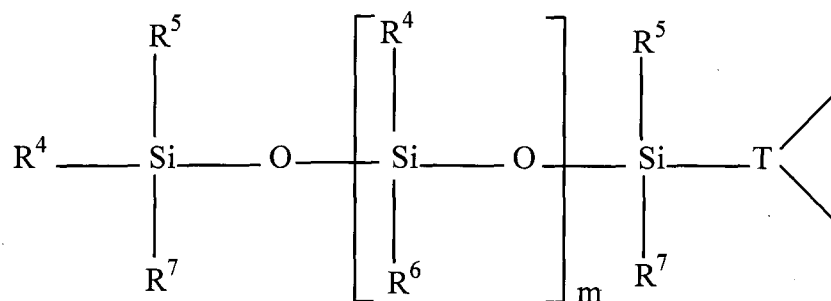
n is an integer ranging from 2 to 500 and preferably from 2 to 200, and m is an integer ranging from 1 to 1000, preferably from 1 to 700 and better still from 6 to 200.

- 15 According to the present invention, 80% of the groups R^4 , R^5 , R^6 and R^7 of the polymer are preferably chosen from methyl, ethyl, phenyl and 3,3,3-trifluoropropyl groups.

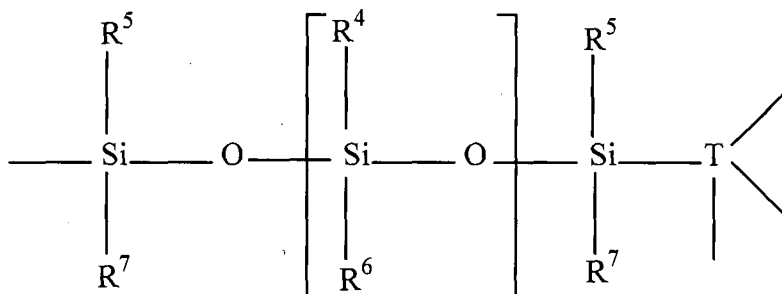
According to the present invention, Y can represent various divalent groups, further optionally comprising one or two free valencies to establish bonds with other units of the polymer or copolymer. Preferably, Y represents a group chosen from:

- C_1 to C_{20} and preferably C_1 to C_{10} linear alkylene groups,
- C_{30} to C_{56} branched alkylene groups possibly comprising rings and unconjugated unsaturations,
- C_5 to C_6 cycloalkylene groups,
- phenylene groups optionally substituted with one or more C_1 to C_{40} alkyl groups,
- C_1 to C_{20} alkylene groups comprising from 1 to 5 amide groups,
- C_1 to C_{20} alkylene groups comprising one or more substituents chosen from hydroxyl, C_3 to C_8 cycloalkane, C_1 to C_3 hydroxyalkyl and C_1 to C_6 alkylamine groups,

- polyorganosiloxane chains of formula:

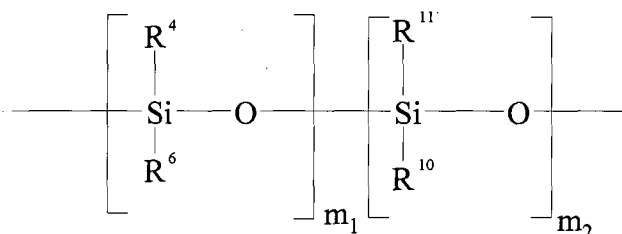


in which R^4 , R^5 , R^6 , R^7 , T and m are as defined above, and
polyorganosiloxane chains of formula:



5

According to the second variant, the polyorganosiloxanes may be polymers comprising at least one unit corresponding to formula (II):



(II)

10 in which:

R^4 and R^6 , which may be identical or different, are as defined above for formula (I),

R^{10} represents a group as defined above for R^4 and R^6 , or represents a group of formula $-\text{X}-\text{G}-\text{R}^{12}$

in which X and G are as defined above for formula (I) and R^{12} represents a hydrogen atom or a linear, branched or cyclic, saturated or unsaturated, C_1 to C_{50} hydrocarbon-based group

15 optionally comprising in its chain one or more atoms chosen from O, S and N, optionally substituted with one or more fluorine atoms and/or one or more hydroxyl groups, or a phenyl group optionally substituted with one or more C_1 to C_4 alkyl groups,

R^{11} represents the group of formula $-\text{X}-\text{G}-\text{R}^{12}$ in which X, G and R^{12} are as defined above,

m_1 is an integer ranging from 1 to 998, and

20 m_2 is an integer ranging from 2 to 500.

According to the present invention, the silicone polymer used as structuring agent may be a homopolymer, i.e., a polymer comprising several identical units, in particular units of formula (I) or of formula (II).

25

According to the present invention, it is also possible to use a silicone polymer formed from a copolymer comprising several different units of formula (I), i.e., a polymer in which at least one of the groups R^4 , R^5 , R^6 , R^7 , X, G, Y, m and n is different in one of the units. The copolymer

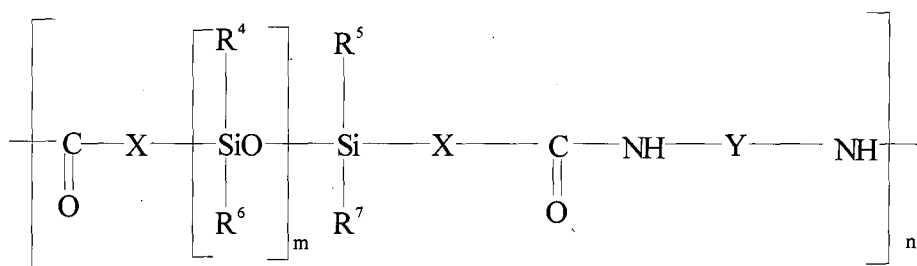
may also be formed from several units of formula (II), in which at least one of the groups R^4 , R^6 , R^{10} , R^{11} , m_1 and m_2 is different in at least one of the units.

5 It is also possible to use a polymer comprising at least one unit of formula (I) and at least one unit of formula (II), the units of formula (I) and the units of formula (II) possibly being identical to or different from each other.

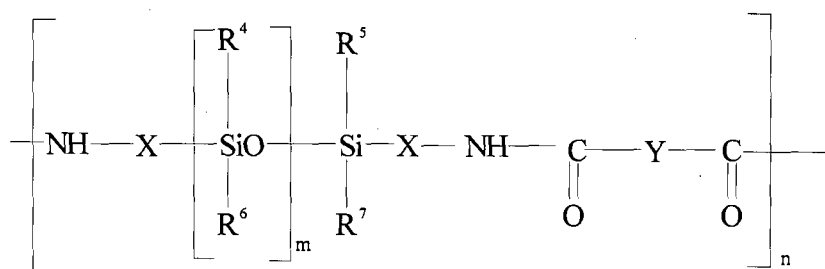
10 According to one variant, it is also possible to use a polymer further comprising at least one hydrocarbon-based unit comprising two groups capable of establishing hydrogen interactions, chosen from ester, amide, sulfonamide, carbamate, thiocarbamate, urea, urethane, thiourea, oxamido, guanidino and biguanidino groups, and combinations thereof.

These copolymers may be block polymers or grafted polymers.

15 According to one advantageous embodiment of the present invention, the groups capable of establishing hydrogen interactions are amide groups of formulae $-C(O)NH-$ and $-HN-C(O)-$. In this case, the structuring agent may be a polymer comprising at least one unit of formula (III) or (IV):



(III)

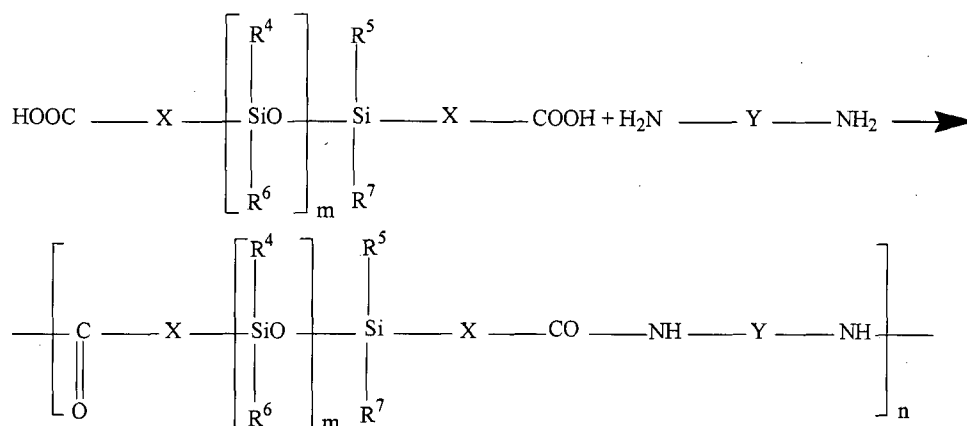


(IV)

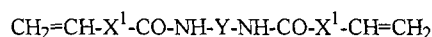
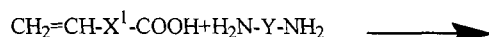
20 in which R^4 , R^5 , R^6 , R^7 , X, Y, m and n are as defined above.

Such a unit may be obtained:

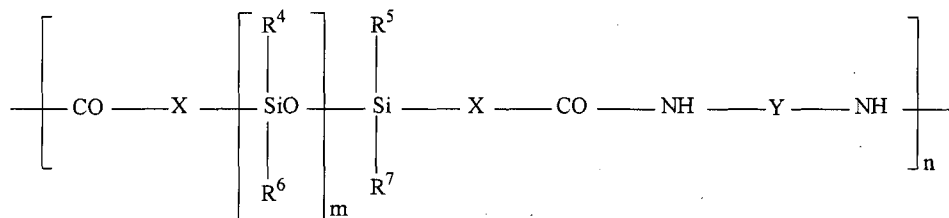
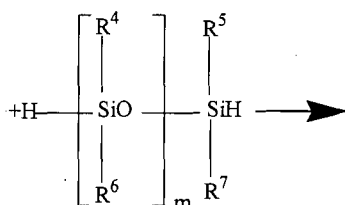
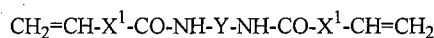
25 either by a condensation reaction between a silicone containing α , ω - carboxylic acid end units and one or more diamines, according to the following reaction scheme:



or by reaction of two unsaturated α carboxylic acid molecules with a diamine according to the following reaction scheme:

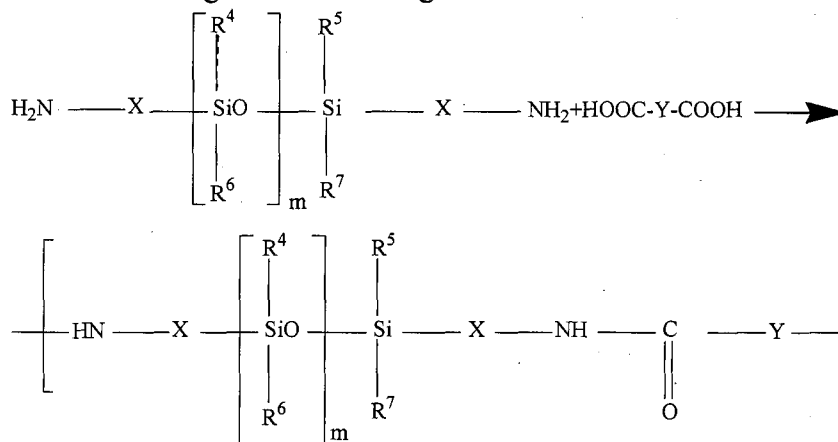


- 5 followed by the addition of a siloxane to the ethylenic unsaturations, according to the following scheme:



in which $\text{X}^1-(\text{CH}_2)_2-$ corresponds to X defined above and Y, R^4 , R^5 , R^6 , R^7 and m are as defined above,

- 10 or by reaction of a silicone containing α , ω - NH_2 end groups and of a diacid of formula $\text{HOOC}-\text{Y}-\text{COOH}$ according to the following reaction scheme:



In these polyamides of formula (III) or (IV), m ranges from 1 to 700, in particular from 15 to 500 and especially from 50 to 200, and n ranges in particular from 1 to 500, preferably from 1 to 100 and better still from 4 to 25,

15

X is preferably a linear or branched alkylene chain containing from 1 to 30 carbon atoms, in particular from 1 to 20 carbon atoms, especially from 5 to 15 carbon atoms and more particularly 10 carbon atoms, and

Y is preferably an alkylene chain that is linear or branched, or which may comprise rings and/or unsaturations, containing from 1 to 40 carbon atoms, in particular from 1 to 20 carbon atoms and better still from 2 to 6 carbon atoms, in particular 6 carbon atoms.

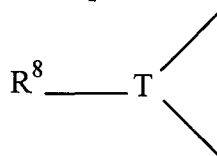
In formulae (III) and (IV), the alkylene group representing X or Y can optionally contain in its alkylene part at least one of the following components:

one to five amide, urea, urethane or carbamate groups,
a C₅ or C₆ cycloalkyl group, and
a phenylene group optionally substituted with 1 to 3 identical or different C₁ to C₃ alkyl groups.

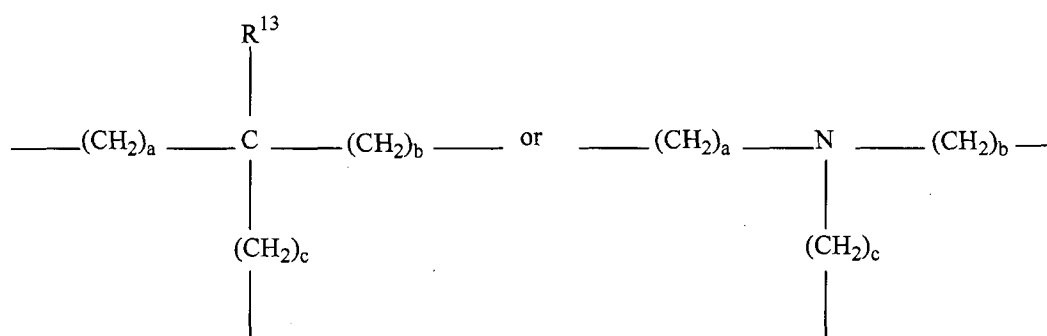
In formulae (III) and (IV), the alkylene groups may also be substituted with at least one component chosen from the group consisting of:

a hydroxyl group,
a C₃ to C₈ cycloalkyl group,
one to three C₁ to C₄₀ alkyl groups,
a phenyl group optionally substituted with one to three C₁ to C₃ alkyl groups,
a C₁ to C₃ hydroxyalkyl group, and
a C₁ to C₆ aminoalkyl group.

In these formulae (III) and (IV), Y may also represent:



in which R⁸ represents a polyorganosiloxane chain and T represents a group of formula:

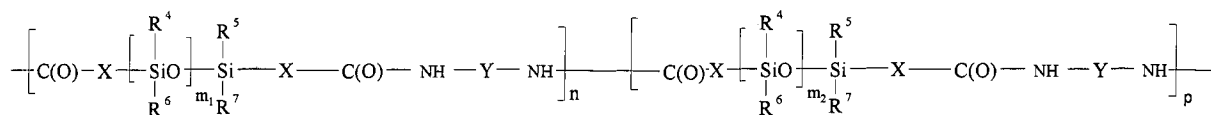


in which a, b and c are, independently, integers ranging from 1 to 10, and R¹³ is a hydrogen atom or a group such as those defined for R⁴, R⁵, R⁶ and R⁷.

In formulae (III) and (IV), R⁴, R⁵, R⁶ and R⁷ preferably represent, independently, a linear or branched C₁ to C₄₀ alkyl group, preferably a CH₃, C₂H₅, n-C₃H₇ or isopropyl group, a polyorganosiloxane chain or a phenyl group optionally substituted with one to three methyl or ethyl groups.

As has been seen previously, the polymer may comprise identical or different units of formula (III) or (IV).

Thus, the polymer may be a polyamide containing several units of formula (III) or (IV) of different lengths, i.e., a polyamide corresponding to formula (V):

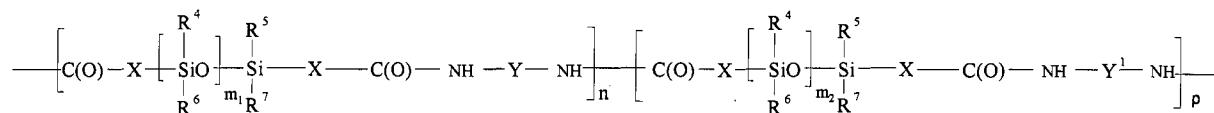


(V)

i

n which X, Y, n and R⁴ to R⁷ have the meanings given above, m₁ and m₂, which are different, are chosen in the range from 1 to 1000, and p is an integer ranging from 2 to 300.

- 5 In this formula, the units may be structured to form either a block copolymer, or a random copolymer or an alternating copolymer. In this copolymer, the units may be not only of different lengths, but also of different chemical structures, for example, containing different groups Y. In this case, the polymer may correspond to formula VI:



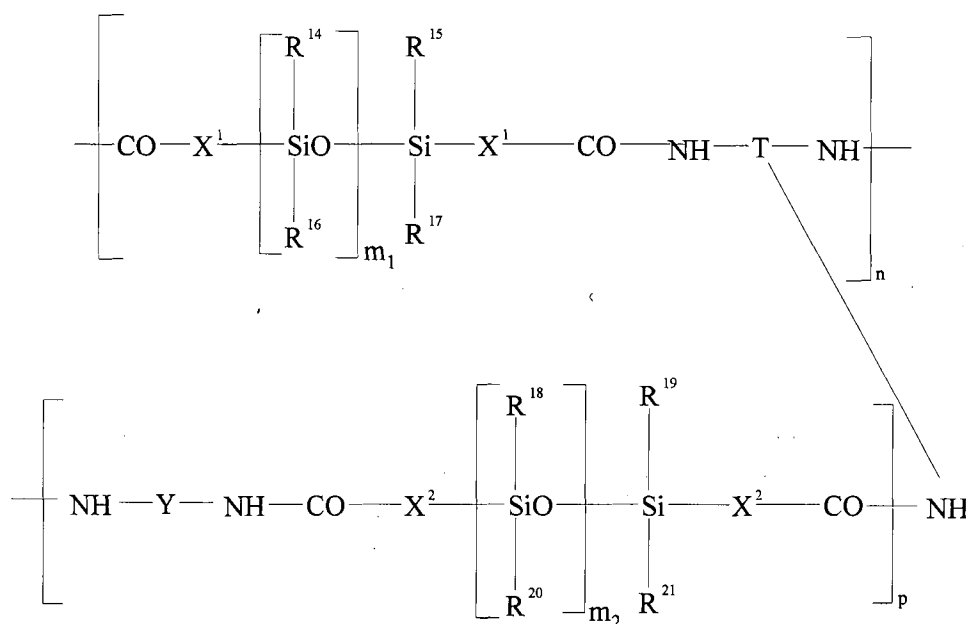
(VI)

i

- 10 n which R⁴ to R⁷, X, Y, m₁, m₂, n and p have the meanings given above and Y¹ is different from Y but chosen from the groups defined for Y. As described previously, the various units may be structured to form either a block copolymer, or a random copolymer or an alternating copolymer.

- 15 In this first embodiment of the present invention, the structuring agent may also be formed from a grafted copolymer. Thus, the polyamide containing silicone units may be grafted and optionally crosslinked with silicone chains containing amide groups. Such polymers may be synthesized with trifunctional amines.

In this case, the polymer may comprise at least one unit of formula (VII):



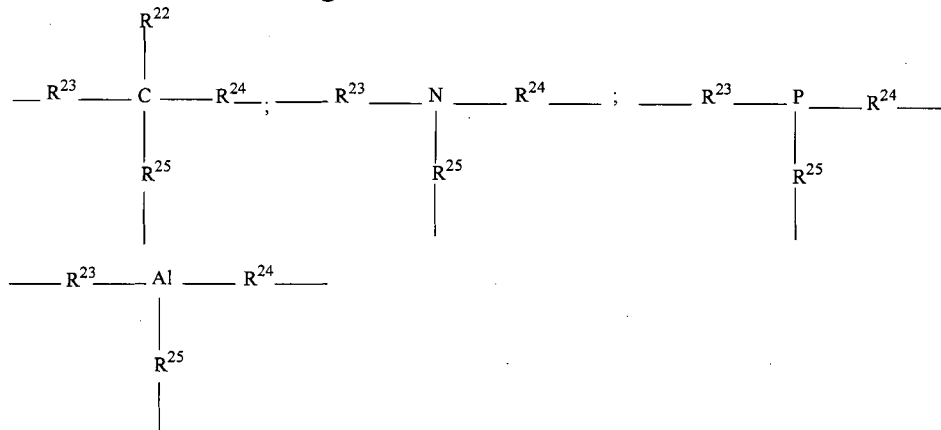
(VII)

- 20 in which X¹ and X², which are identical or different, have the meaning given for X in formula (I), n is as defined in formula (I), Y and T are as defined in formula (I), R¹⁴ to R²¹ are groups chosen

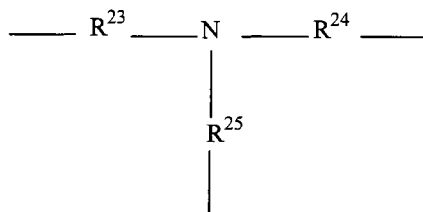
from the same group as R^4 to R^7 , m_1 and m_2 are numbers located in the range from 1 to 1000, and p is an integer ranging from 2 to 500.

In formula (VII), the following are preferred:

- 5 p ranges from 1 to 25 and better still from 1 to 7,
 R^{14} to R^{21} are methyl groups,
 T corresponds to one of the following formulae:



- 10 in which R^{22} is a hydrogen atom or a group chosen from the groups defined for R^4 to R^7 , and R^{23} , R^{24} and R^{25} are, independently, linear or branched alkylene groups, more preferably corresponding to the formula:



- 15 in particular with R^{23} , R^{24} and R^{25} representing $-\text{CH}_2-\text{CH}_2-$,
 m_1 and m_2 range from 15 to 500 and better still from 15 to 45,
 X^1 and X^2 represent $-(\text{CH}_2)_{10}-$, and
 Y represents $-\text{CH}_2-$.

- 20 These polyamides containing a grafted silicone unit of formula (VII) may be copolymerized with polyamide silicones of formula (II) to form block copolymers, alternating copolymers or random copolymers. The weight percentage of grafted silicone units (VII) in the copolymer may range from 0.5% to 30% by weight.

- 25 According to the present invention, as has been seen previously, the siloxane units may be in the main chain or backbone of the polymer, but they may also be present in grafted or pendent chains. In the main chain, the siloxane units may be in the form of segments as described above. In the pendent or grafted chains, the siloxane units may appear individually or in segments.

- 30 According to one embodiment variant of the present invention, a copolymer of silicone polyamide and of hydrocarbon-based polyamide, or a copolymer comprising units of formula (III) or (IV) and hydrocarbon-based polyamide units, may be used. In this case, the silicone polyamide units may be located at the ends of the hydrocarbon-based polyamide.

- 35 According to one preferred embodiment, the silicone polyamide comprises units of formula III, preferably in which the groups R^4 , R^5 , R^6 and R^7 represent methyl groups, one from among X and Y represents an alkylene group of 6 carbon atoms and the other represents an alkylene group of 11 carbon atoms, n representing the degree of polymerization, DP, of the polymer. By way

of example of such silicone polyamides, mention may be made of the compounds sold by the company Dow Corning under the names DC 2-8179 (DP 100) and DC 2-8178 (DP 15), the INCI name of which is Nylon-611/dimethicone copolymer.

- 5 Advantageously, the cosmetic composition according to the present invention comprises at least one polydimethylsiloxane block polymer of general formula (I) with an index m of about 15.

More preferably, the cosmetic composition according to the present invention may comprise at least one polymer comprising at least one unit of formula (III) in which m ranges from 5 to 100,
10 in particular from 10 to 75 and even more particularly is about 15; even more preferably, R⁴, R⁵, R⁶ and R⁷ independently represent a linear or branched C₁ to C₄₀ alkyl group, preferably a group CH₃, C₂H₅, n-C₃H₇ or isopropyl in formula (III).

According to one preferred mode, the silicone polyamide sold by the company Dow Corning
15 under the name DC 2-8179 (DP 100) is used.

As examples of silicone polymers that may be used, mention may be made of one of the silicone polyamides obtained in accordance with Examples 1 to 3 of document US-A-5 981 680.

- 20 The amount of the polyamide-silicone block (co)polymer may be from 0.1% to 15% by weight, preferably from 0.5% to 10% by weight, and more preferably from 1.0% to 5% by weight, in relation to the total weight of the powdery cosmetic composition.

(2) Block ethylenic polymer

25 According to one embodiment of the present invention, the film-forming polymer may be a block ethylenic copolymer, which may contain at least a first block with a glass transition temperature (T_g) of greater than or equal to 40°C and being totally or partly derived from one or more first monomers, which are such that the homopolymer prepared from these monomers has a
30 glass transition temperature of greater than or equal to 40°C, and at least a second block with a glass transition temperature of less than or equal to 20°C and being derived totally or partly from one or more second monomers, which are such that the homopolymer prepared from these monomers has a glass transition temperature of less than or equal to 20°C, the said first block and the said second block being connected together via a statistical intermediate segment
35 comprising at least one of the said first constituent monomers of the first block and at least one of the said second constituent monomers of the second block, and the said block copolymer having a polydispersity index I of greater than 2.

40 The block polymer used according to the present invention thus comprises at least one first block and at least one second block.

The term "at least one block" means one or more blocks.

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

The term "ethylenic" polymer means a polymer obtained by polymerization of ethylenically unsaturated monomers.

50 The block ethylenic polymer used according to the present invention is prepared exclusively from monofunctional monomers.

This means that the block ethylenic polymer used according to the present invention does not contain any multifunctional monomers, which make it possible to break the linearity of a polymer so as to obtain a branched or even crosslinked polymer, as a function of the content of multifunctional monomer. The polymer used according to the present invention also does not
5 contain any macromonomers (the term "macromonomer" means a monofunctional monomer containing pendent groups of polymeric nature, and preferably having a molecular mass of greater than 500 g/mol, or alternatively a polymer comprising on only one of its ends a polymerizable (or ethylenically unsaturated) end group), which are used in the preparation of a grafted polymer.

10 It is pointed out that, in the text hereinabove and hereinbelow, the terms "first" and "second" blocks do not in any way condition the order of the said blocks in the structure of the block polymer.

15 The first block and the second block of the polymer used in the present invention may be advantageously mutually incompatible.

The term "mutually incompatible blocks" means that the mixture formed from the polymer corresponding to the first block and from the polymer corresponding to the second block is not
20 miscible in the polymerization solvent that is in major amount by weight for the block polymer, at room temperature (25°C) and atmospheric pressure (10⁵ Pa), for a content of the mixture of the said polymers of greater than or equal to 5% by weight, in relation to the total weight of the mixture of the said polymers and of the said polymerization solvent, it being understood that:

- 25 i) the said polymers are present in the mixture in a content such that the respective weight ratio ranges from 10/90 to 90/10, and that
ii) each of the polymers corresponding to the first and second blocks has an average (weight-average or number-average) molecular mass equal to that of the block polymer $\pm 15\%$.

30 In the case of a mixture of polymerization solvents, and in the event that two or more solvents are present in identical mass proportions, the said polymer mixture is immiscible in at least one of them.

35 Needless to say, in the case of a polymerization performed in a single solvent, this solvent is the solvent that is in major amount.

The block polymer used according to the present invention may comprise at least a first block and at least a second block that are connected together via an intermediate segment comprising at least one constituent monomer of the first block and at least one constituent monomer of the
40 second block. The intermediate segment (also known as the intermediate block) has a glass transition temperature T_g that is between the glass transition temperatures of the first and second blocks.

45 The intermediate segment is a block comprising at least one constituent monomer of the first block and at least one constituent monomer of the second block of the polymer allowing these blocks to be made "compatible".

Advantageously, the intermediate segment comprising at least one constituent monomer of the first block and at least one constituent monomer of the second block of the block polymer is a
50 statistical polymer.

Preferably, the intermediate block is derived essentially from constituent monomers of the first block and of the second block.

The term “essentially” means at least 85%, preferably at least 90%, better still 95% and even better still 100%.

The block polymer used according to the present invention is advantageously a film-forming block ethylenic polymer.

The term “ethylenic” polymer means a polymer obtained by polymerization of ethylenically unsaturated monomers.

Preferentially, the polymer used according to the present invention does not comprise any silicon atoms in its backbone. The term “backbone” means the main chain of the polymer, as opposed to the pendent side chains.

Preferably, the polymer used according to the present invention is not water-soluble, i.e., the polymer is not soluble in water or in a mixture of water and linear or branched lower monoalcohols containing from 2 to 5 carbon atoms, for instance, ethanol, isopropanol or n-propanol, without modifying the pH, at the solids content of at least 1% by weight, at room temperature (25°C).

Preferably, the polymer used according to the present invention is not an elastomer.

The term “non-elastomeric polymer” means a polymer which, when it is subjected to a constraint intended to stretch it (for example, by 30% in relation to its initial length), it does not return to a length substantially identical to its initial length when the constraint ceases.

More specifically, the term “non-elastomeric polymer” denotes a polymer with an instantaneous recovery $R_i < 50\%$ and a delayed recovery $R_{2h} < 70\%$ after having been subjected to a 30% elongation. Preferably, R_i is $< 30\%$ and $R_{2h} < 50\%$.

More specifically, the non-elastomeric nature of the polymer is determined according to the following protocol.

A polymer film is prepared by pouring a solution of the polymer in a Teflon-coated mould, followed by drying for 7 days in an environment conditioned at $23 \pm 5^\circ\text{C}$ and $50 \pm 10\%$ relative humidity.

A film about 100 μm thick is thus obtained, from which are cut rectangular specimens (for example, using a punch) 15 mm wide and 80 mm long.

This sample is subjected to a tensile stress using a machine sold under the reference Zwick, under the same temperature and humidity conditions as for the drying.

The specimens are pulled at a speed of 50 mm/min and the distance between the jaws is 50 mm, which corresponds to the initial length (I_0) of the specimen.

The instantaneous recovery R_i is determined in the following manner:

- the specimen is pulled by 30% (ϵ_{max}), i.e., about 0.3 times its initial length (I_0)

- the constraint is released by applying a return speed equal to the tensile speed, i.e., 50 mm/min, and the residual elongation of the specimen is measured as a percentage, after returning to zero constraint (ϵ_i).

5 The percentage instantaneous recovery (R_i) is given by the following formula:

$$R_i = (\epsilon_{\max} - \epsilon_i) / \epsilon_{\max} \times 100$$

To determine the delayed recovery, the percentage residual elongation of the specimen (ϵ_{2h}) is measured 2 hours after returning to zero constraint.

10

The percentage delayed recovery (R_{2h}) is given by the following formula:

$$R_{2h} = (\epsilon_{\max} - \epsilon_{2h}) / \epsilon_{\max} \times 100$$

15 Purely as a guide, a polymer according to one embodiment of the present invention preferably has an instantaneous recovery R_i of 10% and a delayed recovery R_{2h} of 30%.

The polydispersity index of the polymer of the present invention is greater than 2.

20 Advantageously, the block polymer used in the cosmetic compositions according to the present invention has a polydispersity index I of greater than 2, for example, ranging from 2 to 9, preferably greater than or equal to 2.5, for example, ranging from 2.5 to 8 and better still greater than or equal to 2.8, and especially ranging from 2.8 to 6.

25 The polydispersity index I of the polymer is equal to the ratio of the weight-average molecular mass M_w to the number-average molecular mass M_n .

30 The weight-average molar mass (M_w) and number-average molar mass (M_n) are determined by gel permeation liquid chromatography (THF solvent, calibration curve established with linear polystyrene standards, refractometric detector).

The weight-average mass (M_w) of the polymer used according to the present invention is preferably less than or equal to 300 000; it ranges, for example, from 35 000 to 200 000 and better still from 45 000 to 150 000 g/mol.

35 The number-average mass (M_n) of the polymer used according to the present invention is preferably less than or equal to 70 000; it ranges, for example, from 10 000 to 60 000 and better still from 12 000 to 50 000 g/mol.

40 Preferably, the polydispersity index of the polymer used according to the present invention is greater than 2, for example, ranging from 2 to 9, preferably greater than or equal to 2.5, for example, ranging from 2.5 to 8 and better still greater than or equal to 2.8, and especially ranging from 2.8 to 6.

First block with a Tg of greater than or equal to 40°C

45

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

50 The glass transition temperatures indicated for the first and second blocks may be theoretical Tg values determined from the theoretical Tg values of the constituent monomers of each of the

blocks, which may be found in a reference manual such as the Polymer Handbook, 3rd Edition, 1989, John Wiley, according to the following relationship, known as Fox's law:

$$1/T_g = \sum (\varpi_i / T_{g_i}), i$$

ϖ_i being the mass fraction of the monomer i in the block under consideration and T_{g_i} being the glass transition temperature of the homopolymer of the monomer i .

Unless otherwise indicated, the T_g values indicated for the first and second blocks in the present patent application are theoretical T_g values.

The difference between the glass transition temperatures of the first and second blocks is generally greater than 10°C, preferably greater than 20°C and better still greater than 30°C.

In the present invention, the expression: "between ... and ..." is intended to denote a range of values for which the limits mentioned are excluded, and "from ... to ..." and "ranging from ... to ..." are intended to denote a range of values for which the limits are included.

The block with a T_g of greater than or equal to 40°C may be a homopolymer or a copolymer.

The block with a T_g of greater than or equal to 40°C may be derived totally or partially from one or more monomers which are such that the homopolymer prepared from these monomers has a glass transition temperature of greater than or equal to 40°C. This block may also be referred to as a "rigid block".

In the case where this block is a homopolymer, it is derived from monomers which are such that the homopolymers prepared from these monomers have glass transition temperatures of greater than or equal to 40°C. This first block may be a homopolymer consisting of only one type of monomer (for which the T_g of the corresponding homopolymer is greater than or equal to 40°C).

In the case where the first block is a copolymer, it may be totally or partially derived from one or more monomers, the nature and concentration of which are chosen such that the T_g of the resulting copolymer is greater than or equal to 40°C.

The copolymer may comprise, for example:

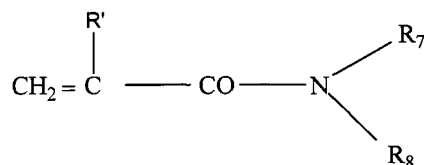
- monomers which are such that the homopolymers prepared from these monomers have T_g values of greater than or equal to 40°C, for example, a T_g ranging from 40 to 150°C, preferably greater than or equal to 50°C, for example, ranging from 50°C to 120°C and better still greater than or equal to 60°C, for example, ranging from 60°C to 120°C, and
- monomers which are such that the homopolymers prepared from these monomers have T_g values of less than 40°C, chosen from monomers with a T_g of between 20°C and 40°C and/or monomers with a T_g of less than or equal to 20°C, for example, a T_g ranging from -100°C to 20°C, preferably less than 15°C, especially ranging from -80°C to 15°C and better still less than 10°C, for example, ranging from -50°C to 0°C, as described later.

The first monomers whose homopolymers have a glass transition temperature of greater than or equal to 40°C are chosen, preferably, from the following monomers, also known as the main monomers:

- the methacrylates of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_1$

in which R_1 represents a linear or branched unsubstituted alkyl group containing from 1 to 4 carbon atoms, such as a methyl, ethyl, propyl or isobutyl group or R_1 represents a C_4 to C_{12} cycloalkyl group, preferably a C_8 to C_{12} cycloalkyl, such as isobornyl methacrylate,

- the acrylates of formula $\text{CH}_2 = \text{CH-COOR}_2$ in which R_2 represents a C_4 to C_{12} cycloalkyl group such as an isobornyl group or a tert-butyl group,
- the (meth)acrylamides of formula:



in which R_7 and R_8 , which may be identical or different, each represent a hydrogen atom or a linear or branched C_1 to C_{12} alkyl group such as an n-butyl, t-butyl, isopropyl, isohexyl, isooctyl or isononyl group; or R_7 represents H and R_8 represents a 1,1-dimethyl-3-oxobutyl group, and

- R' denotes H or methyl. Examples of monomers that may be mentioned include N-butylacrylamide, N-tert-butylacrylamide, N-isopropylacrylamide, N,N-dimethylacrylamide and N,N-dibutylacrylamide, and mixtures thereof.

The first block is advantageously obtained from at least one acrylate monomer of formula $\text{CH}_2 = \text{CH-COOR}_2$ and from at least one methacrylate monomer of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_2$ in which R_2 represents a C_4 to C_{12} cycloalkyl group, preferably a C_8 to C_{12} cycloalkyl, such as isobornyl. The monomers and the proportions thereof are preferably chosen such that the glass transition temperature of the first block is greater than or equal to 40°C .

According to one embodiment, the first block is obtained from:

- at least one acrylate monomer of formula $\text{CH}_2 = \text{CH-COOR}_2$ in which R_2 represents a C_4 to C_{12} cycloalkyl group, preferably a C_8 to C_{12} cycloalkyl, such as isobornyl, and
- at least one methacrylate monomer of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}'_2$ in which R'_2 represents a C_4 to C_{12} cycloalkyl group, preferably a C_8 to C_{12} cycloalkyl, such as isobornyl.

According to one embodiment, the first block is obtained from at least one acrylate monomer of formula $\text{CH}_2 = \text{CH-COOR}_2$ in which R_2 represents a C_8 to C_{12} cycloalkyl group, such as isobornyl, and from at least one methacrylate monomer of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}'_2$ in which R'_2 represents a C_8 to C_{12} cycloalkyl group, such as isobornyl.

Preferably, R_2 and R'_2 represents, independently or simultaneously, an isobornyl group.

Preferably, the block copolymer comprises from 50% to 80% by weight of isobornyl methacrylate/acrylate, from 10% to 30% by weight of isobutyl acrylate and from 2% to 10% by weight of acrylic acid.

The first block may be obtained exclusively from the said acrylate monomer and from the said methacrylate monomer.

The acrylate monomer and the methacrylate monomer are preferably in mass proportions of between 30/70 and 70/30, preferably between 40/60 and 60/40, especially about 50/50.

The proportion of the first block advantageously ranges from 20% to 90%, better still from 30% to 80% and even better still from 60% to 80% by weight of the polymer.

According to one embodiment, the first block is obtained by polymerization of isobornyl methacrylate and isobornyl acrylate.

Second block with a glass transition temperature of less than 20°C

The second block advantageously has a glass transition temperature T_g of less than or equal to 20°C, for example, a T_g ranging from -100°C to 20°C, preferably less than or equal to 15°C, especially ranging from -80°C to 15°C and better still less than or equal to 10°C, for example, ranging from -100°C to 10°C, especially ranging from -30°C to 10°C.

The second block is totally or partially derived from one or more second monomers, which are such that the homopolymer prepared from these monomers has a glass transition temperature of less than or equal to 20°C.

This block may also be referred to as a "flexible block".

The monomer with a T_g of less than or equal to 20°C (known as the second monomer) is preferably chosen from the following monomers:

- the acrylates of formula $\text{CH}_2 = \text{CHCOOR}_3$, R_3 representing a linear or branched C_1 to C_{12} unsubstituted alkyl group, with the exception of the tert-butyl group, in which one or more heteroatoms chosen from O, N and S are optionally intercalated,
- the methacrylates of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_4$, R_4 representing a linear or branched C_6 to C_{12} unsubstituted alkyl group, with the exception of the tert-butyl group, in which one or more heteroatoms chosen from O, N and S are optionally intercalated,
- the vinyl esters of formula $\text{R}_5\text{-CO-O-CH} = \text{CH}_2$, in which R_5 represents a linear or branched C_4 to C_{12} alkyl group,
- ethers of vinyl alcohol and of a C_4 to C_{12} alcohol,
- N-(C_4 to C_{12})alkyl acrylamides, such as N-octylacrylamide, and
- mixtures thereof.

The preferred monomers with a T_g of less than or equal to 20°C are isobutyl acrylate, 2-ethylhexyl acrylate or mixtures thereof in all proportions.

Each of the first and second blocks may contain in small proportion at least one constituent monomer of the other block.

Thus, the first block may contain at least one constituent monomer of the second block, and vice versa.

Each of the first and/or second blocks may comprise, in addition to the monomers indicated above, one or more other monomers known as additional monomers, which are different from the main monomers mentioned above.

The nature and amount of this or these additional monomer(s) are chosen such that the block in which they are present has the desired glass transition temperature.

This additional monomer is chosen, for example, from:

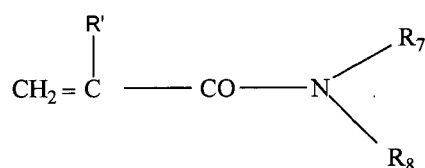
- ethylenically unsaturated monomers comprising at least one tertiary amine function, such as 2-vinylpyridine, 4-vinylpyridine, dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate, dimethylaminopropylmethacrylamide, and salts thereof,
- the methacrylates of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_6$ in which R_6 represents a linear or branched alkyl group containing from 1 to 4 carbon atoms, such as a methyl, ethyl, propyl

or isobutyl group, the said alkyl group being substituted with one or more substituents chosen from hydroxyl groups (for instance, 2-hydroxypropyl methacrylate and 2-hydroxyethyl methacrylate) and halogen atoms (Cl, Br, I or F), such as trifluoroethyl methacrylate,

- the methacrylates of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_9$, R_9 representing a linear or branched C_6 to C_{12} alkyl group in which one or more heteroatoms chosen from O, N and S are optionally intercalated, the said alkyl group being substituted with one or more substituents chosen from hydroxyl groups and halogen atoms (Cl, Br, I or F),
- the acrylates of formula $\text{CH}_2 = \text{CHCOOR}_{10}$, R_{10} representing a linear or branched C_1 to C_{12} alkyl group substituted with one or more substituents chosen from hydroxyl groups and halogen atoms (Cl, Br, I and F), such as 2-hydroxypropyl acrylate and 2-hydroxyethyl acrylate, or R_{10} represents a C_1 to C_{12} alkyl-O-POE (polyoxyethylene) with repetition of the oxyethylene unit 5 to 10 times, for example, methoxy-POE, or R_8 represents a polyoxyethylenated group comprising from 5 to 10 ethylene oxide units.

In particular, the first block may comprise as the additional monomer:

- (meth)acrylic acid, preferably acrylic acid,
- tert-butyl acrylate,
- the methacrylates of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_1$, in which R_1 represents a linear or branched unsubstituted alkyl group containing from 1 to 4 carbon atoms, such as a methyl, ethyl, propyl or isobutyl group,
- the (meth)acrylamides of formula:



in which R_7 and R_8 , which may be identical or different, each represent a hydrogen atom or a linear or branched C_1 to C_{12} alkyl group such as an n-butyl, t-butyl, isopropyl, isohexyl, isooctyl or isononyl group; or R_7 represents H and R_8 represents a 1,1-dimethyl-3-oxobutyl group, and

- R' denotes H or methyl. Examples of monomers that may be mentioned include N-butylacrylamide, N-tert-butylacrylamide, N-isopropylacrylamide, N,N-dimethylacrylamide and N,N-dibutylacrylamide, and
- mixtures thereof.

The additional monomer may represent 0.5% to 30% by weight in relation to the weight of the polymer. According to one embodiment, the polymer used in the present invention does not contain any additional monomer.

Preferably, the polymer used in the present invention comprises at least isobornyl acrylate and isobornyl methacrylate monomers in the first block and isobutyl acrylate and acrylic acid monomers in the second block.

Preferably, the polymer comprises at least isobornyl acrylate and isobornyl methacrylate monomers in equivalent weight proportion in the first block and isobutyl acrylate and acrylic acid monomers in the second block.

Preferably, the polymer comprises at least isobornyl acrylate and isobornyl methacrylate monomers in equivalent weight proportion in the first block and isobutyl acrylate and acrylic acid monomers in the second block, the first block representing 70% by weight of the polymer.

Preferably, the polymer comprises at least isobornyl acrylate and isobornyl methacrylate monomers in equivalent weight proportion in the first block and isobutyl acrylate and acrylic acid monomers in the second block. Preferably, the block with a Tg of greater than 40°C represents 70% by weight of the polymer, and acrylic acid represents 5% by weight of the polymer.

It is preferable to use, as the polymer, acrylic acid/isobutyl acrylate/isobornyl acrylate copolymer marketed as, for example, Chimex Mexomere PAZ (a mixture of 50wt% of acrylic acid/isobutyl acrylate/isobornyl acrylate copolymer and 50wt% of octyldodecyl neopentanoate).

According to one embodiment, the first block does not comprise any additional monomer.

According to a preferred embodiment, the second block comprises acrylic acid as the additional monomer. In particular, the second block is advantageously obtained from an acrylic acid monomer and from at least one other monomer with a Tg of less than or equal to 20°C.

The block copolymer may advantageously comprise more than 2% by weight of acrylic acid monomers, and especially from 2% to 15% by weight, for example, from 3% to 15% by weight, in particular from 4% to 15% by weight or even from 4% to 10% by weight of acrylic acid monomers, in relation to the total weight of the said copolymer.

The constituent monomers of the second block and the proportions thereof are preferably chosen such that the glass transition temperature of the second block is less than or equal to 20°C.

Intermediate segment

The intermediate segment (also known as the intermediate block) connects the first block and the second block of the polymer used according to the present invention. The intermediate segment results from the polymerization:

- i) of the first monomer(s), and optionally of the additional monomer(s), which remain available after their polymerization to a maximum degree of conversion of 90% to form the first block, and
- ii) of the second monomer(s), and optionally of the additional monomer(s), added to the reaction mixture.

The formation of the second block is initiated when the first monomers no longer react or are no longer incorporated into the polymer chain either because they are all consumed or because their reactivity no longer allows them to be.

Thus, the intermediate segment comprises the first available monomers, resulting from a degree of conversion of these first monomers of less than or equal to 90%, during the introduction of the second monomer(s) during the synthesis of the polymer.

The intermediate segment of the block polymer is a statistical polymer (which may also be referred to as a statistical block). This means that it comprises a statistical distribution of the first monomer(s) and of the second monomer(s) and also of the additional monomer(s) that may be present.

Thus, the intermediate segment is a statistical block, as are the first block and the second block if they are not homopolymers (i.e., if they are both formed from at least two different monomers).

Process for preparing the copolymer

The block ethylenic copolymer used according to the present invention is prepared by free radical polymerization, according to the techniques that are well known for this type of polymerization.

The free radical polymerization is performed in the presence of an initiator, whose nature is adapted, in a known manner, as a function of the desired polymerization temperature and of the polymerization solvent. In particular, the initiator may be chosen from initiators containing a peroxide function, redox couples, or other radical polymerization initiators known to those skilled in the art.

In particular, examples of initiators containing a peroxide function that may be mentioned include:

- peroxyesters, such as tert-butyl peroxyacetate, tert-butyl perbenzoate, tert-butyl peroxy-2-ethylhexanoate (Trigonox 21S from Akzo Nobel) and 2,5-bis(2-ethylhexanoylperoxy)-2,5-dimethylhexane (Trigonox 141 from Akzo Nobel);
- peroxydicarbonates, such as diisopropyl peroxydicarbonate;
- peroxy ketones, such as methyl ethyl ketone peroxide;
- hydroperoxides, such as hydrogen peroxide (H₂O₂) and tert-butyl hydroperoxide;
- diacyl peroxides, such as acetyl peroxide and benzoyl peroxide;
- dialkyl peroxides, such as di-tert-butyl peroxide;
- inorganic peroxides, such as potassium peroxodisulfate (K₂S₂O₈).

An example of an initiator in the form of a redox couple that may be mentioned is the potassium thiosulfate + potassium peroxodisulfate couple.

According to one preferred embodiment, the initiator is chosen from organic peroxides comprising from 8 to 30 carbon atoms. Preferably, the initiator used is 2,5-bis(2-ethylhexanoylperoxy)-2,5-dimethylhexane sold under the reference Trigonox® 141 by the company Akzo Nobel.

The block copolymer used according to the present invention is prepared by free-radical polymerization rather than by controlled or living polymerization. In particular, the polymerization of the block ethylenic copolymer is performed in the absence of control agents, and in particular in the absence of control agents conventionally used in living or controlled polymerization processes, for instance, nitroxides, alkoxyamines, dithioesters, dithiocarbamates, dithiocarbonates or xanthates, trithiocarbonates and copper-based catalysts.

As indicated previously, the intermediate segment is a statistical block, as are the first block and the second block if they are not homopolymers (i.e., if they are both formed from at least two different monomers).

The block copolymer may be prepared by free-radical polymerization, and in particular via a process that consists in mixing, in the same reactor, a polymerization solvent, an initiator, at least one monomer with a glass transition temperature of greater than or equal to 40°C and at least one monomer with a glass transition temperature of less than or equal to 20°C, according to the following sequence:

- some of the polymerization solvent and optionally some of the initiator and some of the monomers of the first addition are placed in the reactor, and the mixture is heated to a reaction temperature of between 60 and 120°C,
- the said at least one first monomer with a T_g of greater than or equal to 40°C and optionally some of the initiator are then introduced, in a first addition, and the mixture is

left to react for a time T corresponding to a maximum degree of conversion of the said monomers of 90%,

- more polymerization initiator and the said at least one second monomer with a glass transition temperature of less than or equal to 20°C are then placed in the reactor, in a second addition, and the mixture is left to react for a time T' after which the degree of conversion of the said monomers reaches a plateau,
- the reaction mixture is cooled to room temperature.

Preferably, the copolymer may be prepared by free-radical polymerization, in particular via a process that consists in mixing, in the same reactor, a polymerization solvent, an initiator, an acrylic acid monomer, at least one monomer with a glass transition temperature of less than or equal to 20°C, at least one acrylate monomer of formula $\text{CH}_2 = \text{CH-COOR}_2$ in which R_2 represents a C_4 to C_{12} cycloalkyl group, and at least one methacrylate monomer of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}'_2$ in which R'_2 represents a C_4 to C_{12} cycloalkyl group, according to the following sequence of steps:

- some of the polymerization solvent and optionally some of the initiator and some of the monomers of the first addition are placed in the reactor, and the mixture is heated to a reaction temperature of between 60 and 120°C,
- the said at least one acrylate monomer of formula $\text{CH}_2 = \text{CH-COOR}_2$ and the said at least one methacrylate monomer of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}'_2$ as monomers with a Tg of greater than or equal to 40°C, and optionally some of the initiator, are then introduced, in a first addition, and the mixture is left to react for a time T corresponding to a maximum degree of conversion of the said monomers of 90%,
- more polymerization initiator, the acrylic acid monomer and the said at least one second monomer with a glass transition temperature of less than or equal to 20°C are then placed in the reactor, in a second addition, and the mixture is left to react for a time T' after which the degree of conversion of the said monomers reaches a plateau,
- the reaction mixture is cooled to room temperature.

The term "polymerization solvent" means a solvent or a mixture of solvents. In particular, as polymerization solvents that may be used, mention may be made of:

- ketones that are liquid at room temperature, such as methyl ethyl ketone, methyl isobutyl ketone, diisobutyl ketone, isophorone, cyclohexanone or acetone;
- propylene glycol ethers that are liquid at room temperature, such as propylene glycol monomethyl ether, propylene glycol monomethyl ether acetate or dipropylene glycol mono-n-butyl ether;
- short-chain esters (containing from 3 to 8 carbon atoms in total) such as ethyl acetate, methyl acetate, propyl acetate, n-butyl acetate or isopentyl acetate;
- ethers that are liquid at room temperature, such as diethyl ether, dimethyl ether or dichlorodiethyl ether;
- alkanes that are liquid at room temperature, such as decane, heptane, dodecane, isododecane, cyclohexane or isohexadecane;
- cyclic aromatic compounds that are liquid at room temperature, such as toluene or xylene;
- aldehydes that are liquid at room temperature, such as benzaldehyde or acetaldehyde; and
- mixtures thereof.

Conventionally, the polymerization solvent is a volatile oil with a flash point of less than 80°C. The flash point is measured in particular according to standard ISO 3679.

The polymerization solvent may be chosen especially from ethyl acetate, butyl acetate, alcohols such as isopropanol or ethanol, and aliphatic alkanes such as isododecane, and mixtures thereof.

Preferably, the polymerization solvent is a mixture of butyl acetate and isopropanol or isododecane.

According to another embodiment, the copolymer may be prepared by free-radical

polymerization according to a preparation process that consists in mixing, in the same reactor, a polymerization solvent, an initiator, at least one monomer with a glass transition temperature of less than or equal to 20°C, and at least one monomer with a T_g of greater than or equal to 40°C, according to the following sequence of steps:

- some of the polymerization solvent and optionally some of the initiator and some of the monomers of the first addition are placed in the reactor, and the mixture is heated to a reaction temperature of between 60 and 120°C,
- the said at least one monomer with a glass transition temperature of less than or equal to 20°C and optionally some of the initiator are then introduced, in a first addition, and the mixture is left to react for a time T corresponding to a maximum degree of conversion of the said monomers of 90%,
- more polymerization initiator and the said at least one monomer with a T_g of greater than or equal to 40°C are then placed in the reactor, in a second addition, and the mixture is left to react for a time T' after which the degree of conversion of the said monomers reaches a plateau,
- the reaction mixture is cooled to room temperature.

According to one preferred embodiment, the copolymer may be prepared by free-radical

polymerization according to a preparation process that consists in mixing, in the same reactor, a polymerization solvent, an initiator, an acrylic acid monomer, at least one monomer with a glass transition temperature of less than or equal to 20°C, at least one monomer with a T_g of greater than or equal to 40°C, and, in particular as monomers with a T_g of greater than or equal to 40°C, at least one acrylate monomer of formula CH₂ = CH-COOR₂ in which R₂ represents a C₄ to C₁₂ cycloalkyl group, and at least one methacrylate monomer of formula CH₂ = C(CH₃)-COOR'₂ in which R'₂ represents a C₄ to C₁₂ cycloalkyl group, according to the following sequence of steps:

- some of the polymerization solvent and optionally some of the initiator and some of the monomers of the first addition are placed in the reactor, and the mixture is heated to a reaction temperature of between 60 and 120°C,
- the acrylic acid monomer and the said at least one monomer with a glass transition temperature of less than or equal to 20°C and optionally some of the initiator are then introduced, in a first addition, and the mixture is left to react for a time T corresponding to a maximum degree of conversion of the said monomers of 90%,
- more polymerization initiator, the said at least one acrylate monomer of formula CH₂ = CH-COOR₂ and the said at least one methacrylate monomer of formula CH₂ = C(CH₃)-COOR'₂ as monomers with a T_g of greater than or equal to 40°C are then placed in the reactor, in a second addition, and the mixture is left to react for a time T' after which the degree of conversion of the said monomers reaches a plateau,
- the reaction mixture is cooled to room temperature.

The polymerization temperature is preferably about 90°C.

The reaction time after the second addition is preferably between 3 and 6 hours.

Preferably, the block ethylenic copolymer may be present in the powdery cosmetic composition in an active material content ranging from 0.1% to 15%, better still from 0.5% to 10%, and even better still from 1.0% to 5% by weight in relation to the total weight of the powdery cosmetic composition.

Distillation of the synthesis solvent

It is possible to perform a step of total or partial removal of the said volatile oil or solvent (conventionally isododecane). This is then performed in particular by distillation, optionally under vacuum, and optional addition of non-volatile hydrocarbon-based ester oil comprising at least 16 carbon atoms and having a molar mass of less than 650 g/mol, such as octyldodecyl neopentanoate (especially 2-octyldodecyl neopentanoate).

This step is performed at elevated temperature and optionally under vacuum to distil off a maximum amount of volatile synthesis solvent, and is known to those skilled in the art.

(3) Vinyl polymer comprising at least one carbosiloxane dendrimer derivative

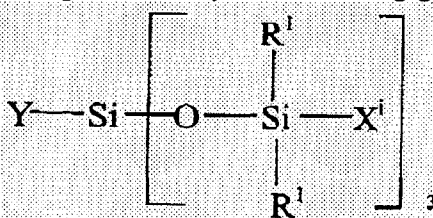
According to one particular embodiment, the cosmetic composition used according to the present invention may comprise, as a film-forming polymer, at least one vinyl polymer comprising at least one carbosiloxane dendrimer-based unit.

The vinyl polymer used according to the present invention especially has a backbone and at least one side chain, which comprises a carbosiloxane dendrimer-based unit having a carbosiloxane dendrimer structure.

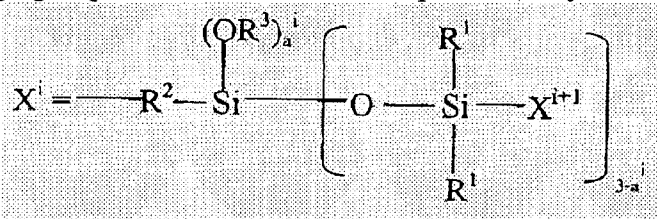
Vinyl polymers comprising at least one carbosiloxane dendrimer unit as described in patent applications WO 03/045337 and EP 963 751 by the company Dow Corning may be used in particular.

The term "carbosiloxane dendrimer structure" in the context of the present invention represents a structure with branched groups of high molecular masses, the said structure having high regularity in the radial direction starting from the bond to the backbone. Such carbosiloxane dendrimer structures are described in the form of a highly-branched siloxane-silylalkylene copolymer in the laid-open Japanese patent application Kokai 9-171 154.

A vinyl polymer used according to the present invention may contain carbosiloxane dendrimer-based units that may be represented by the following general formula:



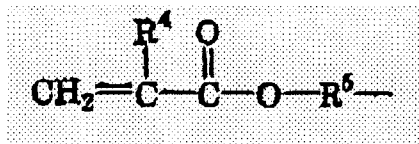
in which R^1 represents an aryl group or an alkyl group containing from 1 to 10 carbon atoms, and X^i represents a silylalkyl group which, when $i = 1$, is represented by the formula:



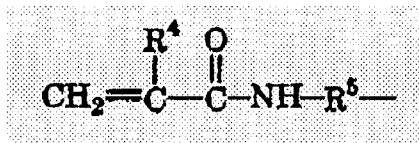
in which R^1 is the same as defined above, R^2 represents an alkylene group containing from 2 to 10 carbon atoms, R^3 represents an alkyl group containing from 1 to 10 carbon atoms, X^{i+1} represents a hydrogen atom, an alkyl group containing from 1 to 10 carbon atoms, an aryl group or the silylalkyl group defined above with $i = i + 1$; i is an integer from 1 to 10 which represents

the generation of the said silylalkyl group, and a^i is an integer from 0 to 3; Y represents a radical-polymerizable organic group chosen from:

- organic groups containing a methacrylic group or an acrylic group and that are represented by the formulae:

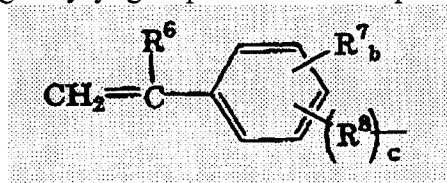


and



in which R^4 represents a hydrogen atom or an alkyl group, R^5 represents an alkylene group containing from 1 to 10 carbon atoms, such as a methylene group, an ethylene group, a propylene group or a butylene group, the methylene group and the propylene group being preferred; and

- organic groups containing a styryl group and that are represented by the formula:

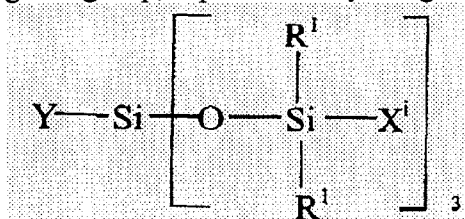


in which R^6 represents a hydrogen atom or an alkyl group, R^7 represents an alkyl group containing from 1 to 10 carbon atoms, such as a methyl group, an ethyl group, a propyl group or a butyl group, the methyl group being preferred, R^8 represents an alkylene group containing from 1 to 10 carbon atoms, such as a methylene group, an ethylene group, a propylene group or a butylene group, the ethylene group being preferred, b is an integer from 0 to 4, and c is 0 or 1 such that if c is 0, $-(\text{R}^8)_c-$ represents a bond.

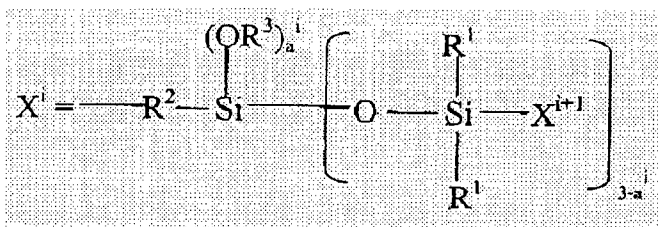
According to one embodiment, R^1 may represent an aryl group or an alkyl group containing from 1 to 10 carbon atoms. The alkyl group may preferably be represented by a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, an isopropyl group, an isobutyl group, a cyclopentyl group or a cyclohexyl group. The aryl group may preferably be represented by a phenyl group and a naphthyl group. The methyl and phenyl groups are more particularly preferred, and the methyl group is preferred among all.

A vinyl polymer containing at least one carbosiloxane dendrimer-based unit has a molecular side chain containing a carbosiloxane dendrimer structure, and may be the product of polymerization of:

- from 0 to 99.9 parts by weight of a vinyl monomer; and
- from 100 to 0.1 parts by weight of a carbosiloxane dendrimer containing a radical-polymerizable organic group, represented by the general formula:

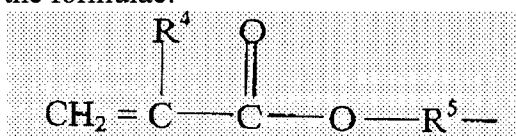


in which Y represents a radical-polymerizable organic group, R^1 represents an aryl group or an alkyl group containing from 1 to 10 carbon atoms, and X^i represents a silylalkyl group which, when $i = 1$, is represented by the formula:

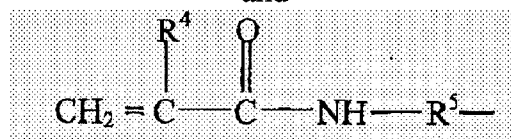


in which R^1 is the same as defined above, R^2 represents an alkylene group containing from 2 to 10 carbon atoms, R^3 represents an alkyl group containing from 1 to 10 carbon atoms, X^{i+1} represents a hydrogen atom, an alkyl group containing from 1 to 10 carbon atoms, an aryl group, or the silylalkyl group defined above with $i = i + 1$; i is an integer from 1 to 10 that represents the generation of the said silylalkyl group, and a^i is an integer from 0 to 3; in which the said radical-polymerizable organic group contained in the component (B) is chosen from:

- organic groups containing a methacrylic group or an acrylic group and that are represented by the formulae:

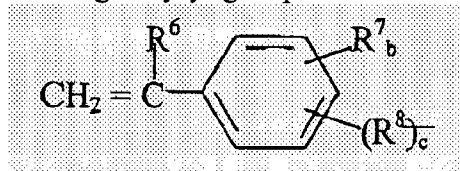


and



in which R^4 represents a hydrogen atom or an alkyl group, R^5 represents an alkylene group containing from 1 to 10 carbon atoms; and

- organic groups containing a styryl group and that are represented by the formula:



in which R^6 represents a hydrogen atom or an alkyl group, R^7 represents an alkyl group containing from 1 to 10 carbon atoms, R^8 represents an alkylene group containing from 1 to 10 carbon atoms, b is an integer from 0 to 4, and c is 0 or 1, such that if c is 0, $-(R^8)_c-$ represents a bond.

The monomer of vinyl type that is the component (A) in the vinyl polymer is a monomer of vinyl type that contains a radical-polymerizable vinyl group.

There is no particular limitation as regards such a monomer.

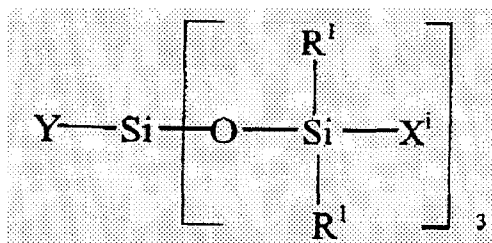
The following are examples of this monomer of vinyl type: methyl methacrylate, ethyl methacrylate, n-propyl methacrylate, isopropyl methacrylate or a methacrylate of a lower alkyl analogue; glycidyl methacrylate; butyl methacrylate, butyl acrylate, n-butyl methacrylate, isobutyl methacrylate, tert-butyl acrylate, tert-butyl methacrylate, n-hexyl methacrylate, cyclohexyl methacrylate, 2-ethylhexyl acrylate, 2-ethylhexyl methacrylate, octyl methacrylate, lauryl methacrylate, stearyl acrylate, stearyl methacrylate or a higher-analogue methacrylate; vinyl acetate, vinyl propionate or a vinyl ester of a lower fatty acid analogue; vinyl caproate, vinyl 2-ethylhexoate, vinyl laurate, vinyl stearate or an ester of a higher fatty acid analogue; styrene, vinyltoluene, benzyl methacrylate, phenoxyethyl methacrylate, vinyl-pyrrolidone or similar vinylaromatic monomers; methacrylamide, N-methylolmethacrylamide, N-methoxymethylmethacrylamide, isobutoxymethoxymethacrylamide,

N,N-dimethylmethacrylamide or similar monomers of vinyl type containing amide groups; hydroxyethyl methacrylate, hydroxypropyl methacrylate or similar monomers of vinyl type containing hydroxyl groups; acrylic acid methacrylic acid, itaconic acid, crotonic acid, fumaric acid, maleic acid or similar monomers of vinyl type containing a carboxylic acid group; tetrahydrofurfuryl methacrylate, butoxyethyl methacrylate, ethoxydiethylene glycol methacrylate, polyethylene glycol methacrylate, polypropylene glycol monomethacrylate, hydroxybutyl vinyl ether, cetyl vinyl ether, 2-ethylhexyl vinyl ether or a similar monomer of vinyl type with ether bonds; methacryloxypropyltrimethoxysilane, polydimethylsiloxane containing a methacrylic group on one of its molecular ends, polydimethylsiloxane containing a styryl group on one of its molecular ends, or a similar silicone compound containing unsaturated groups; butadiene; vinyl chloride; vinylidene chloride; methacrylonitrile; dibutyl fumarate; anhydrous maleic acid; anhydrous succinic acid; methacryl glycidyl ether; an organic salt of an amine, an ammonium salt, and an alkali metal salt of methacrylic acid, of itaconic acid, of crotonic acid, of maleic acid or of fumaric acid; a radical-polymerizable unsaturated monomer containing a sulfonic acid group such as a styrenesulfonic acid group; a quaternary ammonium salt derived from methacrylic acid, such as 2-hydroxy-3-methacryloxypropyltrimethylammonium chloride; and a methacrylic acid ester of an alcohol containing a tertiary amine group, such as a methacrylic acid ester of diethylamine.

Multifunctional monomers of vinyl type may also be used.

The following are examples of such compounds: trimethylolpropane trimethacrylate, pentaerythritol trimethacrylate, ethylene glycol dimethacrylate, tetraethylene glycol dimethacrylate, polyethylene glycol dimethacrylate, 1,4-butanediol dimethacrylate, 1,6-hexanediol dimethacrylate, neopentyl glycol dimethacrylate, trimethylolpropanetrioxymethyl methacrylate, tris(2-hydroxyethyl) isocyanurate dimethacrylate, tris(2-hydroxyethyl) isocyanurate trimethacrylate, polydimethylsiloxane capped with styryl groups containing divinylbenzene groups on both ends, or similar silicone compounds containing unsaturated groups.

A carbosiloxane dendrimer, which is the component (B), may be represented by the following formula:

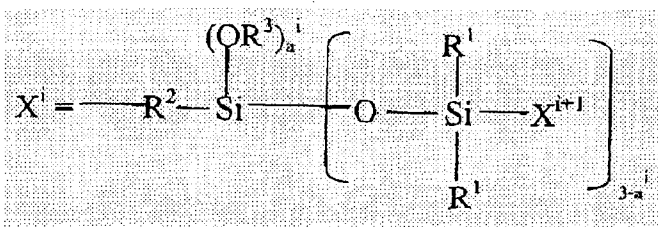


in which Y represents a radical-polymerizable organic group as defined previously.

The following are preferred examples of radical-polymerizable organic groups Y: an acryloxymethyl group, a 3-acryloxypropyl group, a methacryloxymethyl group, a 3-methacryloxypropyl group, a 4-vinylphenyl group, a 3-vinylphenyl group, a 4-(2-propenyl)phenyl group, a 3-(2-propenyl)phenyl group, a 2-(4-vinylphenyl)ethyl group, a 2-(3-vinylphenyl)ethyl group, a vinyl group, an allyl group, a methallyl group and a 5-hexenyl group.

R' is as defined previously.

Xⁱ represents a silylalkyl group that is represented by the following formula, when i is equal to 1:



in which R^1 is as defined above.

R^2 represents an alkylene group containing from 2 to 10 carbon atoms, such as an ethylene group, a propylene group, a butylene group, a hexylene group or a similar linear alkylene group; a methylmethylene group, a methylethylene group, a 1-methylpentylene group, a 1,4-dimethylbutylene group or a similar branched alkylene group. The ethylene, methylethylene, hexylene, 1-methylpentylene and 1,4-dimethylbutylene groups are preferred above all.

R^3 represents an alkyl group containing from 1 to 10 carbon atoms, such as methyl, ethyl, propyl, butyl and isopropyl groups.

X^{i+1} represents a hydrogen atom, an alkyl group containing from 1 to 10 carbon atoms, an aryl group or the silylalkyl group with $i = i + 1$.

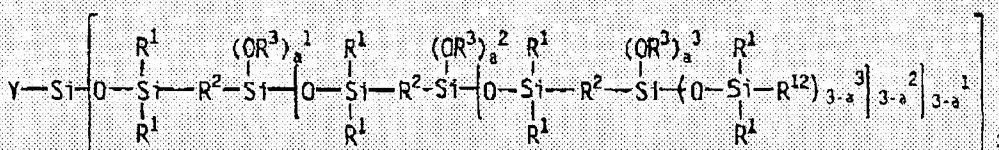
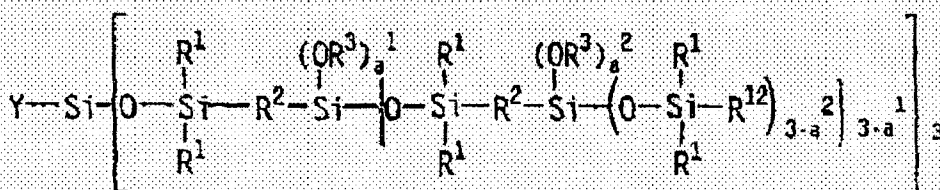
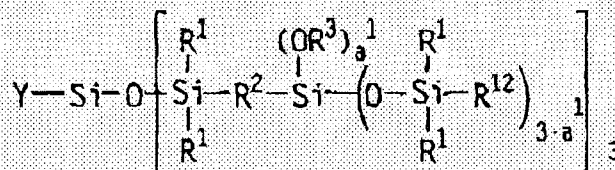
a^i is an integer from 0 to 3, and i is an integer from 1 to 10 that indicates the generation number, which represents the number of repetitions of the silylalkyl group.

For example, when the generation number is equal to 1, the carbosiloxane dendrimer may be represented by the first general formula shown below, in which Y , R^1 , R^2 and R^3 are the same as defined above, R^{12} represents a hydrogen atom or is identical to R^1 ; a^1 is identical to a^1 .

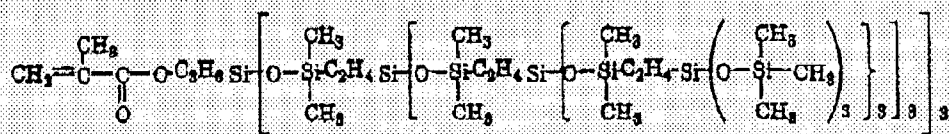
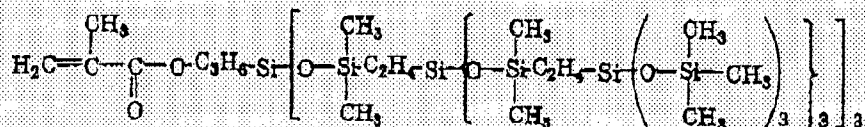
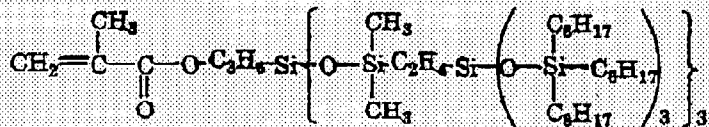
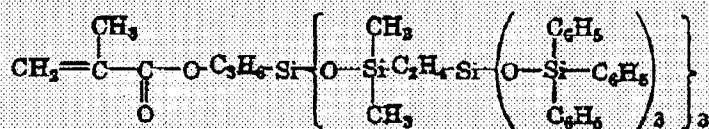
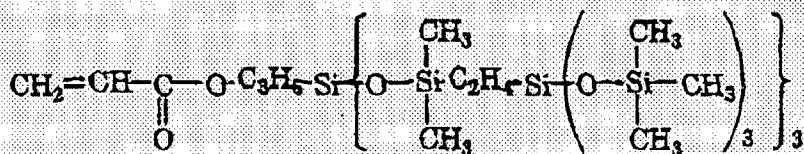
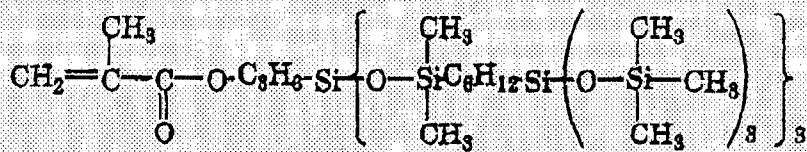
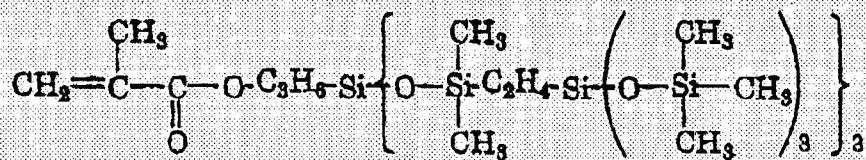
Preferably, the mean total number of groups OR^3 in a molecule is within the range from 0 to 7.

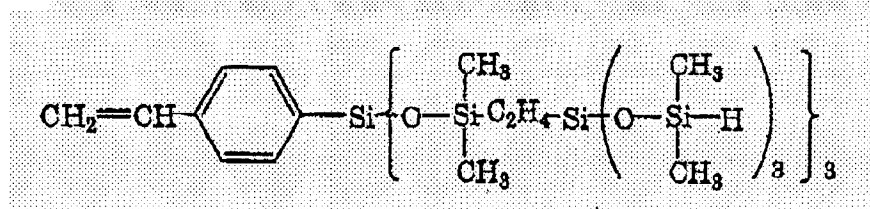
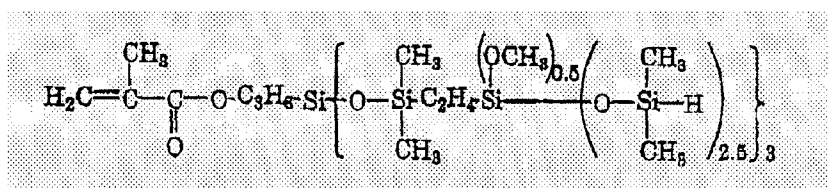
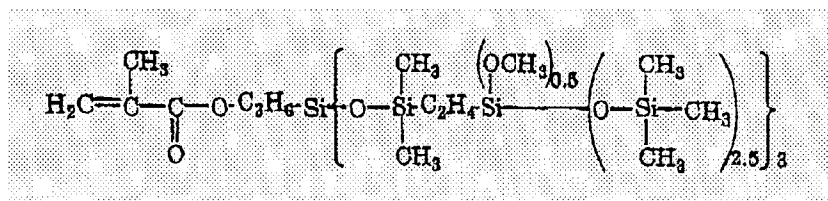
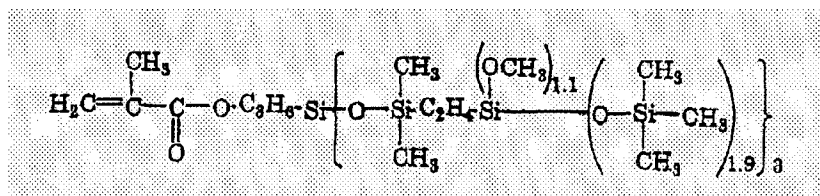
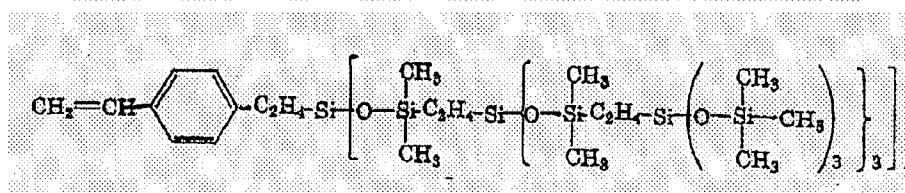
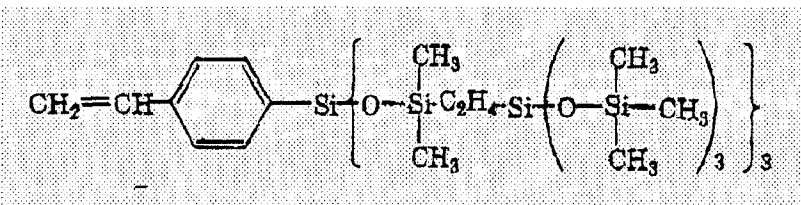
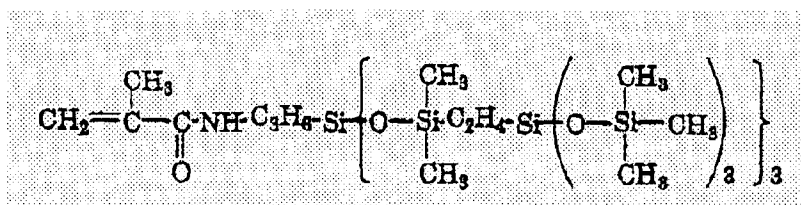
When the generation number is equal to 2, the carbosiloxane dendrimer may be represented by the second general formula shown below, in which Y , R^1 , R^2 , R^3 and R^{12} are the same as defined above; a^1 and a^2 represent the a^i of the indicated generation. Preferably, the mean total number of groups OR^3 in a molecule is within the range from 0 to 25.

When the generation number is equal to 3, the carbosiloxane dendrimer is represented by the third general formula shown below, in which Y , R^1 , R^2 , R^3 and R^{12} are the same as defined above; a^1 , a^2 and a^3 represent the a^i of the indicated generation. Preferably, the mean total number of groups OR^3 in a molecule is within the range from 0 to 79.



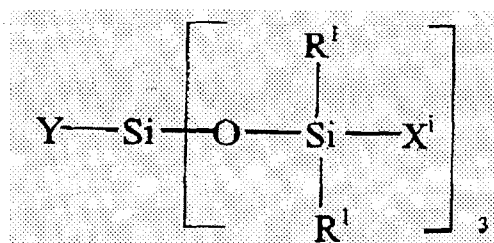
A carbosiloxane dendrimer that contains a radical-polymerizable organic group may be represented by the following mean structural formulae:





5 The carbosiloxane dendrimer may be manufactured according to the process for manufacturing a branched silalkylene siloxane described in Japanese patent application Hei 9-171 154.

For example, it may be produced by subjecting an organosilicon compound containing a hydrogen atom linked to a silicon atom, represented by the following general formula:



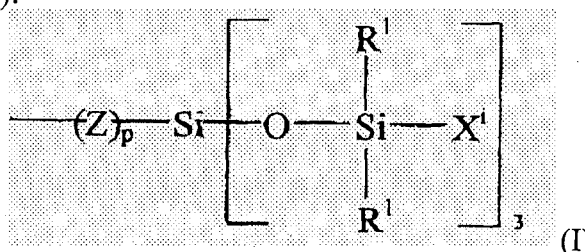
and an organosilicon compound containing an alkenyl group, to a hydrosilylation reaction.

In the above formula, the organosilicon compound may be represented by

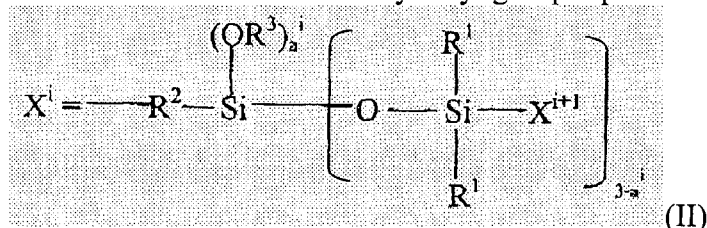
- 5 3-methacryloxypropyltris(dimethylsiloxy)silane, 3-acryloxypropyltris(dimethylsiloxy)silane and 4-vinylphenyltris(dimethylsiloxy)silane. The organosilicon compound that contains an alkenyl group may be represented by vinyltris(trimethylsiloxy)silane, vinyltris(dimethylphenylsiloxy)silane, and 5-hexenyltris(trimethylsiloxy)silane.

- 10 The hydrosilylation reaction is performed in the presence of a chloroplatinic acid, a complex of vinylsiloxane and of platinum, or a similar transition metal catalyst.

A vinyl polymer containing at least one carbosiloxane dendrimer-based unit may be chosen from polymers such that the carbosiloxane dendrimer-based unit is a carbosiloxane dendritic structure represented by formula (I):



in which Z represents a divalent organic group, "p" is 0 or 1, R¹ is an aryl or alkyl group containing from 1 to 10 carbon atoms and X¹ is a silylalkyl group represented by formula (II):



- 20 in which R¹ is as defined above, R² is an alkylene group containing from 1 to 10 carbon atoms, R³ is an alkyl group containing from 1 to 10 carbon atoms and Xⁱ⁺¹ is a group chosen from the group comprising hydrogen atoms, aryl groups and alkyl groups containing up to 10 carbon atoms, and silylalkyl groups Xⁱ in which the power "i" is an integer from 1 to 10 indicating the generation of the starting silylalkyl group in each carbosiloxane dendritic structure with a value of 1 for the group Xⁱ in formula (I) and the index "a" is an integer from 0 to 3.

- 30 In a vinyl polymer containing at least one carbosiloxane dendrimer-based unit, the polymerization ratio between the components (A) and (B), in terms of the weight ratio between (A) and (B), may be within a range from 0/100 to 99.9/0.1, or even from 0.1/99.9 to 99.9/0.1 and preferably within a range from 1/99 to 99/1. A ratio between the components (A) and (B) of 0/100 means that the compound becomes a homopolymer of component (B).

A vinyl polymer containing at least one carbosiloxane dendrimer-based unit may be obtained by copolymerization of the components (A) and (B), or by polymerization of component (B) alone.

The polymerization may be a free-radical polymerization or an ionic polymerization, but free-radical polymerization is preferred.

The polymerization may be performed by bringing about a reaction between the components (A) and (B) in a solution for a period of from 3 to 20 hours in the presence of a radical initiator at a temperature of from 50°C to 150°C.

A suitable solvent for this purpose is hexane, octane, decane, cyclohexane or a similar aliphatic hydrocarbon; benzene, toluene, xylene or a similar aromatic hydrocarbon; diethyl ether, dibutyl ether, tetrahydrofuran, dioxane or similar ethers; acetone, methyl ethyl ketone, methyl isobutyl ketone, diisobutyl ketone or similar ketones; methyl acetate, ethyl acetate, butyl acetate, isobutyl acetate or similar esters; methanol, ethanol, isopropanol, butanol or similar alcohols; octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, hexamethyldisiloxane, octamethyltrisiloxane or a similar organosiloxane oligomer.

The radical initiator may be any compound known in the art for standard free-radical polymerization reactions. Specific examples of such radical initiators are 2,2'-azobis(isobutyronitrile), 2,2'-azobis(2-methylbutyronitrile), 2,2'-azobis(2,4-dimethylvaleronitrile) or similar compounds of azobis type; benzoyl peroxide, lauroyl peroxide, tert-butyl peroxybenzoate, tert-butyl peroxy-2-ethylhexanoate or a similar organic peroxide. These radical initiators may be used alone or in a combination of two or more. The radical initiators may be used in an amount of from 0.1 to 5 parts by weight per 100 parts by weight of the components (A) and (B). A chain-transfer agent may be added. The chain-transfer agent may be 2-mercaptoethanol, butyl mercaptan, n-dodecyl mercaptan, 3-mercaptopropyltrimethoxysilane, a polydimethylsiloxane containing a mercaptopropyl group or a similar compound of mercapto type; methylene chloride, chloroform, carbon tetrachloride, butyl bromide, 3-chloropropyltrimethoxysilane or a similar halogenated compound.

In the manufacture of the polymer of vinyl type, after the polymerization, the residual unreacted vinyl monomer may be removed under conditions of heating under vacuum.

To facilitate the preparation of the mixture of the starting material of cosmetic products, the number-average molecular mass of the vinyl polymer containing a carbosiloxane dendrimer may be chosen within the range between 3000 and 2 000 000 and preferably between 5000 and 800 000. It may be a liquid, a gum, a paste, a solid, a powder or any other form. The preferred forms are solutions formed from the dilution of a dispersion or of a powder in solvents.

The vinyl polymer may be a dispersion of a polymer of vinyl type having a carbosiloxane dendrimer structure in its molecular side chain, in a liquid such as a silicone oil, an organic oil, an alcohol or water.

The silicone oil may be a dimethylpolysiloxane with the two molecular ends capped with trimethylsiloxy groups, a copolymer of methylphenylsiloxane and of dimethylsiloxane having the two molecular ends capped with trimethylsiloxy groups, a copolymer of methyl-3,3,3-trifluoropropylsiloxane and of dimethylsiloxane having the two molecular ends capped with trimethylsiloxy groups, or similar unreactive linear silicone oils, and also hexamethylcyclotrisiloxane, octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane or a similar cyclic compound. In addition to the unreactive silicone oils, modified polysiloxanes containing functional groups such as silanol groups, amino groups and polyether groups on the ends or within the molecular side chains may be used.

The organic oils may be isododecane, liquid paraffin, isoparaffin, hexyl laurate, isopropyl myristate, myristyl myristate, cetyl myristate, 2-octyldodecyl myristate; isopropyl palmitate, 2-ethylhexyl palmitate, butyl stearate, decyl oleate, 2-octyldodecyl oleate, myristyl lactate, cetyl lactate, lanolin acetate, stearyl alcohol, cetostearyl alcohol, oleyl alcohol, avocado oil, almond oil, olive oil, cocoa oil, jojoba oil, gum oil, sunflower oil, soybean oil, camellia oil, squalane, castor oil, cottonseed oil, coconut oil, egg yolk oil, polypropylene glycol monooleate, neopentyl glycol 2-ethylhexanoate or a similar glycol ester oil; triglyceryl isostearate, the triglyceride of a fatty acid of coconut oil, or a similar oil of a polyhydric alcohol ester; polyoxyethylene lauryl ether, polyoxypropylene cetyl ether or a similar polyoxyalkylene ether.

The alcohol may be any type that is suitable for use in combination with a cosmetic product starting material. For example, it may be methanol, ethanol, butanol, isopropanol or similar lower alcohols.

A solution or a dispersion of the alcohol should have a viscosity within the range from 10 to 10^9 mPa at 25°C . To improve the sensory use properties in a cosmetic product, the viscosity should be within the range from 100 to 5×10^8 mPa.s.

The solutions and dispersions may be readily prepared by mixing the vinyl polymer having a carbosiloxane dendrimer structure with a silicone oil, an organic oil, an alcohol or water. The liquids may be present in the step of polymerization of a vinyl polymer containing at least one carbosiloxane dendrimer-based unit. In this case, the unreacted residual vinyl monomer should be completely removed by heat treatment of the solution or dispersion under atmospheric pressure or reduced pressure.

In the case of a dispersion, the dispersity of the polymer of vinyl type may be improved by adding a surfactant.

Such an agent may be hexylbenzenesulfonic acid, octylbenzenesulfonic acid, decylbenzenesulfonic acid, dodecylbenzenesulfonic acid, cetylbenzenesulfonic acid, myristylbenzenesulfonic acid or anionic surfactants of the sodium salts of these acids; octyltrimethylammonium hydroxide, dodecyltrimethylammonium hydroxide, hexadecyltrimethylammonium hydroxide, octyldimethylbenzylammonium hydroxide, decyldimethylbenzylammonium hydroxide, dioctadecyldimethylammonium hydroxide, beef tallow-trimethylammonium hydroxide, coconut oil-trimethylammonium hydroxide, or a similar cationic surfactant; a polyoxyalkylene alkyl ether, a polyoxyalkylenealkylphenol, a polyoxyalkylene alkyl ester, the sorbitol ester of polyoxyalkylene, polyethylene glycol, polypropylene glycol, an ethylene oxide additive of diethylene glycol trimethylnonanol, and nonionic surfactants of polyester type, and also mixtures.

In addition, the solvents and dispersions may be combined with iron oxide suitable for use with cosmetic products, or a similar pigment, and also zinc oxide, titanium oxide, silicon oxide, mica, talc or similar mineral oxides in powder form. In the dispersion, a mean particle diameter of the polymer of vinyl type may be within a range of between 0.001 and 100 microns and preferably between 0.01 and 50 microns. The reason for this is that, outside the recommended range, a cosmetic product mixed with the emulsion will not have a nice enough feel on the skin or to the touch, or sufficient spreading properties or a pleasant feel.

A vinyl polymer contained in the dispersion or the solution may have a concentration in the range between 0.1% and 95% by weight and preferably between 5% and 85% by weight. However, to facilitate the handling and the preparation of the mixture, the range should preferably be between 10% and 75% by weight.

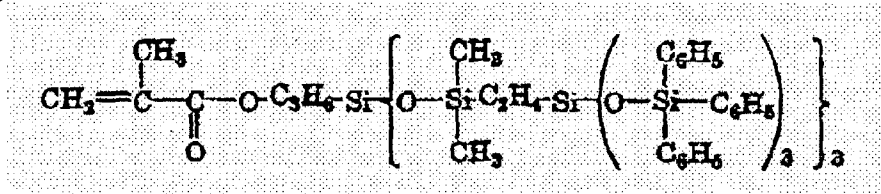
According to one preferred mode, a vinyl polymer that is suitable for use in the present invention may be one of the polymers described in the examples of patent application EP 0 963 751.

5 According to one preferred embodiment, a vinyl polymer grafted with a carbosiloxane dendrimer may be the product of polymerization of:

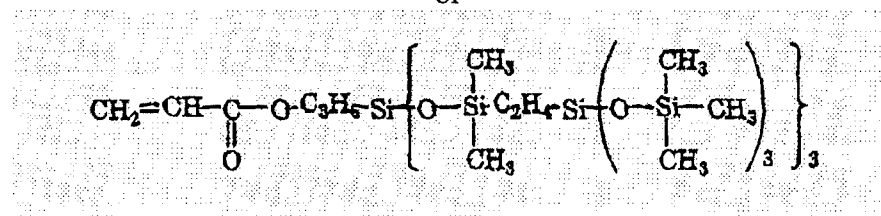
- (A) from 0.1 to 99 parts by weight of one or more acrylate or methacrylate monomers; and
- (B) from 100 to 0.1 parts by weight of an acrylate or methacrylate monomer of a

tris[tri(trimethylsiloxy)silylethyldimethylsiloxy]silylpropyl carbosiloxane dendrimer.

10 According to one embodiment, a vinyl polymer containing at least one carbosiloxane dendrimer-based unit may comprise a tris[tri(trimethylsiloxy)silylethyldimethylsiloxy]silylpropyl carbosiloxane dendrimer-based unit corresponding to one of the formulae:



or



15 According to one preferred mode, a vinyl polymer containing at least one carbosiloxane dendrimer-based unit used in the present invention comprises at least one butyl acrylate monomer.

20 According to one embodiment, a vinyl polymer may also comprise at least one fluoro organic group. A fluoro vinyl polymer may be one of the polymers described in the examples of patent application WO 03/045337.

25 According to one preferred embodiment, a vinyl polymer grafted in the sense of the present invention may be conveyed in an oil or a mixture of oils, which are preferably volatile, chosen in particular from silicone oils and hydrocarbon-based oils, and mixtures thereof.

30 According to one particular embodiment, a silicone oil that is suitable for use in the present invention may be cyclopentasiloxane.

35 According to another particular embodiment, a hydrocarbon-based oil that is suitable for use in the present invention may be isododecane.

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

Preferably, the vinyl polymer grafted with at least one carbosiloxane dendrimer-based unit that may be used in a cosmetic composition of the present invention is an acrylate/polytrimethyl siloxymethacrylate copolymer, especially the product sold as isododecane under the name Dow Corning FA 4002 ID Silicone Acrylate by the company Dow Corning.

Preferably, the vinyl polymer comprising at least one carbosiloxane dendrimer derivative may be present in the powdery cosmetic composition in an active material content ranging from 0.1% to 15%, better still from 0.5% to 10%, and even better still from 1.0% to 5% by weight in relation to the total weight of the powdery cosmetic composition.

(4) Copolymer comprising carboxylate groups and polydimethylsiloxane groups

According to one particular embodiment, the cosmetic composition according to the present invention may comprise, as a film-forming polymer, at least one copolymer comprising carboxylate groups and polydimethylsiloxane groups.

In the present patent application, the expression “copolymer comprising carboxylate groups and polydimethylsiloxane groups” means a copolymer obtained from (a) one or more carboxylic (acid or ester) monomers, and (b) one or more polydimethylsiloxane (PDMS) chains.

In the present patent application, the term “carboxylic monomer” means both carboxylic acid monomers and carboxylic acid ester monomers. Thus, the monomer (a) may be chosen, for example, from acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, crotonic acid, esters thereof and mixtures of these monomers. Esters that may be mentioned include the following monomers: acrylate, methacrylate, maleate, fumarate, itaconate and/or crotonate. According to one preferred embodiment of the present invention, the monomers in ester form are more particularly chosen from linear or branched, preferably C₁-C₂₄ and better still C₁-C₂₂ alkyl acrylates and methacrylates, the alkyl radical preferably being chosen from methyl, ethyl, stearyl, butyl and 2-ethylhexyl radicals, and mixtures thereof.

Thus, according to one particular embodiment of the present invention, the copolymer comprises as carboxylate groups at least one group chosen from acrylic acid and methacrylic acid, and methyl, ethyl, stearyl, butyl or 2-ethylhexyl acrylate or methacrylate, and mixtures thereof.

In the present patent application, the term “polydimethylsiloxanes” (also known as organopolysiloxanes and abbreviated as PDMS) denotes, in accordance with what is generally accepted, any organosilicon polymer or oligomer of linear structure, of variable molecular weight, obtained by polymerization and/or polycondensation of suitably functionalized silanes, and consisting essentially of a repetition of main units in which the silicon atoms are linked together via oxygen atoms (siloxane bond $\equiv \text{Si-O-Si} \equiv$), comprising trimethyl radicals directly linked via a carbon atom to the said silicon atoms. The PDMS chains that may be used to obtain the copolymer used according to the present invention comprise at least one polymerizable radical group, preferably located on at least one of the ends of the chain, i.e., the PDMS may contain, for example, a polymerizable radical group on the two ends of the chain or one polymerizable radical group on one end of the chain and one trimethylsilyl end group on the other end of the chain. The radical-polymerizable group may especially be an acrylic or methacrylic group, in particular a group $\text{CH}_2 = \text{CR}_1 - \text{CO} - \text{O} - \text{R}_2$, in which R₁ represents a hydrogen or a methyl group, and R₂ represents -CH₂-, -(CH₂)_n- with n = 3, 5, 8 or 10, -CH₂-CH(CH₃)-CH₂-, -CH₂-CH₂-O-CH₂-CH₂-, -CH₂-CH₂-O-CH₂-CH₂-CH(CH₃)-CH₂- or -CH₂-CH₂-O-CH₂-CH₂-O-CH₂-CH₂-CH₂-.

The copolymers used in the cosmetic composition of the present invention are generally obtained according to the usual methods of polymerization and grafting, for example, by free-radical polymerization (A) of a PDMS comprising at least one polymerizable radical group (for example, on one of the ends of the chain or on both ends) and (B) of at least one carboxylic monomer, as described, for example, in documents US-A-5 061 481 and US-A-5 219 560.

The copolymers obtained generally have a molecular weight ranging from about 3000 to 200 000 and preferably from about 5000 to 100 000.

The copolymer used in the cosmetic composition of the present invention may be in its native form or in dispersed form in a solvent such as lower alcohols containing from 2 to 8 carbon atoms, for instance, isopropyl alcohol, or oils, for instance, volatile silicone oils (for example, cyclopentasiloxane).

As copolymers that may be used in the cosmetic composition of the present invention, mention may be made, for example, of copolymers of acrylic acid and of stearyl acrylate containing polydimethylsiloxane grafts, copolymers of stearyl methacrylate containing polydimethylsiloxane grafts, copolymers of acrylic acid and of stearyl methacrylate containing polydimethylsiloxane grafts, copolymers of methyl methacrylate, butyl methacrylate, 2-ethylhexyl acrylate and stearyl methacrylate containing polydimethylsiloxane grafts. As copolymers that may be used in the cosmetic composition of the present invention, mention may be made in particular of the copolymers sold by the company Shin-Etsu under the names KP-561 (CTFA name: acrylates/dimethicone), KP-541 in which the copolymer is dispersed at 60% by weight in isopropyl alcohol (CTFA name: acrylates/dimethicone and isopropyl alcohol), and KP-545 in which the copolymer is dispersed at 30% in cyclopentasiloxane (CTFA name: acrylates/dimethicone and cyclopentasiloxane). According to one preferred embodiment of the present invention, KP561 is preferably used; this copolymer is not dispersed in a solvent, but is in waxy form, its melting point being about 30°C.

Mention may also be made of the grafted copolymer of polyacrylic acid and dimethylpolysiloxane dissolved in isododecane, sold by the company Shin-Etsu under the name KP-550.

Preferably, the copolymer comprising carboxylate groups and polydimethylsiloxane groups may be present in the powdery cosmetic composition in an active material content ranging from 0.1% to 15%, better still from 0.5% to 10%, and even better still from 1.0% to 5.0% by weight in relation to the total weight of the powdery cosmetic composition.

(5) Silicone resin

According to one embodiment variant, the powdery cosmetic composition according to the present invention may comprise, as a film-forming polymer, at least one silicone resin.

More generally, the term "resin" means a compound whose structure is three-dimensional.

"Silicone resins" are also known as "silicone-based resins" or "siloxane resins". Thus, for the purposes of the present invention, a polydimethylsiloxane is not a silicone resin.

The nomenclature of silicone resins (also known as siloxane resins) is known under the name "MDTQ", the resin being described as a function of the various siloxane monomer units that it comprises, each of the letters "MDTQ" characterizing a type of unit.

The letter "M" represents the Monofunctional unit of formula $R_1R_2R_3SiO_{1/2}$, the silicon atom being connected to only one oxygen atom in the polymer comprising this unit.

The letter "D" means a Difunctional unit $R_1R_2SiO_{2/2}$ in which the silicon atom is connected to two oxygen atoms.

The letter "T" represents a Trifunctional unit of formula $R_1SiO_{3/2}$.

Such resins are described, for example, in the "Encyclopaedia of Polymer Science and Engineering, vol. 15, John Wiley & Sons, New York (1989), pp. 265-270 and US 2 676 182, US 3 627 851, US 3 772 247 and US 5 248 739 or alternatively US 5 082 706, US 5 319 040, US 5 302 685 and US 4 935 484.

In the M, D and T units defined previously, R, i.e., R_1 , R_2 , and R_3 , represents a hydrocarbon-based radical (especially alkyl) containing from 1 to 10 carbon atoms, a phenyl group, a phenylalkyl group or a hydroxyl group.

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

Various silicone resins with different properties may be obtained from these different units, the properties of these polymers varying as a function of the type of monomer (or unit), the nature and number of the radical R, the length of the polymer chain, the degree of branching and the size of the pendent chains.

As silicone resins that may be used in the cosmetic composition according to the present invention, use may be made, for example, of silicone resins of MQ type, of T type or of MQT type.

MQ resins:

As examples of silicone resins of MQ type, mention may be made of the alkyl siloxysilicates of formula $[(R_1)_3SiO_{1/2}]_x(SiO_{4/2})_y$ (MQ units) in which x and y are integers ranging from 50 to 80, and such that the group R_1 represents a radical as defined previously, and is preferably an alkyl group containing from 1 to 8 carbon atoms, preferably a methyl group. Trimethylsiloxysilicate is preferable.

As examples of solid silicone resins of MQ type of trimethyl siloxysilicate type, mention may be made of those sold under the reference SR1000 by the company General Electric, under the reference TMS 803 by the company Wacker, or under the name KF-7312J by the company Shin-Etsu or DC749 or DC593 by the company Dow Corning.

As silicone resins comprising MQ siloxysilicate units, mention may also be made of phenylalkylsiloxysilicate resins, such as phenylpropyldimethylsiloxysilicate (Silshine 151 sold by the company General Electric). The preparation of such resins is described especially in patent US 5 817 302.

Resins T:

Examples of these silicone resins of type T that may be mentioned include the polysilsesquioxanes of formula $(RSiO_{3/2})_x$ (units T) in which x is greater than 100 and such that

the group R is an alkyl group containing from 1 to 10 carbon atoms, the said polysilsesquioxanes also possibly comprising Si-OH end groups. Polymethylsilsesquioxane is preferable.

Polymethylsilsesquioxane resins that may preferably be used are those in which R represents a methyl group, for instance, those sold:

- by the company Wacker under the reference Resin MK, such as Belsil PMS MK: polymer comprising $\text{CH}_3\text{SiO}_{3/2}$ repeating units (units T), which may also comprise up to 1% by weight of $(\text{CH}_3)_2\text{SiO}_{2/2}$ units (units D) and having an average molecular weight of about 10 000 g/mol, or
- by the company Shin-Etsu under the reference KR-220L, which are composed of units T of formula $\text{CH}_3\text{SiO}_{3/2}$ and have Si-OH (silanol) end groups, under the reference KR-242A, which comprise 98% of units T and 2% of dimethyl units D and have Si-OH end groups, or alternatively under the reference KR-251 comprising 88% of units T and 12% of dimethyl units D and have Si-OH end groups.

MQT resins:

Resins comprising MQT units that are especially known are those mentioned in document US 5 110 890.

A preferred form of resins of MQT type are MQT-propyl (also known as MQTPr) resins. Such resins that may be used in the cosmetic composition according to the present invention are especially the resins described and prepared in patent application WO 2005/075542, the content of which is incorporated herein by reference.

The MQ-T-propyl resin preferably comprises the following units:

- (i) $(\text{R}_1\text{SiO}_{1/2})_a$
- (ii) $(\text{R}_2\text{SiO}_{2/2})_b$
- (iii) $(\text{R}_3\text{SiO}_{3/2})_c$ and
- (iv) $(\text{SiO}_{4/2})_d$

with

R1, R2 and R3 independently representing a hydrocarbon-based radical (especially alkyl) containing from 1 to 10 carbon atoms, a phenyl group, a phenylalkyl group or a hydroxyl group, and preferably an alkyl radical containing from 1 to 8 carbon atoms or a phenyl group,

a being between 0.05 and 0.5,

b being between 0 and 0.3,

c being greater than 0,

d being between 0.05 and 0.6,

$a + b + c + d = 1$, and a, b, c and d being mole fractions,

on condition that more than 40 mol% of the groups R3 of the siloxane resin are propyl groups.

Preferably, the siloxane resin comprises the following units:

- (i) $(\text{R}_1\text{SiO}_{1/2})_a$
- (iii) $(\text{R}_3\text{SiO}_{3/2})_c$ and
- (iv) $(\text{SiO}_{4/2})_d$

with

R1 and R3 independently representing an alkyl group containing from 1 to 8 carbon atoms, R1 preferably being a methyl group and R3 preferably being a propyl group,

a being between 0.05 and 0.5 and preferably between 0.15 and 0.4,

c being greater than 0 and preferably between 0.15 and 0.4,

d being between 0.05 and 0.6, preferably between 0.2 and 0.6, or alternatively between 0.2 and 0.55,

$a + b + c + d = 1$ and a , b , c and d being mole fractions,
on condition that more than 40 mol% of the groups R3 of the siloxane resin are propyl groups.

The siloxane resins that may be used according to the present invention may be obtained via a process comprising the reaction of:

A) an MQ resin comprising at least 80 mol% of units $(R_1)_3SiO_{1/2})_a$ and $(SiO_{4/2})_d$
R1 representing an alkyl group containing from 1 to 8 carbon atoms, an aryl group, a carbinol group or an amino group,
 a and d being greater than 0,
the ratio a/d being between 0.5 and 1.5;

and

B) a T-propyl resin comprising at least 80 mol% of units $(R_3SiO_{3/2})_c$,
R3 representing an alkyl group containing from 1 to 8 carbon atoms, an aryl group, a carbinol group or an amino group,
 c being greater than 0,
on condition that at least 40 mol% of the groups R3 are propyl groups,
in which the mass ratio A/B is between 95/5 and 15/85 and the mass ratio A/B is preferably 30/70.

Advantageously, the mass ratio A/B is between 95/5 and 15/85. Preferably, the ratio A/B is less than or equal to 70/30. These preferred ratios have been proven to produce deposits that are comfortable due to the absence of percolation of the rigid MQ resin particles in the deposit.

Thus, preferably, the silicone resin is chosen from the group comprising:

- a) a resin of MQ type, chosen especially from (i) alkyl siloxysilicates, which may be trimethyl siloxysilicates, of formula $[(R_1)_3SiO_{1/2}]_x(SiO_{4/2})_y$, in which x and y are integers ranging from 50 to 80, and such that the group R1 represents a hydrocarbon-based radical containing from 1 to 10 carbon atoms, a phenyl group, a phenylalkyl group or a hydroxyl group, and preferably is an alkyl group containing from 1 to 8 carbon atoms, preferably a methyl group, and (ii) phenylalkyl siloxysilicate resins, such as phenylpropyldimethyl siloxysilicate, and/or
- b) a resin of T type, chosen especially from the polysilsesquioxanes of formula $(RSiO_{3/2})_x$, in which x is greater than 100 and the group R is an alkyl group containing from 1 to 10 carbon atoms, for example, a methyl group, the said polysilsesquioxanes also possibly comprising Si-OH end groups, and/or
- c) a resin of MQT type, especially of MQT-propyl type, which may comprise units (i) $(R_1)_3SiO_{1/2})_a$, (ii) $(R_2)_2SiO_{2/2})_b$, (iii) $(R_3SiO_{3/2})_c$ and (iv) $(SiO_{4/2})_d$, with R1, R2 and R3 independently representing a hydrocarbon-based radical, especially alkyl, containing from 1 to 10 carbon atoms, a phenyl group, a phenylalkyl group or a hydroxyl group and preferably an alkyl radical containing from 1 to 8 carbon atoms or a phenyl group,
 a being between 0.05 and 0.5,
 b being between 0 and 0.3,
 c being greater than 0,
 d being between 0.05 and 0.6,
 $a + b + c + d = 1$, and a , b , c and d being mole fractions,
on condition that more than 40 mol% of the groups R3 of the siloxane resin are propyl groups.

Polypropylsilsesquioxane marketed as Dow Corning 680 ID Fluid (a mixture of 72wt% of polypropylsilsesquioxane and 28wt% of isododecane) is preferable.

Preferably, silicone resin may be present in the powdery cosmetic composition in an active material content ranging from 0.1% to 15%, better still from 0.5% to 10%, and even better still from 1.0% to 5% by weight in relation to the total weight of the powdery cosmetic composition.

5 (6) Lipodispersible polymer in the form of a non-aqueous dispersion of polymer particles

According to another embodiment variant, the cosmetic composition according to the present invention may comprise, as a film-forming polymer, at least one polymer chosen from lipodispersible film-forming polymers in the form of non-aqueous dispersions of polymer particles, also known as NADs.

Non-aqueous dispersions of hydrophobic film-forming polymer that may be used include dispersions of particles of a grafted ethylenic polymer, preferably an acrylic polymer, in a liquid oily phase:

- 15 - either in the form of ethylenic polymer particles dispersed in the absence of additional stabilizer at the surface of the particles, as described especially in document WO 04/055081,
- or in the form of surface-stabilized particles dispersed in the liquid fatty phase. The dispersion of surface-stabilized polymer particles may be manufactured as described in document EP-A-749 747. The polymer particles may in particular be surface-stabilized by means of a stabilizer that may be a block polymer, a grafted polymer and/or a random polymer, alone or as a mixture. Dispersions of film-forming polymer in the liquid fatty phase, in the presence of stabilizers, are especially described in documents EP-A-748 746, EP-A-923 928 and EP-A-930 060, the content of which is incorporated by reference into the present patent application.

Advantageously, dispersions of ethylenic polymer particles dispersed in the absence of additional stabilizer at the surface of the said particles are used.

- 30 Examples of polymers of NAD type that may be mentioned more particularly include acrylic dispersions in isododecane, for instance, Mexomer PAP® (acrylic copolymer as a dispersion in isododecane (25%) with pyrene/isoprene copolymer) sold by the company Chimex.

Preferably, the lipodispersible polymer in the form of a non-aqueous dispersion of polymer particles may be present in the powdery cosmetic composition in an active material content ranging from 0.1% to 15%, better still from 0.5% to 10%, and even better still from 1.0% to 10% by weight in relation to the total weight of the powdery cosmetic composition.

40 (7) Olefin copolymer selected from amorphous olefin copolymers and olefin copolymers with controlled and moderate crystallization

According to one embodiment variant, the cosmetic composition according to the present invention may comprise, as a film-forming polymer, at least one olefin copolymer selected from amorphous olefin copolymers and olefin copolymers with controlled and moderate crystallization.

The expression olefin copolymer for the purposes of the present application is understood to mean any copolymer formed by polymerization of at least one olefin and another additional monomer different from the said olefin.

The olefin may be in particular an ethylenically unsaturated monomer.

By way of example of an olefin, there may be mentioned ethylene hydrocarbon monomers having in particular one or two ethylene unsaturations, having from 2 to 5 carbon atoms, such as ethylene, propylene, butadiene, and isoprene.

5 *Amorphous olefin copolymer*

According to a first embodiment, the olefin copolymer may be an amorphous copolymer formed by polymerization of at least one olefin.

10 The expression amorphous copolymer is understood to mean a polymer which does not have a crystalline form. The amorphous copolymer is also film-forming, that is to say that it is capable of forming a film during its application to the skin.

15 The amorphous olefin copolymer may be in particular a diblock, triblock, multiblock, radial, or star-shaped copolymer, or mixtures thereof.

Such amorphous olefin copolymers are described in application US-A-2002/005562 and in patent US-A-5 221 534.

20 Advantageously, the amorphous olefin copolymer is an amorphous styrene and olefin block copolymer. Thus, it is preferable that the amorphous olefin copolymer comprise at least one styrene block.

25 The amorphous olefin copolymer is preferably hydrogenated in order to reduce the residual ethylene unsaturations after polymerization of the monomers.

In particular, the amorphous olefin copolymer is an optionally hydrogenated copolymer having styrene blocks and having ethylene/C₃-C₄ alkylene blocks.

30 As the diblock copolymer, preferably hydrogenated, there may be mentioned styrene-ethylene/propylene copolymers, styrene-ethylene/butadiene copolymers, styrene/isoprene copolymers, and styrene/butadiene copolymers. Diblock polymers are in particular sold under the name Kraton® G1701E, Kraton® G1701EU and Kraton® G1657M by the company Kraton Polymers.

35 As the triblock copolymer, preferably hydrogenated, there may be mentioned styrene-ethylene/propylene-styrene copolymers, styrene-ethylene/butadiene-styrene copolymers, styrene-isoprene-styrene copolymers, and styrene-butadiene-styrene copolymers. Triblock polymers are in particular sold under the names Kraton® G1650, Kraton® G1652, Kraton®
40 D1101, Kraton® D1102, Kraton® D1160 by the company Kraton Polymers.

It is also possible to use a mixture of hydrogenated styrene-butylene/ethylene-styrene triblock copolymer and hydrogenated ethylene-propylene-styrene star-shaped polymer, such a mixture being in particular in isododecane. Such mixtures are, for example, sold by the company
45 PENRECO under the trade names VERSAGEL® M5960 and VERSAGEL® M5670.

Advantageously, a diblock copolymer such as those described above, and in particular a styrene-ethylene/propylene diblock copolymer, is used as amorphous olefin copolymer.

50 It is preferable that the amorphous olefin copolymer be selected from the group consisting of a styrene-ethylene/butylene-styrene triblock copolymer, a styrene-ethylene/butylene diblock

copolymer, a styrene-ethylene/isoprene-styrene triblock copolymer, a styrene-ethylene/isoprene diblock copolymer, or a mixture thereof.

Olefin copolymer with controlled and moderate crystallization

According to a second embodiment, the olefin copolymer is an olefin copolymer with controlled and moderate crystallization.

The olefin copolymers with controlled and moderate crystallization used in the powdery cosmetic composition according to the present invention may be any olefin copolymer, namely a copolymer containing solely olefin units, having a controlled and moderate crystalline character, that is to say a level of crystallinity at most equal to 50%, preferably ranging from 5 to 40%, and even better ranging from 10 to 35%.

These copolymers are generally elastomers or plastomers and may be synthesized by any known process, in particular by the free radical route, by Ziegler-Natta catalysis or by metallocene catalysis. Such polymers are described in particular in the application EP-A-1 034 776.

A first class of olefin copolymers with controlled and moderate crystallization, which can be used in the cosmetic composition according to the present invention, may be copolymers of linear or branched α -olefin, in particular C_2 - C_{16} , and even better C_2 - C_{12} , α -olefin. Preferably, these copolymers are bi- or terpolymers and most particularly bipolymers.

Among the bipolymers recommended for the cosmetic composition of the present invention, there may be mentioned bipolymers of ethylene and C_4 - C_{16} , preferably C_4 - C_{12} , α -olefin and bipolymers of propylene and C_4 - C_{16} , preferably C_4 - C_{12} , α -olefin. Preferably still, the α -olefin is chosen from 1-butene, 1-pentene, 1-hexene, 1-octene, 1-nonene, 1-decene, 1-undecene, 1-dodecene, 3,5,5-trimethyl-1-hexene, 3-methyl-1-pentene, and 4-methyl-1-pentene.

Among these monomers, 1-butene and 1-octene are particularly preferred.

The bipolymers recommended are the elastomers having a level of crystallinity ranging from 10 to 35%.

These bipolymers are preferably synthesized by metallocene catalysis.

Such bipolymers are marketed by the company DOW CHEMICAL under the trade names "AFFINITY" (plastomers) and by the company Dupont de Nemours under the name "ENGAGE" (elastomers).

Ethylene-butene bipolymers are marketed by the company EXXON under the trade name "EXACT RESINS" and by the company ELENAC under the trade name "LUFLEXEN".

Among the terpolymers, there may be mentioned the terpolymers of ethylene, propylene and C_4 - C_{16} , preferably C_4 - C_{12} α -olefin.

In these terpolymers, the C_4 - C_{16} α -olefin contents are as indicated above and the preferred α -olefins are butene, hexene and octene.

The preferred copolymers, described in the application EP-A-1 034 776, may in particular be ethylene/octene copolymers sold under the reference "Engage 8400" by the company Dupont de Nemours.

5 A second class of olefin copolymers with controlled and moderate crystallization suitable for the present invention are copolymers of ethylene or propylene and a cycloolefin, in particular bipolymers.

Generally, the cycloolefin content of the copolymers is less than 20 mol%.

10 Among the cycloolefins which can be used, there may be mentioned cyclobutene, cyclohexene, cyclooctadiene, norbornene, dimethano-octahydronaphthalene (DMON), ethylidene norbornene, vinyl norbornene and 4-vinylcyclohexene.

15 The recommended copolymers of this class are copolymers of ethylene and norbornene. The norbornene content of these copolymers is generally less than 18 mol% in order to exhibit the crystalline character required and these copolymers are synthesized by metallocene catalysis.

20 Appropriate ethylene/norbornene copolymers are marketed by the companies MITSUI PETROCHEMICAL or MITSUI-SEKKA under the trade name "APPEL" and by the company HOECHST-CELANESE under the trade name "TOPAS".

25 Other recommended ethylene/cycloolefin copolymers are the ethylene/cyclobutene and ethylene/cyclohexene bipolymers containing a low cycloolefin content, generally less than 20 mol%.

30 A third class of olefin copolymers suitable for the present invention consists of copolymers of monoolefin and a monomer with one or more ethylene bonds such as dienes, for example, ethylene/butadiene, propylene/butadiene, ethylene/isoprene and propylene/isoprene bipolymers, and ethylene/propylene/diene terpolymers, also obtained by metallocene synthesis.

The proportion of "ethylene" or "diene" units in the copolymer with controlled crystallization is generally in the range from 3 to 20 mol%.

35 According to a preferred embodiment, the olefin copolymer with controlled and moderate crystallization is chosen from ethylene/octene copolymers and ethylene/norbornene copolymers.

40 According to a preferred embodiment, the olefin copolymer may be in particular a polymeric gelling agent capable of thickening or of gelling the organic phase of the powdery cosmetic composition.

45 Preferably, the olefin copolymer selected from amorphous olefin copolymers and olefin copolymers with controlled and moderate crystallization may be present in the powdery cosmetic composition in an active material content ranging from 0.1% to 15%, better still from 0.5% to 10%, and even better still from 1.0% to 5.0% by weight in relation to the total weight of the powdery cosmetic composition.

50 (8) Hydrocarbon-based resins having a number-average molecular weight of less than or equal to 10000 g/mol

According to one embodiment variant, the cosmetic composition according to the present invention may comprise, as a film-forming polymer, at least one hydrocarbon resin having a number-average molecular weight of less than or equal to 10000 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 (M_n) are determined by gel permeation liquid chromatography (THF solvent, calibration curve established with linear polystyrene standards, refractometric detector).

The above hydrocarbon-based resin used in the cosmetic composition according to the present 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.

It is preferable that the above hydrocarbon-based resin be selected from indene hydrocarbon-based resins.

More 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 an 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 Chemicals, Nevchem 100 and Nevex 100 by the company Neville Chemical, 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 R1100, Regalite R1090, Regalite R7100, 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 monomers 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, Nevtac 100 by the company Neville Chemical 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, Nevpene 9500 by the company Neville Chemical, 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 dicyclopentadiene, 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 Chemical, 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, β -pinene and limonene, and mixtures thereof. These resins can 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 Chemical Co.

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, under the reference Escorez 5300 by the company Exxon Chemicals, or the resins Nevillac Hard or Nevroz sold by the company Neville Chemical, 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 cyclopentenediene dimers and diene resins of isoprene dimers, or mixtures thereof.

Preferably, the powdery cosmetic composition according to the present invention 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 indene/methylstyrene/hydrogenated 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 R 1010 Hydrocarbon Resin and Regalite R 1125 Hydrocarbon Resin.

Preferably, the hydrocarbon-based resins having a number-average molecular weight of less than or equal to 10000 g/mol may be present in the powdery cosmetic composition according to the present invention in an active material content ranging from 0.1% to 15%, better still from 0.5% to 10%, and even better still from 1.0% to 5% by weight in relation to the total weight of the powdery cosmetic composition according to the present invention.

According to a preferred embodiment, the cosmetic composition according to the present invention comprises, as a film-forming polymer, at least one silicone resin, preferably selected from MQ resin.

In one embodiment, the powdery cosmetic composition according to the present invention is an anhydrous composition. As used herein, the term "anhydrous composition" means a composition comprising no more than 2% by weight of water, for example, no more than 0.5% of water, and, for example, free of water, wherein the water is not added during the preparation

of the powdery cosmetic composition according to the present invention, but corresponds to the residual water provided by the mixed ingredients.

[Preparation]

The powdery cosmetic composition according to the present invention can be prepared by mixing the ingredients of the pulverulent phase (first and second fillers, and the like) and by then adding the film-forming polymer, and the liquid fatty phase, if necessary, with stirring, the mixture subsequently being milled, sieved, then poured into a dish and compacted, if necessary.

The powdery cosmetic composition according to the present invention can be provided in the form of a compact powder.

The milled and sieved mixture of the pulverulent phase and of the film-forming polymer (and the fatty phase, if present) can be compacted using a press, such as by applying a pressure ranging from 0.5 MPa to 10 MPa. In one embodiment of the present invention, the milled and sieved mixture of the pulverulent phase and of the fatty phase may be compacted by applying a pressure ranging from 1 MPa to 5 MPa.

If the above compacting process is not necessary, the powdery cosmetic composition according to the present invention can be provided in the form of a loose powder.

The powdery cosmetic composition according to the present invention can be used as various powdery cosmetic products, such as make-up products, in particular powdery foundations.

[Cosmetic process]

In another aspect, the present invention also relates to a cosmetic process including the step of applying to skin, preferably the face and/or eyelids, a powdery cosmetic composition according to the present invention. The cosmetic process preferably includes making up and/or caring for the skin, preferably facial skin and eyelid skin.

The powdery cosmetic composition used in the cosmetic process according to the present invention is preferably of the leave-in type. The term "leave-in" means a composition that is not intended to be washed out or removed immediately after application.

The cosmetic process according to the present invention can provide long-lasting cosmetic effects, such as long-lasting matte effects and/or color-keeping effects, as well as good makeup finish. Therefore, for example, skin imperfections, such as redness, marks, pores and wrinkles on the skin, in particular the face, can be masked for a long period of time. Thus, the cosmetic film formed by the cosmetic process according to the present invention can have good staying power on the skin over time even under hot and/or humid conditions, for example, during summer.

Furthermore, the cosmetic process according to the present invention or the powdery cosmetic composition according to the present invention can also provide good feeling to use, texture, spreadability, sebum resistance, sweat resistance and the like.

EXAMPLES

The present invention will be described in a more detailed manner by way of examples. However, these examples should not be construed as limiting the scope of the present invention.

Example 1 to 3 and Reference Examples 1 to 3

[Preparations]

- 5 The following compositions according to Examples (Ex.) 1 to 3 and Reference Examples (Ref.) 1 to 3, shown in Table 1, were prepared by mixing the components shown in Table 1. The numerical values for the amounts of the components shown in Table 1 are all based on “% by weight” as active raw materials.

Table 1

Trade name	Ingredient	Ex.1	Ex.2	Ex.3	Ref.1	Ref.2	Ref.3
FHS-3A TALC JA-68R	Talc (and) Perfluorooctyltriethoxysilane (FIRST PARTICLE)	43.40	33.40	13.40	43.40	-	-
FHS-3 SERICITE FSE	Mica (and) Perfluorooctyltriethoxysilane (FIRST PARTICLE)	5	5	5	5	5	5
Sunpuro Iron Oxide	Iron Oxides (and) Perfluorooctyltriethoxysilane (FIRST PARTICLE)	2.2	2.2	2.2	2.2	-	-
SA-TA-13R	Talc (and) Dimethicone (SECOND PARTICLE)	-	10	30	-	42.77	42.77
Sunpuro Iron Oxide	Iron Oxides (and) Talc 30% (SECOND PARTICLE)	-	-	-	-	2.83	2.83
LP-S-100	Mica (and) Palmitoyl Proline (and) Sodium Palmitoyl Sarcosinate (and) Magnesium Palmitoyl Glutamate (and) Aluminum Hydroxide (and) Palmitic Acid (SECOND PARTICLE)	10	10	10	10	10	10
LL 5 TITANIUM DIOXIDE CR 50	Titanium Dioxide (and) Lauroyl Lysine (SECOND PARTICLE)	7	7	7	7	7	7
TZ-POWDER TYPE-2	Titanium Dioxide (and) Zinc Oxide (and) Talc (and) Hydrogen Dimethicone (and) Aluminum Hydroxide (SECOND PARTICLE)	7	7	7	7	7	7
SIO1-2 PDM-5L	Synthetic Fluorophlogopite (and) Hydrogen Dimethicone (SECOND PARTICLE)	3	3	3	3	3	3
Micropear LM305	Methyl Methacrylate Crosspolymer (SECOND PARTICLE)	3	3	3	3	3	3
SP - 500	Nylon-12 (SECOND PARTICLE)	3	3	3	3	3	3
KSP-100	Vinyl Dimethicone/Methicone Silsesquioxane Crosspolymer (SECOND PARTICLE)	2	2	2	2	2	2
KSP-300	Diphenyl Dimethicone/Vinyl Diphenyl Dimethicone/Silsesquioxane Crosspolymer (SECOND PARTICLE)	4	4	4	4	4	4
Pulverulent phase							
SR 1000	Trimethylsiloxy silicate (FILM FORMING POLYMER)	89.6	89.6	89.6	89.6	89.6	89.6
MYRITOL 318	Caprylic/Capric Triglyceride (FATTY PHASE)	3	3	3	-	3	-
SPAN 83-LQ-(MV)	Sorbitan Sesquioleate (FATTY PHASE)	-	-	-	1	-	1
XIAMETER PMX-200 SILICONE FLUID 5CS	Dimethicone (FATTY PHASE)	-	-	-	1	-	1
KF-56A	Dimethicone (FATTY PHASE)	1	1	1	2	1	2
PARSOL MCX	Diphenylsiloxy Phenyl Trimethicon (FATTY PHASE)e	3	3	3	3	3	3
SENSIVA SC 50	UV Filter (FATTY PHASE)	3	3	3	3	3	3
	Preservative System	0.4	0.4	0.4	0.4	0.4	0.4
	Total	100	100	100	100	100	100

[Evaluations]

(Matte Evaluation)

The powdery cosmetic compositions (foundations) according to Examples 1 to 3 and Reference Examples 1 to 3 were compared in terms of gloss intensity by panelists under the conditions that the powdery cosmetic compositions of Examples 1 to 3 and Reference Examples 1 to 3 were applied to half of the face of each panelist.

Next, the gloss (reflected light on the face) of the applied half of the face was measured by a polarimetric camera immediately after the application (T0) and 180 minutes after the application (T180). The difference in the gloss between T0 and T180 was determined as a matte value, and relatively compared under the condition that the difference in the gloss for the powdery cosmetic composition according to Example 1 was set as 1. The results are shown in Table 2.

Table 2

	Ex. 1	Ex. 2	Ex. 3	Ref. 1	Ref. 2	Ref. 3
Matte (T180-T0)	1	1.33	1.15	1.54	1.5	1.17

The lower the matte value was, the longer the matte effect lasted. The results shown in Table 2 show that the powdery cosmetic composition according to Example 1 provided matte effects longer than those according to Reference Examples 1 to 3.

(Color Change Evaluation)

The powdery cosmetic compositions (foundations) according to Example 1 and Reference Examples 1 to 3 were compared in terms of color change by panelists under the conditions that the powdery cosmetic compositions of Example 1 and Reference Examples 1 to 3 were applied to half of the face of each panelist.

Next, the image of the applied half of the face was measured by a camera immediately after the application (T0) and a predetermined time after the application (T180). The pixel data (R/G/B) of the measured color image were converted into a color value (L/a/b) under the Lab color system. The difference (ΔE) in the color value between T0 and T180 was determined as a color change value, and relatively compared under the condition that the difference in the color change for the powdery cosmetic composition according to Example 1 was set as 1. The results are shown in Table 3.

Table 3

	Ex. 1	Ex. 2	Ex. 3	Ref. 1	Ref. 2	Ref. 3
Color Change (T180-T0)	1	1.05	1.14	1.23	2.28	1.6

The lower the color change value was, the longer the makeup effect lasted. The results shown in Table 3 show that the powdery cosmetic composition according to Example 1 provided makeup effects longer than those according to Reference Examples 1 to 3.

(Sensory Evaluation)

The powdery cosmetic composition according to Example 1 and Reference Example 3 were compared in terms of long-lasting cosmetic effects (long lasting, hiding pores and lines, and coverage) for 3 and 6 hours by panelists under the conditions that the powdery cosmetic composition according to Example 1 was applied to half of the face of each panelist, and the powdery cosmetic composition according to Reference Example 3 was applied to the other half of the face of each panelist, wherein the amount of the powdery cosmetic composition applied to the each half of the face was the same. All of the panelists reported that the powdery cosmetic composition according to Example 1 provided better makeup, and more than 80% of the panelists reported that the powdery cosmetic composition according to Example 1 provided better long-lasting cosmetic effects than the powdery cosmetic composition according to Reference Example 3.

Furthermore, the powdery cosmetic composition according to Example 1 was subjected to a use test at panelist's house for 1 week in Singapore (n=106). The panelists evaluated the texture of the composition base on 5 scales (+2=agree, +1=somewhat agree, 0= neither agree nor disagree, -1=somewhat disagree, -2=disagree). As a result, 97.2% out of the panelists replied with positive impression (+2 and +1).

Example 4 to 18

[Preparations]

The following compositions according to Examples 1 to 18, shown in Tables 4 to 7, were prepared by mixing the components shown therein. The numerical values for the amounts of the components are all based on "% by weight" as active raw materials. The powder cosmetic compositions according to Examples 4 to 18 provide long lasting cosmetic effects, such as long lasting matte effects and/or color keeping effects, as well as good makeup finish and good texture.

Table 4

Trade Name	INCI	Ex. 4	Ex. 5	Ex. 6	Ex. 7
FHS-3A TALC JA-68R	Talc (and) Perfluorooctyl triethoxysilane	43.40	43.40	43.40	43.40
FHS-3 SERICITE FSE	Mica (and) Perfluorooctyl triethoxysilane	5	5	5	5
Sunpuro Iron Oxide	Iron oxides (and) Perfluorooctyl triethoxysilane	2.2	2.2	2.2	2.2
LP-S-100	Mica (and) Palmitoyl proline (and) Sodium palmitoyl sarcosinate (and) Magnesium palmitoyl glutamate (and) Aluminum hydroxide (and) Palmitic acid	10	10	10	10
SIO1-2 PDM-5L	Synthetic fluorophlogopite (and) Hydrogen dimethicone	3	3	3	3
Micropearl M305	Methyl methacrylate crosspolymer	3	3	3	3
SP - 500	Nylon-12	3	3	3	3
KSP-100	Vinyl dimethicone/methicone silsesquioxane crosspolymer	6	-	-	-
KSP-300	Diphenyl dimethicone/vinyl diphenyl dimethicone/silsesquioxane crosspolymer	-	6	-	-
KMP-590	Polymethylsilsesquioxane	-	-	6	-
KSP-101	Vinyl dimethicone/methicone silsesquioxane crosspolymer	-	-	-	6
LL 5 TITANIUM DIOXIDE CR 50	Titanium dioxide (and) Lauroyl lysine	7	7	7	7
TZ-POWDER TYPE-2	Titanium dioxide (and) Zinc oxide (and) Talc (and) Hydrogen dimethicone (and) Aluminum hydroxide	7	7	7	7
	Pulverulent phase	89.6	89.6	89.6	89.6
KF-56A	Diphenylsiloxy phenyl trimethicone	3	3	3	3
	Dimethicone	1	1	1	1
SR 1000	Trimethylsiloxy silicate	3	3	3	3
PARSOL MCX	Ethylhexyl methoxycinnamate	3	3	3	3
SENSIVA SC 50	Ethylhexylglycerin	0.4	0.4	0.4	0.4
	Total	100	100	100	100

Table 5

Trade Name	INCI	Ex. 8	Ex. 9	Ex. 10
FHS-3A TALC JA-68R	Talc (and) Perfluorooctyl triethoxysilane	43.40	43.40	43.40
FHS-3 SERICITE FSE	Mica (and) Perfluorooctyl triethoxysilane	5	5	5
Sunpuro Iron Oxide	Iron oxides (and) Perfluorooctyl triethoxysilane	2.2	2.2	2.2
LP-S-100	Mica (and) palmitoyl proline (and) Sodium palmitoyl sarcosinate (and) Magnesium palmitoyl glutamate (and) Aluminum hydroxide (and) Palmitic acid	10	10	10
SIO1-2 PDM-5L	Synthetic fluorophlogopite (and) Hydrogen dimethicone	3	3	3
Micropearl M305	Methyl methacrylate crosspolymer	3	3	3
SP - 500	Nylon-12	3	3	3
KSP-100	Vinyl dimethicone/methicone silsesquioxane crosspolymer	2	2	2
KSP-300	Diphenyl dimethicone/vinyl diphenyl dimethicone/silsesquioxane crosspolymer	4	4	4
LL 5 TITANIUM DIOXIDE	Titanium dioxide (and) Lauroyl lysine	7	7	7
TZ-POWDER TYPE-2	Titanium dioxide (and) Zinc oxide (and) Talc (and) Hydrogen dimethicone (and) Aluminum hydroxide	7	7	7
	Pulverulent phase	89.6	89.6	89.6
KF-56A	Diphenylsiloxy phenyl trimethicone	3	3	3
	Dimethicone	2	2	1
SILFORM FLEXIBLE RESIN	Polymethylsilsesquioxane	2	-	-
DOW CORNING 2-8179	Nylon-611/dimethicone copolymer	-	2	-
DOW CORNING 680 ID FLUID (T- Propyl Regine Polymer)	Polypropylsilsesquioxane 72%	-	-	2.16
	Isododecane 28%	-	-	0.84
	UV filter	3	3	3
	Preservative system	0.4	0.4	0.4
	Total	100	100	100

Table 6-1

Trade Name	INCI	Ex 11	Ex 12	Ex 13	Ex 14	Ex 15
FHS-3A TALC JA-68R	Talc (and) Perfluorooctyl triethoxysilane	43.40	43.40	43.40	43.40	43.40
FHS-3 SERICITE FSE	Mica (and) Perfluorooctyl triethoxysilane	5	5	5	5	5
Sunpuro Iron Oxide	Iron oxides (and) Perfluorooctyl triethoxysilane	2.2	2.2	2.2	2.2	2.2
LP-S-100	Mica (and) Palmitoyl proline (and) Sodium palmitoyl sarcosinate (and) Magnesium palmitoyl glutamate (and) Aluminum hydroxide (and) Palmitic acid	10	10	10	10	10
SIO1-2 PDM-5L	Synthetic fluorophlogopite (and) Hydrogen dimethicone	3	3	3	3	3
Micropearl M305	Methyl methacrylate crosspolymer	3	3	3	3	3
SP - 500	Nylon-12	3	3	3	3	3
KSP-100	Vinyl dimethicone/methicone silsesquioxane crosspolymer	2	2	2	2	2
KSP-300	Diphenyl dimethicone/vinyl diphenyl dimethicone/silsesquioxane crosspolymer	4	4	4	4	4
LL 5 TITANIUM DIOXIDE CR 50	Titanium dioxide (and) Lauroyl lysine	7	7	7	7	7
TZ-POWDER TYPE-2	Titanium dioxide (and) Zinc oxide (and) Talc (and) Hydrogen dimethicone (and) Aluminum hydroxide	7	7	7	7	7
Subtotal	Pulverulent phase	89.6	89.6	89.6	89.6	89.6

(continued)

Table 6-2

(continued)

KF-56A	Diphenylsiloxyl phenyl trimethicone	2	2	3	3	3	3
	Dimethicone	-	-	2	2	2	2
WICKENOL 151	Isononyl isononanoate	4	4	-	-	-	-
KRATON G1701 EU	Hydrogenated styrene/isoprene copolymer	1	-	-	-	-	-
KRATON G1657M	Hydrogenated styrene/butadiene copolymer	-	1	-	-	-	-
REGALITE R1100 CG	Hydrogenated styrene/methyl styrene/indene copolymer	-	-	2	-	-	-
CHIMEX MEXOMERE PAZ (Cynamer3/Pseudo-bloc)	Acrylic acid/isobutyl acrylate/isobornyl acrylate copolymer 50%	-	-	-	1	-	-
	Octyldodecyl neopentanoate 50%	-	-	-	1	-	-
DOW CORNING FA 4002 ID SILICONE ACRYLATE	Acrylates/polytrimethylsiloxymethacrylate copolymer	-	-	-	-	2	2
	UV filter	3	3	3	3	3	3
	Preservative system	0.4	0.4	0.4	0.4	0.4	0.4
	Total	100	100	100	100	100	100

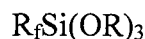
Table 7

Trade Name	INCI	Ex 16	Ex 17	Ex 18
FHS-3A TALC JA-68R	Talc (and) Perfluorooctyl triethoxysilane	43.40	43.40	43.40
FHS-3 SERICITE FSE	Mica (and) Perfluorooctyl triethoxysilane	5	5	5
Sunpuro Iron Oxide	Iron oxides (and) Perfluorooctyl triethoxysilane	2.2	2.2	2.2
LP-S-100	Mica (and) Palmitoyl proline (and) Sodium palmitoyl sarcosinate (and) Magnesium palmitoyl glutamate (and) Aluminum hydroxide (and) Palmitic acid	10	10	10
SI01-2 PDM-5L	Synthetic fluorophlogopite (and) Hydrogen dimethicone	3	3	3
Micropearl M305	Methyl methacrylate crosspolymer	3	3	3
SP - 500	Nylon-12	3	3	3
KSP-100	Vinyl dimethicone/methicone silsesquioxane crosspolymer	2	2	2
KSP-300	Diphenyl dimethicone/vinyl diphenyl dimethicone/silsesquioxane crosspolymer	4	4	4
LL 5 TITANIUM DIOXIDE CR 50	Titanium dioxide (and) Lauroyl lysine	7	7	7
TZ-POWDER TYPE-2	Titanium dioxide (and) Zinc oxide (and) Talc (and) Hydrogen dimethicone (and) Aluminum hydroxide	7	7	7
	Pulverulent phase	89.6	89.6	89.6
KF-56A	Diphenylsiloxy phenyl trimethicone	4	2	-
XIAMETER PMX-200 SILICONE FLUID 5CS	Dimethicone	1	1	1
SR 1000	Trimethylsiloxy silicate	2	4	6
	UV filter	3	3	3
	Preservative System	0.4	0.4	0.4
	Total	100	100	100

CLAIMS

1. A powdery cosmetic composition comprising:
 - (a) a pulverulent phase comprising
 - (i) at least one first particle being treated with a surface treatment agent comprising at least one fluorine-containing compound, and
 - (ii) at least one second particle different from the (i) first particle(s),
 - (b) a liquid fatty phase, and
 - (c) at least one film-forming polymer,wherein the amount of the (a)-(i) first particle(s) is 10% by weight or more in relation to the total weight of the composition.
2. The powdery cosmetic composition according to Claim 1, wherein the second particle(s) comprise(s) spherical fillers.
3. The powdery cosmetic composition according to Claim 2, wherein the spherical filler(s) is(are) present in an amount of 5% by weight or more, preferably 8% by weight or more, and more preferably 10% by weight or more, in relation to the total weight of the composition.
4. The powdery cosmetic composition according to any one of Claims 1 to 3, wherein the second particle(s) comprise(s) at least one spherical filler selected from the group consisting of organopolysiloxane elastomer powder, polyamide powder, (meth)acrylic or (meth)acrylate powder, polyurethane powder, silica microspheres, polyacrylonitrile, and a mixture thereof, and preferably at least one organopolysiloxane elastomer powder.
5. The powdery cosmetic composition according to any one of Claim 2 to 4, wherein 40% by weight or more, preferably 45% by weight or more, and more preferably 50% by weight or more of the spherical filler(s) in the second particle(s) is(are) organopolysiloxane elastomer powder.
6. The powdery cosmetic composition according to Claim 4 or 5, wherein the organopolysiloxane elastomer powder comprises at least one elastomeric organopolysiloxane powder which has been coated with at least one silicone resin.
7. The powdery cosmetic composition according to Claim 4 or 5, wherein the organopolysiloxane elastomer powder comprises at least one hybrid silicone functionalized with at least one phenyl group.
8. The powdery cosmetic composition according to any one of Claims 1 to 7, wherein the first particle(s) comprise(s) non-spherical particle(s), preferably lamellar particle(s).
9. The powdery cosmetic composition according to any one of Claims 1 to 8, wherein the first particle(s) is(are) selected from the group consisting of talc, mica, silica, kaolin, sericite, calcinated talc, calcinated mica, calcinated sericite, synthetic mica, lauroyl lysine, metal soap, bismuth oxychloride, barium sulfate, boron nitride, calcium carbonate, magnesium carbonate, magnesium hydrogen carbonate, iron oxide, hydroxyapatite, and a mixture thereof, and preferably is selected from talc, mica, iron oxide and a mixture thereof.
10. The powdery cosmetic composition according to any one of Claims 1 to 9, wherein the fluorine-containing compound(s) comprise(s) at least one fluorosilane.

11. The powdery cosmetic composition according to Claim 10, wherein the fluorosilane(s) is(are) represented by the formula:



wherein

R_f is a C_4 - C_{16} hydrocarbyl having at least one fluorine atom, and

R is a C_1 - C_6 hydrocarbyl.

12. The powdery cosmetic composition according to Claim 10 or 11, wherein the fluorosilane(s) is(are) represented by the formula:



wherein

R_f' is a C_4 - C_{14} perfluoro hydrocarbyl, and

R is methyl or ethyl.

13. The powdery cosmetic composition according to any one of Claims 1 to 12, wherein the film-forming polymer(s) is(are) selected from the group consisting of silicone resins, polyamide silicone block polymers, block ethylenic polymers, vinyl polymers comprising at least one carbosiloxane dendrimer derivative, copolymers comprising carboxylate groups and polydimethylsiloxane groups, lipodispersible polymers in the form of a non-aqueous dispersion of polymer particles, olefin copolymers selected from amorphous olefin copolymers and olefin copolymers with controlled and moderate crystallization, hydrocarbon-based resins having a number-average molecular weight of less than or equal to 10,000 g/mol, and a mixture thereof.
14. The powdery cosmetic composition according to any one of claims 1 to 13, wherein the amount of the film-forming polymer is from 0.1% to 15% by weight, preferably 0.5% to 10% by weight, and more preferably from 1.0% to 5% by weight in relation to the total weight of the composition.
15. The powdery cosmetic composition according to any one of Claims 1 to 14, wherein the weight ratio of the (a)-(i) first particle(s) and the (a)-(ii) second particles is from 20/1 to 1/10, preferably from 10/1 to 1/5, and more preferably from 5/3 to 2/7.
16. The powdery cosmetic composition according to any one of Claims 1 to 15, wherein the amount of the first particle(s) is from 10% to 70% by weight, preferably from 20% to 60% by weight, and more preferably from 30% to 55% by weight, in relation to the total weight of the composition.
17. The powdery cosmetic composition according to any one of Claims 1 to 16, wherein the composition is in the form of a compacted powder or a loose powder.
18. A cosmetic process including a step of applying the powdery cosmetic composition according to any one of Claims 1 to 17 to the skin, in particular the face.

INTERNATIONAL SEARCH REPORT

International application No

PCT/JP2014/073414

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K8/25 A61K8/26 A61K8/37 A61Q1/12 A61K8/81
A61K8/89 A61K8/891 A61K8/897 A61K8/92 A61K8/02
A61K8/19

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)

EP0-Internal, WPI Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 112 736 A2 (KAO CORP [JP]) 4 July 2001 (2001-07-04) example 1 page 7, paragraph 37 page 2, lines 6-9 -----	1-3,8,9, 13-18
X	EP 2 420 221 A1 (SHISEIDO CO LTD [JP]) 22 February 2012 (2012-02-22)	1-4,8-18
Y	page 36, paragraph 164 page 8, paragraph 43 page 3, paragraph 8 -----	1-18
Y	EP 2 233 126 A1 (SHISEIDO CO LTD [JP]) 29 September 2010 (2010-09-29) pages 17,18, paragraph 65; table 9 page 2, paragraph 7 page 6, paragraph 26 ----- -/-	1-18



Further documents are listed in the continuation of Box C.



See patent family annex.

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INTERNATIONAL SEARCH REPORT

International application No

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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.
A	EP 2 289 484 A1 (MIYOSHI KASEI INC [JP]; DAIKIN IND LTD [JP]) 2 March 2011 (2011-03-02) the whole document -----	1-18

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/JP2014/073414

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1112736	A2	04-07-2001	CN 1302597 A	11-07-2001
			DE 60023254 T2	03-08-2006
			EP 1112736 A2	04-07-2001
			JP 3850612 B2	29-11-2006
			JP 2001187714 A	10-07-2001
			TW 528601 B	21-04-2003
			US 2002012682 A1	31-01-2002

EP 2420221	A1	22-02-2012	AU 2010237765 A1	03-11-2011
			CN 102395351 A	28-03-2012
			EP 2420221 A1	22-02-2012
			HK 1165290 A1	21-03-2014
			KR 20120041691 A	02-05-2012
			RU 2011142385 A	27-05-2013
			US 2012039971 A1	16-02-2012
			WO 2010119954 A1	21-10-2010

EP 2233126	A1	29-09-2010	CN 101903006 A	01-12-2010
			EP 2233126 A1	29-09-2010
			ES 2395332 T3	12-02-2013
			HK 1148213 A1	01-02-2013
			JP 4499173 B2	07-07-2010
			JP 4517000 B2	04-08-2010
			JP 2009167181 A	30-07-2009
			JP 2009167182 A	30-07-2009
			KR 20100080629 A	09-07-2010
			US 2010266519 A1	21-10-2010
			WO 2009078486 A1	25-06-2009

EP 2289484	A1	02-03-2011	CN 102036650 A	27-04-2011
			EP 2289484 A1	02-03-2011
			US 2011110995 A1	12-05-2011
			WO 2009142047 A1	26-11-2009
