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(54) Title: PERSONAL CARE AND DERMATOLOGIC COMPOSITIONS

(57) Abstract: The present invention relates to personal care and dermatologic products, both emulsions and anhydrous formulations, containing a non-cross-linked silicone polymer ("NXL Silicone Polymer") made by the hydrosilylation reaction of a terminal divinyl silicone polymer and a terminal disilanic-hydrogen silicone polymer.

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Personal Care and Dermatologic Compositions
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Personal Care and Dermatologic Compositions

[0001] The present invention relates to the use in personal care and dermatologic finished products of a non-cross-linked silicone polymer ("NXL Silicone Polymer") made by the hydrosilylation reaction of a terminal divinyl silicone polymer and a terminal disilanic-hydrogen silicone polymer. More particularly, the present invention relates to both anhydrous formulations as well as emulsions (both two-phase and three-phase) containing the NXL Silicone Polymer which when applied to the hair, skin or nails provide coloring, conditioning and/or other desired benefits. Additionally, formulations containing the NXL Silicone Polymer produce unique tactile and performance properties including, but not limited to, improvements in terms of cushion, spreadibility, long-wear, smudge and transfer resistance, mattification, gloss and optical blurring, as well as reducing the appearance of fine lines and wrinkles associated with chronological or environmentally-caused aging. These properties are achieved by depositing on the skin, hair or nails, a film with unique sensorial attributes.

Background of the Invention

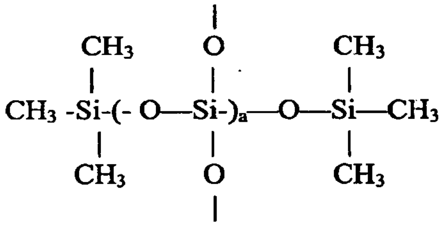
[0002] There has been and remains a need both among formulators of cosmetic and dermatologic products, as well as consumers who use them, for products that deposit on the skin, hair or nails a cosmetically-acceptable film containing one or more colorants or active ingredients. Additionally, there has been and remains a need for a long-wearing cosmetically-acceptable film – one that lasts until the consumer purposefully removes the product (*i.e.*, by washing with water or by using a composition specifically formulated to remove the product). By "cosmetically-acceptable film" is meant a film having a desired safety profile (*e.g.*, lack of irritation and lack of sensitization) that allows the skin, hair or nails to breathe, retain moisture and exhibit a superficially attractive appearance. A "cosmetically-acceptable film" is also one that on sensorial evaluation is not perceived as being too heavy, tight or tacky. By "colorant" is meant a pigment or dye that imparts color to the hair, skin or nails.

[0003] It is well-known in the art that cosmetically-acceptable films may be produced by polymers, either natural (*e.g.*, cellulosic materials) or synthetic. Synthetic polymers are generally classified into two groups – synthetic organic polymers (those comprised of repeating organic moieties) and silicone polymers (those containing repeating units of silicon and oxygen). Some synthetic polymers contain both siloxane monomers and organic moieties. These are described in the art as organofunctional silicone polymers.

[0004] Synthetic organic polymers may be obtained, for example, by polymerizing ethylenically unsaturated monomers, such as acrylates or alkylenes. While synthetic polymers comprised of organic moieties can provide desired surface properties not found in silicone polymers, it is recognized by those of skill in the art that these polymers have limitations, particularly in terms of plasticity. Synthetic organic polymers often crack on dynamic surfaces such as skin. For this reason and others, synthetic organic polymers are not as widely used in topically-applied compositions as silicone polymers.

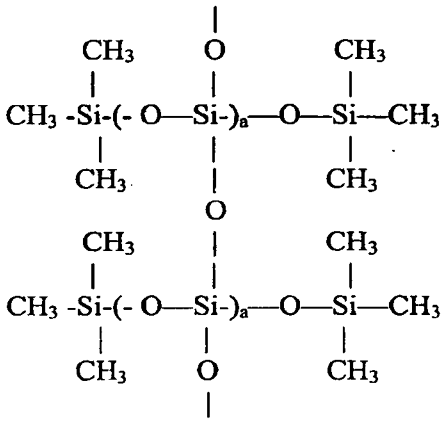
[0005] Silicone film-forming polymers are well-known in the art and are comprised of at least two silicone backbones joined by a "cross-linking group". The film-forming properties of silicone polymers are determined by the number of cross-linking groups, expressed as a percentage of the total molecular weight of the polymer. It is the degree of cross-linking that determines the extent to which the groups attached to the backbone of a silicone polymer rotate and, ultimately, the properties of the final polymer. Silicone polymers without cross-linking groups rotate freely and are free-flowing fluids. With the addition of cross-linking groups to the backbone, the silicone polymer becomes a "rubbery" elastomer. The addition of still more cross-linking groups produces a harder more brittle material known as a "resin".

[0006] Silicone resins (and elastomers) can be classified based on the nature of the cross-linking group. One such class is the so-called "Q resins".



$$\mathrm{CH_3{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}({-}O{-}\underset{\underset{|}{O}}{\overset{\overset{|}{O}}{Si}}{-})_a{-}O{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}CH_3}$$

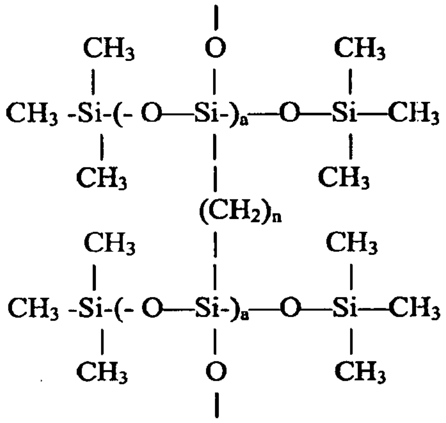
[0007] In "Q" resins, the cross-linking group (–O–) connects to another silicone polymer creating the following silicone polymer:



$$\begin{array}{c}\mathrm{CH_3{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}({-}O{-}\overset{\overset{|}{O}}{Si}{-})_a{-}O{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}CH_3}\\ |\\ \mathrm{O}\\ |\\ \mathrm{CH_3{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}({-}O{-}\underset{\underset{|}{O}}{Si}{-})_a{-}O{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}CH_3}\end{array}$$

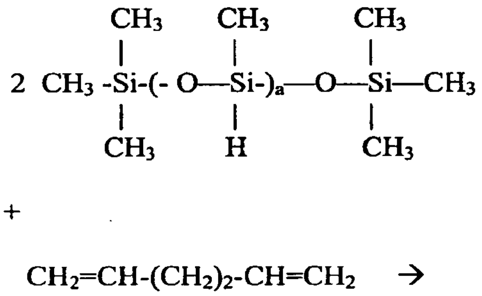
[0008] The resin is referred to as Q – short for quad – because the Si is bonded to four oxygen atoms. Q resins are further described in U.S Patent No. 6,139,823. (To the extent pertinent, the disclosures of all granted US patents and published US Patent Applications cited are incorporated in their entirety by reference.) Q resins are generally very powdery and, consequently, are rarely used without a separate plasticizer. Q resins are also known to cause drying of the skin or hair.

[0009] Another class of silicone resin has an alkyl-containing cross-linking group.



$$\begin{array}{ccccc}
 & & | & & \\
 & CH_3 & O & & CH_3 \\
 & | & | & & | \\
CH_3\text{-} & Si\text{-}(\text{-}O & -Si\text{-})_a & -O- & Si-CH_3 \\
 & | & | & & | \\
 & CH_3 & | & & CH_3 \\
 & & (CH_2)_n & & \\
 & CH_3 & | & & CH_3 \\
 & | & | & & | \\
CH_3\text{-} & Si\text{-}(\text{-}O & -Si\text{-})_a & -O- & Si-CH_3 \\
 & | & | & & | \\
 & CH_3 & O & & CH_3 \\
 & & | & &
\end{array}$$

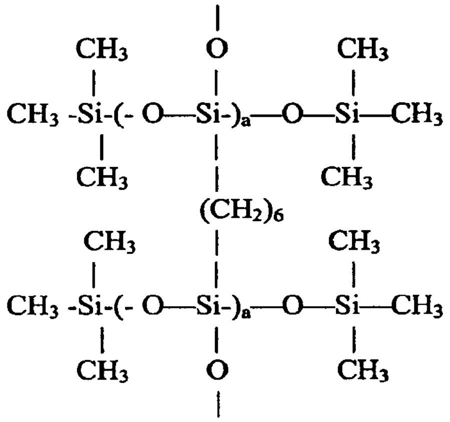
[0010] An example of such an alkyl-containing cross-linked silicone polymer (where n = 1) is formed by the following reaction



$$\begin{array}{ccccc}
 & CH_3 & CH_3 & & CH_3 \\
 & | & | & & | \\
2\ CH_3\text{-} & Si\text{-}(\text{-}O & -Si\text{-})_a & -O- & Si-CH_3 \\
 & | & | & & | \\
 & CH_3 & H & & CH_3
\end{array}$$

+

$CH_2{=}CH\text{-}(CH_2)_2\text{-}CH{=}CH_2 \rightarrow$



$$\mathrm{CH_3{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}(-O{-}\underset{|}{\overset{\overset{|}{O}}{Si}}{-})_a{-}O{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}CH_3}$$

$$\mathrm{(CH_2)_6}$$

$$\mathrm{CH_3{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}(-O{-}\underset{\underset{|}{O}}{\overset{|}{Si}}{-})_a{-}O{-}\underset{CH_3}{\overset{CH_3}{Si}}{-}CH_3}$$

[0011] As illustrated above, the vinyl groups on divinyl molecule react with the SiH groups by a process generally referred to as hydrosilylation. This reaction is typically performed in a solvent (*e.g.*, cyclomethicone, hexamethyl disiloxane, or a volatile hydrocarbon, such as isododecane) in the presence of a platinum-based catalyst. Chloroplatinic acid or platinum divinyl (commonly referred to as Karstedt) catalysts are preferred. The resulting material is a viscous liquid that forms a film after evaporation of the solvent.

[0012] Because the NXL Silicone Polymers do not contain cross-linking groups, in theory, they should be free-flowing oily liquids that do not produce films. Surprisingly and unexpectedly, however, topically-applied cosmetic and dermatologic products of the present invention – those containing the NXL Silicone Polymers and a solvent – form a film of the type associated with cross-linked polymers (*i.e.*, elastomers and resins).

[0013] Without wishing to be bound by any one theory, applicants believe that as the NXL Silicone Polymers grow, the polymer "backbites," thereby forming cyclic structures. As a consequence of this backbiting phenomenon, the NXL Silicone Polymers form an interlocked system of cyclic materials which, after the solvent evaporates, deposit a film on the skin, hair or nails. Thus, the NXL Silicone Polymers may be viewed as the product of two competing reactions – chain growth and cyclization – where the size of the cyclic material is controlled by the choice of raw materials.

[0014] US Patent No. 6,936,686 describes a cross-linked silicone polymeric gel made by reacting a specific polyorganohydrosiloxane, one having a molecular weight of about 3500 to about 4000 and 6-7 Si-H bonds per molecule, with a lower alkylene terminated polydimethylsiloxane having a molecular weight of about 20,000 to about 25,000. The polymerization is performed in a low viscosity silicone oil or hydrocarbon oil in the presence of a hydrosilylation catalyst. The resulting cross-linked silicone polymer (about 3% to about 15% cross-linked polymer and about 97% to about 85% solvent) is then milled in a colloid mill. The NXL Silicone Polymer contained within the compositions of the present invention is not cross-linked.

[0015] There has been and remains a need for color cosmetic products, in particular lipsticks, liquid and stick foundations, and mascaras, that are long wearing. This need is met by the compositions of the present invention. In addition, there has been and remains a need for color cosmetic compositions that are transfer resistant. This need is also met by the compositions of the present invention.

[0016] NXL Silicone Polymers have the ability to increase refractive index of a liquid glossing agent (to about 1.45). Accordingly, a further advantage of compositions of the present invention is the ability to create both glossy and matte finishes. (As will be appreciated by persons of skill in the art, mattification is achieved by closely matching the refractive indexes of the internal and external phases of an emulsion.)

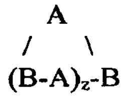
[0017] Compositions of the present invention can be used to impart natural-looking, rich colors to the skin without appearing "made up." In part, this is because the film created by products of the present invention has the desirable properties of smudge resistance and optical blurring.

[0018] Additionally, there has been and remains a need for stable oil-in-water emulsions having a low internal oil phase volume (as low as about 10% by weight of the composition) that produces a non-tacky, powdery, light skin feel. This need is also met by compositions of the present invention. US Patent Application Publication Nos. 2006/0120984 and 2006/0120986 describe a silicone copolymer with a dynamic viscosity range of from 1 x 10^6 to 1 x 10^8. The NXL Silicone Polymer produced by reacting a terminal divinyl silicone polymer and a terminal disilanic-hydrogen silicone polymer is solid, and does not have a measurable dynamic viscosity at room temperature.

[0019] Other objects of the invention will become clear as one reads the specification attached hereto.

Summary of the Invention

[0020] The present invention relates to topically-applied personal care and dermatologic compositions comprising a NXL Silicone Polymer conforming to the structure:

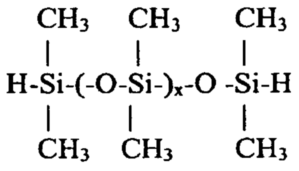


$$\begin{array}{c} A \\ / \quad \backslash \\ (B\text{-}A)_z\text{-}B \end{array}$$

Formula 1

wherein z is an integer ranging from 2 to 2000;

(i) A is a terminal disilanic-hydrogen silicone polymer conforming to the structure:

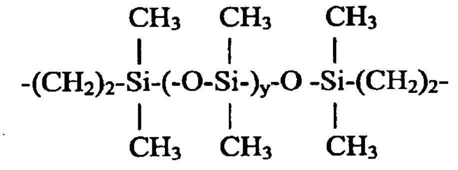


$$\begin{array}{ccccc} & CH_3 & CH_3 & & CH_3 \\ & | & | & & | \\ H\text{-} & Si\text{-}(\text{-}O\text{-} & Si & \text{-})_x\text{-}O\text{-} & Si\text{-}H \\ & | & | & & | \\ & CH_3 & CH_3 & & CH_3 \end{array}$$

Formula 2

wherein x is an integer ranging from 0 to 5000;

(ii) B is a terminal divinyl silicone polymer conforming to the structure:



$$-(CH_2)_2-\underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{Si}}}}-(-O-\underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{Si}}}}-)_y-O-\underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{Si}}}}-(CH_2)_2-$$

Formula 3

wherein

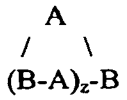
y is an integer ranging from 0 to 5000; and

(iii) the NXL Silicone Polymer is dissolved in at least one solvent selected from the group consisting of linear silicones, cyclic silicones, paraffinic hydrocarbons and mixtures thereof.

Detailed Description of the Invention

[0021] One aspect of the present invention relates to topically-applied personal care and dermatologic compositions comprising

(i) a NXL Silicone Polymer conforming to the structure:



$$\begin{array}{c} A \\ / \quad \backslash \\ (B\text{-}A)_z\text{-}B \end{array}$$

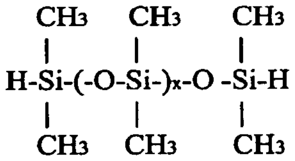
Formula 1

wherein A is a terminal disilanic-hydrogen silicone polymer and B is a terminal di-vinyl silicone polymer; and

(ii) at least one solvent for the NXL Silicone Polymer, where the solvent is selected from the group consisting of linear silicones, cyclic silicones, paraffinic hydrocarbons and mixtures thereof.

[0022] In Formula 1, "z" is an integer ranging from 2 to 2,000. The value of "z" determines if the product is resinous or elastomeric. Elastomeric materials are "rubbery" and typically have a z value of less than about 1,000. Resins, in contrast, are not rubbery, but are hard and brittle. Resins typically have a z value of from about 1,000 to about 2,000.

[0023] As used in the present application, by terminal disilanic-hydrogen silicone polymer is meant a polymer conforming to the structure:



$$\mathrm{H-\underset{CH_3}{\overset{CH_3}{|}}\!\!\!\!\!\!\overset{}{Si}-(-O-\underset{CH_3}{\overset{CH_3}{Si}}-)_x-O-\underset{CH_3}{\overset{CH_3}{Si}}-H}$$

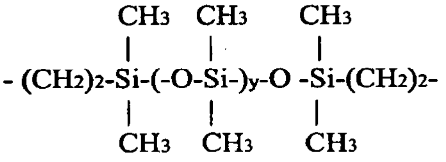
wherein x is an integer ranging from 2 to 2,000.

[0024] In a preferred embodiment x is an integer ranging from 5 to 200.

[0025] In a more preferred embodiment x is an integer ranging from 10 to 100.

[0026] In a still more preferred embodiment x is an integer ranging from 10 to 50.

[0027] As used in the present, by terminal divinyl silicone polymer is meant a polymer conforming to the structure:



$$\mathrm{-(CH_2)_2-\underset{CH_3}{\overset{CH_3}{Si}}-(-O-\underset{CH_3}{\overset{CH_3}{Si}}-)_y-O-\underset{CH_3}{\overset{CH_3}{Si}}-(CH_2)_2-}$$

wherein y is an integer ranging from 2 to 2,000.

[0028] In a preferred embodiment y is an integer ranging from 5 to 200.

[0029] In a more preferred embodiment y is an integer ranging from 10 to 100.

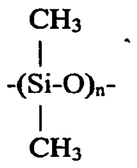
[0030] In a still more preferred embodiment y is an integer ranging from 10 to 50.

[0031] The NXL Silicone Polymer contained within compositions of the present invention is formed by reacting a terminal disilanic-hydrogen polymer and a terminal di-vinyl silicone polymer in a solvent selected from the group consisting of linear silicones, cyclic silicones, paraffinic hydrocarbons and mixtures. The reaction is conducted in the presence of a suitable hydrosilylation catalyst.

[0032] As used in the present application, the term "volatile" means a fluid that has a measurable vapor pressure, preferably of at least about 2 mm. of mercury at 20°C. In contrast, by the term "nonvolatile" is meant a fluid that has a vapor pressure of less than about 2 mm. of mercury at 20°C.

[0033] Preferred volatile solvents generally have a viscosity of from about 0.5 to about 10 centipoise at 25°C and are selected from the group consisting of volatile cyclic silicones, volatile linear silicones, volatile paraffinic hydrocarbons and mixtures thereof.

[0034] Volatile cyclic silicones, (also referred to by those of skill in the art as cyclomethicones) are articles of commerce known to those of skill in the art and conform to the formula



$$-(\overset{\overset{\large CH_3}{|}}{\underset{\underset{\large CH_3}{|}}{Si}}-O)_n-$$

wherein n is an integer from 3 to 6.

[0035] Linear volatile silicone fluids are articles of commerce known to those of skill in the art and conform to the formula:

$$(CH_3)_3\text{-}Si\text{-}O\text{-}[Si(CH_3)_2\text{-}O]_n\text{-}Si(CH_3)_3$$

wherein n is an integer from 0 to 7, preferably from 0 to 5.

[0036] Linear volatile silicones and cyclic volatile silicones are available from various commercial sources including Dow Corning Corporation (Midland, Michigan), Shinetsu (Akron, Ohio), Siltech Corp. (Ontario, Canada) and Momentive Performance

Materials (Wilton, CT), formerly GE Silicones. Representative volatile silicones are sold under the tradenames Dow Corning 244, 245, 344, and 200 fluids.

[0037] Volatile paraffinic hydrocarbons are articles of commerce known to those of skill in the art. In the compositions of the present invention, straight or branched chain paraffinic hydrocarbons having 5 to 40 carbon atoms, more preferably 8-20 carbon atoms, may be used. Non-limiting examples of preferred volatile paraffinic hydrocarbons include pentane, hexane, heptane, decane, dodecane, tetradecane, tridecane, and C_{8-20} isoparaffins as disclosed in U.S. Pat. Nos. 3,439,088 and 3,818,105.

[0038] Particularly preferred volatile paraffinic hydrocarbons have the following physicochemical properties: molecular weight of from about 70 to about 225, more preferably from about 160 to 190; boiling point range of from about 30°C to about 320°C, preferably from about 60°C to about 260°C; viscosity of less than about centistokes 10 at 25°C. Non-limiting examples of particularly preferred volatile paraffinic hydrocarbons are available from Exxon-Mobil under the ISOPARS tradename. C_{12} isoparaffins sold by Permethyl Corporation and distributed by Presperse under the tradename Permethyl 99A are also particularly preferred volatile paraffinic hydrocarbons.

[0039] In a particularly preferred embodiment, the reaction of a terminal disilanic-hydrogen polymer and a terminal divinyl silicone polymer is performed in a cyclomethicone or isododecane solvent system.

[0040] In a preferred embodiment, the catalyst is chloroplatinic acid.

[0041] In another preferred embodiment, the catalyst is Karstedt catalyst.

[0042] In a yet another preferred embodiment, there is an excess of terminal disilanic-hydrogen silicone polymer relative to terminal divinyl silicone polymer present in the reaction mixture.

[0043] In a particularly preferred embodiment, there is a 10% by weight excess of terminal disilanic-hydrogen silicone polymer relative to terminal divinyl silicone polymer present in the reaction mixture.

[0044] A preferred embodiment of the present invention is directed to a composition comprising an amount of the NXL Silicone Polymer sufficient to form a film when applied to the skin.

[0045] Another preferred embodiment of the present invention is directed to a composition comprising an amount of the NXL Silicone Polymer sufficient to form a film when applied to the hair.

[0046] Yet another preferred embodiment of the present invention is directed to a composition comprising an amount of the NXL Silicone Polymer sufficient to form a film when applied to the nails.

[0047] In each of the above-described preferred embodiments, the NXL Silicone Polymer is preferably present at a concentration of from about 0.1% to about 60% by weight of the total composition.

[0048] Yet another aspect of the present invention is directed to color cosmetic products comprising a NXL Silicone Polymer in an amount sufficient to deposit on the skin, hair or nails a film containing at least one colorant.

[0049] Colorants are substances known to those of skill in the art that are intended to color or opacify a cosmetic composition and, ultimately, to impart a desired color when applied to the skin, hair or nails. Colorants are generally present in colored cosmetic products at concentrations of from about 0.1% to 50%, preferably from about 0.5% to about 30%, and more preferably from about 1% to about 20%, based on the weight of the composition. By color cosmetic product is meant make-ups, nail polishes and products for treating colored hair (*e.g*, shampoos and conditioners).

[0050] Pigments suitable for use in colored cosmetic compositions of the present may be white or colored, mineral or organic, uncoated or surface-treated. Surface-treated pigments may be covered with a coating sufficient to render the surface of the pigment particles water repellant (hydrophobic), oil dispersible (lipophilic), both lipophobic and hydrophobic (perfluoro treated), or hydrophilic. Non-limiting examples of colorants are pigments and dyes as described, for example, in US Patent Nos. 6,869,597.

[0051] Colored cosmetic products according to this aspect of the present invention may be in the form of a lipstick, a foundation makeup, a concealer, a blush, an eyeshadow, an eyeliner, a mascara or a nail polish/enamel.

[0052] In particularly preferred embodiment of this aspect of the invention, the colored cosmetic product has a high gloss.

[0053] In particularly preferred embodiment of this aspect of the invention, the colored cosmetic product is long-wearing.

[0054] In a still more preferred embodiment, the colored cosmetic product is long-wearing and has a high gloss.

[0055] In another particularly preferred embodiment of this aspect of the invention, the colored cosmetic product is transfer-resistant. Tests for transfer-resistance are known to those of skill in the art and include the "Kiss Test" described in Example 4 of US Patent No. 5,505,937.

[0056] Transfer-resistant colored cosmetic compositions according to the present invention may be formulated with (i) a NXL Silicone Polymer; (ii) a volatile solvent, preferably a volatile silicone or C_8-C_{20} isoparaffin as described above; (iii) a wax;

(iv) an oil or silicone fluid; and (v) pigments and/or powders. A representative, non-limiting example of such a transfer-resistant colored cosmetic composition contains the above ingredients at the following concentrations:

NXL Silicone Polymer	0.1 – 15%
Volatile Solvent	1 – 70%
Wax	10 – 45%
Oil or Si fluid	1 – 30%
Pigments and/or Powders	5 – 50%

A preferred wax is a silicone ester wax of the type described in US Patent No. 5,505,937. The volatile solvent, wax, oil or silicone fluid, pigments and powders are each described in detail in the '937 Patent.

[0057] Pigments and powders in the above transfer-resistant composition may be present in a pigment-to-powder ratio (expressed on a weight:weight basis) ranging from 1:20 to 20:1. Preferably, the pigments and/or powders are micronized, having an average particle size of from about 0.02 to 50 microns. If the oil or silicone fluid is non-volatile, preferably it is of a viscosity of less than about 50,000 centipoise at room temperature. More preferably, the viscosity of a non-volatile oil or non-volatile silicone is less than about 10,000 centipoise at room temperature, still more preferably less than about 1,000 centipoise at room temperature.

[0058] A still further aspect of the present invention is directed to skin or hair treatment products comprising a NXL Silicone Polymer in an amount sufficient to deposit on the skin or hair a film containing at least one skin care or hair care active ingredient.

[0059] By skin care active ingredient is meant an ingredient that helps to reduce the appearance of and/or prevent the formation of fine lines, wrinkles, age spots, sallowness, blotchiness, redness, dark circles (*i.e.*, under the eyes). Skin care active ingredients also help to reduce skin oiliness, reduce transepidermal water loss, improve skin retention of moisture and/or improve skin elasticity. Non-limiting examples of skin care actives include: anti-inflammatory agents (e.g., 1,3 1,6 beta glucan; polyglutamic acid (and) polyfructose); humectants; skin bleaching/lightening agents (*e.g.*, hydroquinone, kojic acid, ascorbic acid, magnesium ascorbyl phosphate, ascorbyl 3 aminopropyl phosphate, ascorbyl 3 aminopropyl dihydrogen phosphate); skin soothing agents (*e.g.*, panthenol and derivatives, aloe vera, pantothenic acid and its derivatives, allantoin, bisabolol, and dipotassium glycyrrhizinate); antioxidants; vitamins and derivatives thereof; exfoliants (*e.g.*, abrasive particles, hydroxy-acids); anti-aging ingredients, including short-chain peptides (*i.e.*, having less than about 12 amino acids); and self-tanning agents (*e.g.*, dihydroxyacetone).

[0060] In a particularly preferred embodiment of this aspect of the invention, the skin care active is a sunscreen or physical sunblock. In the United States, the use of sunscreens and sunblocks are regulated by the US Food and Drug Administration. . The following FDA-approved sunscreens and sunblocks may be used in compositions of the present invention: p-Aminobenzoic acid up to 15 %; Avobenzone up to 3%; Cinoxate up to 3%; Dioxybenzone up to 3%; Homosalate up to 15%; Menthyl anthranilate up to 5%; Octocrylene up to 10%; Octylmethoxycinnamate (Octinoxate) up to 7.5%; Octyl salicylate up to 5%; Oxybenzone up to 6%; Padimate O up to 8%; Phenylbenzimidazole sulfonic acid (Ensulizole) up to 4%; Sulisobenzone up to 10%; Titanium dioxide up to 25%; Trolamine salicylate up to 12 %; Zinc oxide up to 25%. Other sunscreens and sunblocks are approved in countries outside the US and are suitable for inclusion in compositions of the present invention.

[0061] Additional examples of skin care actives, including, but not limited to, antimicrobial agents and anti-acne agents (*e.g.*, resorcinol, sulfur, salicylic acid, benzoyl peroxide, lincomycins), are disclosed in U.S. Patent Nos. 6,492,326 and 6,277,892 and U.S. Patent Application Publication Nos. 2005/0142095 and 2004/0180020.

[0062] Reduction in the appearance of fine lines and wrinkles can be measured by a number of techniques known to those of skill in the art and including clinical assessment by a trained observer (*e.g.*, doctor, nurse, technician) instrumentally (*e.g.*, by use of Silflo replica masks or an imaging system such as VISIA from Canfield Scientific.) Improvements in elasticity are measurable, for example, with a Twistometer. Reduction in the rate of transepidermal water loss and improvement in skin moisture content are measurable, respectively, with an evaporimeter and corneometer.

[0063] Hair care actives include ingredients known to those of skill in the art that moisturize, condition, improve bending modulus, increase tensile strength, increase sheen/shine, improve touchability, reduce split ends, volumize, reduce fly-away, and/or increase longevity of color treatment. Such materials include proteins and polypeptides and derivatives thereof, antioxidants, humectants and moisturizing and conditioning agents. One preferred conditioning agent is Polyquaternium-10.

[0064] Another aspect of the present invention is directed to a personal care or dermatologic composition comprising an amount of the NXL Silicone Polymer sufficient to form a film on the hair or skin in combination with a second film-forming polymer.

[0065] In one preferred embodiment of this aspect of the invention, the second film-forming is a cross-linked silicone polymer. The cross-linked silicone polymer may be either an elastomer or resin.

[0066] In another preferred embodiment of this aspect of the invention, the second film-forming polymer is a non-silicone polymer. A preferred non-silicone polymer according to this aspect of the invention is a polymer comprised of polymerized ethylenically unsaturated monomers, alone or in combination with one or more organic moieties.

[0067] In a further embodiment of this aspect of present invention, the second film-forming polymer is an organofunctional silicone polymer.

[0068] Compositions of the present invention may be in the form of a cream, lotion, gel or serum. Compositions of the present invention may be emulsions comprised of water phase and one or two phases which are immiscible in water – either oil or silicone. More particularly, emulsions of the present invention may be dual-phase with water as the external phase (oil-in-water; silicone-in-water) or with water as the internal phase (*i.e.*, water-in-oil; water-in-silicone). Emulsions of the present invention may also be three-phase emulsions (*e.g.*, water-in-oil-in-water; oil-in-water-in-oil).

[0069] A particularly preferred aspect of the present invention is directed to an oil-in-water or silicone-in-water emulsions comprising a NXL Silicone Polymer and having a low internal phase volume. Preferably, the internal phase volume is less than about 20%, more preferably less than about 15%, and still more preferably less than about 12%.

[0070] Compositions of the present invention may be anhydrous gels or serums.

[0071] Additionally, compositions of the present invention may be suspensions or dispersions.

[0072] Emulsion or anhydrous embodiments of the present invention may also contain one or more of the following water-immiscible materials which are liquid at room temperature: (i) non-volatile silicone fluids, preferably have a viscosity ranging of from about 20 to 100,000 centistokes at 25°C; (ii) nonvolatile hydrocarbon oils including, but not limited to, isoparaffins and olefins having greater than 20 carbon atoms; (iii) cosmetically-acceptable esters as described below; (iv) lanolin and derivatives thereof; (v) glyceryl esters of fatty acids or triglycerides, derived from animal or vegetable sources, non-limiting examples of which include castor oil, C_{10-18} triglycerides, caprylic/capric triglycerides, coconut oil, corn oil, cottonseed oil, sesame oil, olive oil, palm oil, peanut oil, rapeseed oil, soybean oil, safflower oil, sunflower seed oil and walnut oil, and derivatives thereof; (vi) fluorinated oils including, but not limited to, fluorinated silicones, fluorinated esters and perfluropolyethers; and (vii) Guerbet esters formed by the reaction of a carboxylic acid with a Guerbet alcohol.

[0073] The above-listed water-immiscible materials which are liquid at room temperature may be present in compositions of the present invention at concentrations of from about 0.1% to about 95%, preferably from about 5% to about 80%, more preferably from about 10% to about 75%, by weight of the total composition.

[0074] As used herein, "cosmetically-acceptable ester" refers to compounds formed by the reaction of a mono-, di- or tri-carboxylic acid with an aliphatic or aromatic alcohol that are not irritating or sensitizing when applied to the skin. The carboxylic acid may contain from 2 to 30 carbon atoms, and may be straight-chain or branched-chain, saturated or unsaturated. The carboxylic acid may also be substituted with one or more hydroxyl groups. The aliphatic or aromatic alcohol may contain 2 to 30 carbon atoms, may be straight-chain or branched-chain, saturated or unsaturated. The aliphatic or aromatic alcohol may contain one or more substituents including, for example, a hydroxyl group.

[0075] The International Cosmetic Ingredient Dictionary and Handbook, (11th Edition), published by the Cosmetics Fragrance and Toiletries Association, describes a wide variety of non-limiting ingredients used in topically-applied personal care and dermatologic products, which may be formulated in compositions of the present invention. These include active ingredients (as described above), plasticizers, structuring agents, viscosity modifiers, thickeners, gellants, and particulate fillers which are further described in U.S. Patent Nos. 6,492,326 and 6,277,892 and U.S. Patent Application Publication Nos. 2004/0180020 and 2005/0142095. By structuring agent is meant an ingredient that improves or increases the hardness of an oil as measured by test methods well-known to those of skill in the art including drop point and penetration.

[0076] In a preferred embodiment, compositions of the present invention contain one or more plasticizers to further modify spreadability and other application characteristics of the composition. Plasticizers may be present at concentrations of from about 0.01% to about 20%, preferably about 0.05% to about 15%, and more preferably from about 0.1% to about 10%.

[0077] Viscosity modifiers or thickeners may be added to compositions of the present invention at concentrations of from about 0.01% to about 60%, preferably from about 0.05% to about 50%, more preferably from about 0.1% to about 45%.

[0078] The compositions of the present invention may comprise one or more surfactants at a concentration of from about 0.01% to about 20%, preferably from about 0.1% to about 15%, and more preferably from about 0.5% to about 10% by weight of the total composition. The surfactant may be amphoteric, anionic, cationic, or non-ionic.

[0079] Amphoteric surfactants suitable for use in compositions of the present invention include propionates, alkyldimethyl betaines, alkylamido betaines, sulfobetaines, imidazoline.

[0080] Anionic surfactants suitable for use in compositions of the present invention include fatty alcohol sulfates, alpha olefin sulfonates, sulfosuccinates, phosphate esters, carboxylates and sarcosinates.

[0081] Cationic surfactants suitable for use in compositions of the present invention include alkyl quaternaries, alylamido quaternaries, imidazoline quaternaries.

[0082] Nonionic ionic surfactants suitable for use in compositions of the present invention include alkanolamides, ethoxylated amides, esters, alkoxylated alcohols, alkoxylated triglycerides, alkylpolyglucosides, amine oxides, sorbitan esters and ethoxylates.

[0083] Surfactants may also be silicone surfactants including, but not limited, dimethicone copolyols, alkyl dimethicone copolyols, silicone quaternary compounds, silicone phosphate esters and silicone esters.

[0084] Each of the above surfactant classes are described in O'Lenick, *Surfactants: Strategic Personal Care Ingredients* (Allured Publishing 2005), the disclosure of which is incorporated by reference. Other suitable surfactants are described in *McCutcheon's Detergents and Emulsifiers* (1986), the disclosure of which is also incorporated by reference.

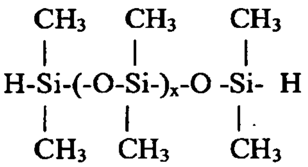
A. Perle; C. Tarletsky; A. O'Lenick, Jr.
Personal Care and Dermatologic Compositions
Attorney Docket 538-004

Examples

[0085] The following examples are further illustrative of the present invention. The components and specific ingredients are presented as being typical, and various modifications can be derived in view of the foregoing disclosure within the scope of the invention.

[0086] **Raw Material Example –**
Terminal Disilanic-Hydrogen Silicone Polymers

[0087] Terminal disilanic-hydrogen silicone polymers are commercially-available from Siltech Corp. (Toronto, Canada). They conform to the following structure



$$H\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-}(\text{-}O\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-})_x\text{-}O\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-}H$$

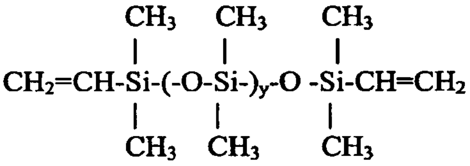
wherein x is an integer ranging from 0 to 5000.

[0088]

Example	x
1	0
2	20
3	50
4	75
5	100
6	125
7	200
8	500
9	1000
10	2000

[0089] **Raw Material Example – Terminal Divinyl Silicone Polymers**

[0090] Terminal divinyl silicone polymers are commercially-available from Siltech Corp. (Toronto, Canada). They conform to the following structure:



$$CH_2=CH-\overset{CH_3}{\underset{CH_3}{Si}}-(-O-\overset{CH_3}{\underset{CH_3}{Si}}-)_y-O-\overset{CH_3}{\underset{CH_3}{Si}}-CH=CH_2$$

wherein y is an integer ranging from 0 to 2000.

[0091]

Example	y
11	2000
12	1000
13	500
14	200
15	125
16	100
17	75
18	50
19	20
20	0

[0092] **Raw Material Example – Hydrosilylation Solvent**

[0093] The hydrosilylation reactions are advantageously run in a volatile solvent, which can later be distilled off is desired. It is also a practice to sell the products in solvent.

[0094]

Example	Ingredient
21	isododecane

22	cyclomethicone
23	polydimethyl siloxane 350 viscosity (Siltech F-350)

[0095] **Hydrosilylation**

[0096] Hydrosilylation is a process that reacts terminal divinyl silicone polymers with terminal disilanic-hydrogen silicone polymers. This reaction, including suitable catalysts, is described in the following US patents: USPN 3,715,334; USPN 3,775,452; USPN 3,159,601; USPN 3,220,972; USPN 3,576,027.

[0097] To the specified number of grams of the specified solvent is added the specified number of grams of the specified disilanic-hydrogen silicone polymer. The mass is mixed well. To that mixture is added the specified number of grams of the specified terminal divinyl silicone polymer. The reaction mass is mixed well until homogeneous. To that mixture is added 0.1% Karstedt catalyst, which is commercially available from Geleste. The reaction mass thickens over 4 hours. Once the maximum viscosity is reached the reaction is considered complete. The solvent may be distilled off or the product may be sold as prepared without additional purification.

[0098] **NXL Silicone Polymer Examples**

	Vinyl compound		Silanic Hydrogen		Solvent	
Example	Example	Grams	Example	Grams	Example	Grams
25	11	99.91	1	0.1	21	2000.0
26	12	97.87	2	2.34	22	2000.0
27	13	90.65	3	10.28	23	1441.8
28	14	72.5	4	30.25	21	1028.0
29	15	55.6	5	48.84	22	1305.5
30	16	44.7	6	60.83	23	1407.0

31	17	27.75	7	79.47	21	2145.0
32	18	9.47	8	99.58	21	1560.0
33	19	2.2	9	107.6	23	1100.0
34	20	0.13	10	109.9	22	1695.0

[0099] **Applications Examples**

[0100] **Lipsticks**

[0101] Non-limiting examples of cosmetic formulations of the present invention intended for application to the lips (*i.e.*, as a lipstick) include the following:

Ingredient	A	B	C	D	E	F	G	H
Example 28	99.30							
Example 25		99.30						
Example 30			99.30					
Example 26				99.30				
Example 27					99.30			
Example 31						99.30		
Example 26							99.30	
Example 32								99.30
Mica, Titanium Dioxide	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Mica, Titanium Dioxide and Iron Oxides	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Calcium Aluminum Borosilicate Titanium Dioxide	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25

[0102] The above-described compositions are prepared by mixing the listed ingredients at room temperature using an osterizer.

[0103] **Eyeshadows**

[0104] Non-limiting examples of cosmetic compositions of the present invention intended for application to the eyelids (i.e., as an eyeshadow) include the following:

Ingredient	I	J	K	L	M	N	O	P
Phase A								
Calcium Aluminium Borosilicate	25.00	25.00	25.00	25.00	23.00	23.00	23.00	23.00
Iron Oxide	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Manganese Violet	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35

<u>Phase B</u>								
Mica,Titanium Dioxide	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
<u>Phase C</u>								
Carnauba wax, beeswax	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Dipentaerythrityl Hexacaprylate/Hexacaprate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Isododecane,Quaternium-18, Hectorite, Propylene Carbonate	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Example 28	52.65	37.65	42.65	37.65	44.65	39.65	44.65	39.65
Example 25		15.00						
Example 30			10.00					
Example 26				15.00				
Example 27					10.00			
Example 31						15.00		
Example 26							10.00	
Example 32								15.00

[0105] The above-described compositions are prepared as follows: Pre-mix Phase A ingredients in an osterizer. Check the pigment dispersion. Repeat the process if needed. Combine Phase C ingredients and heat to 80° - 85° C. Add Phase B to Phase Add premixed Phase A to Phase B and C mixtures. Mix well at temperature. Add Phase D to mixture A-B-C. Continue mixing. Pour at 80° – 75° C into a mold.

[0106] **<u>Water-in-Oil Makeup (Examples Q and R)</u>**

Ingredient	INCI name	Supplier	Q	R
Permethyl 99A	Isododecane	Presperse	10.0	10.0
JEESILC DMC 322	Cyclopentasiloxane and Dimethicone Copolyol	JEEN International	5.0	5.0
JEESILC PS-VH	Isododecane and Bis-Vinyl Dimethicone/Dimethicone Copolymer	Jeen Intl	6.0	6.0
JEESILC PS-CMLV	Cyclomethicone and Bis-Vinyl Dimethicone/Dimethicone Copolymer	Jeen Intl	-	1.5
Abil WE-09	Polyglyceryl-4 Isostearate and Cetyl Dimethicone Copolyol and Hexyl Laurate	Goldschmidt	4.0	4.0
Bentone Gel VS-5	Cyclomethicone and Quaternium-18 Hectorite and SD Alcohol 40	Rheox	1.50	1.50
JEECIDE CAP-5	Phenoxyethanol and Caprylyl Glycol and Potassium Sorbate and Water and Hexylene Glycol	JEEN International	1.00	1.00
DI Water	Water		59.0	57.5
JEECHEM BUGL	Butylene Glycol	JEEN International	2.5	2.5
Sodium Chloride	Sodium Chloride		1.0	1.0

Ganzpearl GPA-550	Nylon 12	Presperse	1.0	1.0
TIO2 SI2	Titanium Dioxide and Methicone	LCW/Sensient	7.0	7.0
Yellow Iron Oxide SI	Iron Oxides and Methicone	LCW/Sensient	1.5	1.5
Red Iron Oxide SI	Iron Oxides and Methicone	LCW/Sensient	0.25	0.25
Black Iron Oxide SI	Iron Oxides and Methicone	LCW/Sensient	0.25	0.25

[0107] The above-described make-up compositions are prepared as follows: Using a homogenizer in the main tank, combine the Permethyl, JEESILC PS-VH and PS-CMLV and mix at moderate agitation until smooth. Add the JEESILC DMC 322, Abil WE-09, Jeecide CAP-5 and Bentone Gel VS-5 and mix for 15 minutes. In a side tank, pre-blend the Nylon 12, TiO_2 and Iron Oxides. Add to the main tank, and mix for 30 minutes. Switch to prop agitation. In a side tank, pre-blend the water, JEECHEM BUGL and Sodium Chloride. Slowly add the water phase to the oil phase using high speed prop agitation without aerating the batch. Mix for 20-25 minutes.

[0108] **Clear Lip Gloss (Example S)**

Ingredient	INCI name	Supplier	%
Jeesilc PS-DMLV	Dimethicone & Bis-Vinyl Dimethicone/Dimethicone Copolymer	JEEN Int'l	80.7
Jeesilc PTMF	Phenyl Trimethicone	JEEN Int'l	19.3

[0109] The above-described composition is a clear viscous liquid and is prepared as follows: Add the Jeesilc PS-DMLV and Jeesilc PTMF and mix well with prop agitation.

[0110] **Cooling Lip Balm (Example T)**

Ingredient	INCI name	Supplier	%
Jeesilc PS-DMLV	Dimethicone & Bis-Vinyl Dimethicone/Dimethicone Copolymer	Jeen Int'l	2.5
Cooling Balm Base	Polybutene & Petrolatum & Lanolin Alcohol & Triisostearyl Citrate & Mineral Oil & Menthol	Jeen Int'l	72.0
Mineral Oil	Mineral Oil		13.8
Jeenate 3H	Polyethylene	Jeen Int'l	2.0
Jeenate 4H	Polyethylene	Jeen Int'l	1.5

Beeswax – White	Beeswax		3.0
Vitamin E Acetate	Tocopheryl Acetate		0.2
Cloisonne Rouge Flambe 440X	Mica & Iron oxide & Titanium Dioxide	Engelhard	1.0
Flamenco Velvet 120V+	Mica & Titanium Dioxide	Engelhard	2.0
Timica Copper 340A	Mica & Iron oxide & Titanium Dioxide	Engelhard	2.0

[0111] The above-described composition is a pearly red/brown waxy solid and is prepared as follows: Add the Cooling Balm Base, Mineral Oil, Jeenate 3H and 4H and Beeswax in a vessel and heat to 70 – 75°C. When uniform, add in the Jeesilc PS-DMLV and Vitamin E Acetate. Mix well with prop agitation. Add in the pigments with homogenizing agitation. Hot pour into containers. Cool to room temperature.

[0112] **Fragrance-Free, Paraben-Free Daily Firming Serum (Example U)**

Phase	Ingredient	INCI name	Supplier	%
A	Jeesilc CPS-312	Cyclomethicone	JEEN Int'l	19.5
A	Gransil PSQ	Polymethylsilsesquioxane	Grant	5.0
A	Abil EM-97	Bis-PEG/PPG-14/14 Dimethicone	Degussa	3.0
A	Jeesilc PS-CM	Cyclomethicone & Bis-Vinyl Dimethicone/Dimethicone Copolymer	JEEN Int'l	5.0
A	Liponate CER	Cetyl Ricinoleate	Lipo	0.5
A	Jeecide CAP-5	Phenoxyethanol & Caprylyl Glycol & Potassium Sorbate & Water & Hexylene Glycol	JEEN Int'l	1.0
A	Vitamin E Acetate	Vitamin E Acetate	JEEN Int'l	0.5
B	DI Water	Water		39.5
B	Jeesilc DS-8	PEG-8 Dimethicone	Jeen Int'l	2.0
B	Glycerin 99	Glycerin	Jeen Int'l	10.0
B	Matrixyl 3000	Glycerin (and) Butylene Glycol (and) Water (and)Carbomer (and) Polysorbate 20 (and) Palmitoyl Oligopeptide (and) Palmitoyl Tetrapeptide-3	Sederma	2.0
B	Propylene Glycol	Propylene Glycol	Jeen Int'l	10.0
B	Sodium Chloride	Sodium Chloride		1.0
B	Jeemate 4400 DPS	PEG-100 Stearate	Jeen Int'l	1.0

[0113] The above-described composition is prepared as follows: Combine Phase A ingredients and warm to 40C. Homogenize at a slow speed until uniform. Combine

Phase B ingredients and heat to 60-65C. Mix until uniform. Cool to 40C. When phases are at temperature, begin medium speed homogenizing agitation in Phase A and very slowly add Phase B. Viscosity will increase and sweep mixing necessary. Once the mixture is uniform, cool batch to room temperature.

[0114] **Hand & Body Moisturizer (Example V)**

Phase	Ingredient	INCI name	Supplier	%
A	Deinoized Water	Water		
A	Ultrez® 10	Carbomer	Noveon	0.40
B	Stearic Acid	Stearic Acid	JEEN Int'l	3.50
B	Cetyl Alcohol	Cetyl Alcohol	JEEN Int'l	1.00
B	Stearyl Alcohol	Stearyl Alcohol	JEEN Int'l	1.50
B	Jeechem TN	C12-15 Alkyl Benzoate	JEEN Int'l	7.00
C	Jeesilc PS-CM	Cyclomethicone & Bis-Vinyl Dimethicone/Dimethicone Copolymer	JEEN Int'l	4.00
C	Jeesilc CPS-312	Cyclomethicone	JEEN Int'l	1.50
D	Triethanolamine 99%	Triethanolamine	JEEN Int'l	1.00
E	Jeecide CAP-5	Phenoxyethanol & Caprylyl Glycol & Potassium Sorbate & Water & Hexylene Glycol	JEEN Int'l	1.00
E	Vitamin E Acetate	Tocopheryl Acetate	JEEN Int'l	0.50
E	Jeechem FS-102	Hexylene Glycol & PEG-25 Hydrogenated Castor Oil & PEG-40 Hydrogenated Castor Oil	JEEN Int'l	1.00
E	Fragrance	Fragrance		0.50
F	Algae Extract	Algae Extract	Botanicals Plus	1.50

[0115] The above-described composition is prepared as follows: Add D.I. Water and sprinkle in Ultrez® 10 under propeller mixing. Heat Phase A to 70° C. Combine Phase B ingredients and heat to 75°C. When phases are at temperature, insert homomixer into Phase A and add Phase B. Pre-mix Phase C in a side vessel. Cool batch to 55-60° C and add Phase C. When uniform, change to sweep and add Phase D slowly. Pre-mix

Phase E in a side vessel. Cool batch to 45° C and add Phase E. Add Phase F and cool batch to room temperature.

[0116] **Lip Gloss (Examples W and X)**

Ingredient	INCI name	Supplier	X	Y
Bentone Gel VS-PC	Disteardimonium Hectorite & Cyclopentasiloxane & Propylene Carbonate	Elementis	45.0	45.0
Jeesilc PS-DMLV	Dimethicone & Bis-Vinyl Dimethicone/Dimethicone Copolymer	JEEN Int'l	10.0	-
Jeesilc PS-VHLV	Isodedecane & Bis-Vinyl Dimethicone/Dimethicone Copolymer	JEEN Int'l	-	10.0
Jeesilc 74	Cyclomethicone & Trimethylsiloxysilicate	JEEN Int'l	5.0	5.0
Jeesilc DMC-141	Cyclomethicone & Dimethiconol	JEEN Int'l	5.0	5.0
Jeechem FS-103	Butylene Glycol & PEG-25 Hydrogenated Castor Oil & PEG-40 Hydrogenated Castor Oil	JEEN Int'l	3.0	3.0
Water	Water		3.0	3.0
Color Concentrate	D&C Red #7Calcium Lake & Isododecane & Bis-Vinyl Dimethicone/Dimethicone Copolymer	JEEN Int'l	14.2	1402
BRO-11S2	Iron Oxide and Triethoxy Caprylylsilane	Kobo	3.4	3.4
BTD-11S2	Titanium Dioxide and Triethoxy Caprylylsilane	Kobo	3.4	3.4
Cloissonne Rouge	Mica & Iron Oxide & Titanium Dioxide	Englehard	1.5	1.5
Ganzpearl GPA-550	Polymethyl Methacrylate	Presperse	2.0	2.0
Jeesilc CPS-312	Cyclomethicone	JEEN Int'l	4.5	4.5

[0117] The above-described composition is prepared as follows: Add the Bentone Gel, Jeesilc PS-DMLV, Jeesilc 74 and Jeesilc DMC-141 and heat to 65-70° C. Mix with prop agitation. Pre-mix the Jeechem FS-103 and water and add to the batch. Add in the Color Concentrate, BRO-11S2, BTD-11S2, Cloissone Rouge and Ganzpearl GPA-550 and begin homogenizing agitation. Mix until smooth and uniform. Cool to 50° C, add in the Jeesilc CPS312 and mix with prop agitation. Cool to room temperature.

[0118] Matte Concealer Stick (Example Y)

Ingredient	INCI name	Supplier	%
Dimethicone 5 cst.	Dimethicone	Jeen Int'l	45.05
Jeesilc PS-VHLV	Isododecane and Bis-Vinyldimethicone/ Dimethicone Copolymer	Jeen Int'l	15.30
Jeenate 4H	Polyethylene	Jeen Int'l	5.10
Jeenate 3H	Polyethylene	Jeen Int'l	1.30
TiO2 SI	Titanium Dioxide and Methicone	LCW/Sensient	18.10
Spheron L-1500	Silica	Presperse, Inc.	6.50
Ganzpearl GPA-550	Nylon 12	Presperse, Inc.	6.50
Red Iron Oxide SI	Iron Oxide and Methicone	LCW/Sensient	0.60
Black Iron Oxide SI	Iron Oxide and Methicone	LCW/Sensient	0.35
Yellow Iron Oxide SI	Iron Oxide and Methicone	LCW/Sensient	1.20

[0119] The above-described composition is a soft, waxy stick and is prepared as follows: Blend all powders in an Osterizer and mix on high for 5 minutes. Add all oils and waxes to main tank and heat to 75-80°C. Add powders to oils and waxes and homogenize until smooth.

[0120] Acneiform Facial Cleanser (Example Z)

Phase	Ingredient	INCI name	Supplier	%
A	DI Water	Water		q.s.
A	Glycerin	Glycerin	Jeen Int'l	3.0
B	Jeelate ES-270	Sodium Lauryl Sulfate	Jeen Int'l	10.0
B	Jeeteric CDX-38	Disodium Cocoamphocarboxy Glycinate	Jeen Int'l	6.0
B	Jeeteric CAB-LC	Cocoamidopropyl Betaine	Jeen Int'l	6.0
B	Jeemate 6000DS	PEG-12 Ditearate	Jeen Int'l	0.4
B	Jeechem EGMS	Glycol Stearate	Jeen Int'l	1.0
C	Structure Plus (20% aq)	Acrylate/Aminoacrylates/C10-30 Alkyl PEG-20 Itaconate Copolymer	National Starch	5.0
C	DI Water	Water		10.0
D	Citric Acid (10%)	Citric Acid		5.0
E	Celquat SC-230M (2% aq)	Polyquaternium-10	National Starch	10.5
E	Celquat SC-240C (2% aq)	Polyquaternium-10	National Starch	4.5
F	Jeesilc PS-DMLV	Bis-Vinyl Dimethicone/Dimethicone Copolymer	Jeen Int'l	1.0
F	Jeecide CAP-5	Phenoxyethanol & Caprylyl Glycol & Potassium Sorbate & Water & Hexylene Glycol	Jeen Int'l	1.0

G	Anti-Acne Blend	Propylene Glycol & Water & Arnica Montana Extract & Citrus Aurantium Bergamia Extract & Arctium Lappa Root Extract & Calendula Officinalis Flower Extract Chamomilla Recutita Extract & Teraxacum Officinale Extract & Eucalyptus Globulus Leaf Extract & Hydrastis Canadensis Extract & Citrus medica Limonum Extract & Glycyrrhiza Plant Extract	Botanicals Plus	2.0
H	Salicylic Acid	Salicylic Acid		0.1
H	Jeechem FS-102	Hexylene Glycol & PEG-25 Hydrogenated Castor Oil & PEG-40 Hydrogenated Castor Oil	Jeen Int'l	0.2
H	Fragrance	Fragrance		0.2
I	FD&C #40 (0.2%)	FD&C #40		q.s.

[0121] Skin Brightening Lotion (Example AA)

Phase	Ingredient	INCI name	Supplier	%
A	Deionized Water	Water		q.s.
A	Ultrez® 10	Carbomer	Noveon	0.40
B	Stearic Acid	Stearic Acid	Jeen Intl	3.50
B	Cetyl Alcohol	Cetyl Alcohol	Jeen Intl	1.00
B	Stearyl Alcohol	Stearyl Alcohol	Jeen Intl	1.50
B	Jeechem TN	C12-15 Alkyl Benzoate	Jeen Intl	7.00
C	Jeesilc PS-CM	Cyclomethicone & Bis-Vinyl Dimethicone/Dimethicone Copolymer	Jeen Intl	4.00
C	Jeesilc CPS-312	Cyclomethicone	Jeen Intl	1.50
D	Triethanolamine 99%	Triethanolamine	Jeen Intl	1.00
E	Jeecide CAP-5	Phenoxyethanol & Caprylyl Glycol & Potassium Sorbate & Water & Hexylene Glycol	Jeen Intl	1.00
E	Vitamin E Acetate	Tocopheryl Acetate	Jeen Intl	0.50
E	Jeechem FS-102	Hexylene Glycol & PEG-25 Hydrogenated Castor Oil & PEG-40 Hydrogenated Castor Oil	Jeen Intl	1.00
E	Fragrance	Fragrance		0.50
F	Botanagen C	Ascorbyl 3-Aminopropyl Phosphate	Botanicals Plus	0.50
F	Water	Water		2.0

[0122] The above-described composition is prepared as follows: Add D.I. Water and sprinkle in Ultrez® 10 under propeller mixing. Heat Phase A to 70°C. Combine Phase B ingredients and heat to 75°C. When phases are at temperature, add Phase B to Phase A with prop agitation. Pre-mix Phase C in a side vessel. Cool batch to 55-60°C and add Phase C using a homomixer. When uniform, change to sweep and add Phase D slowly. Pre-mix Phase E in a side vessel. Cool batch to 45°C and add Phase E. Pre-mix Phase F. Warm to effect solution. Add to the batch. Cool the batch to room temperature.

[0123] **Sensitive Skin Facial Cleanser (Example BB)**

Phase	Ingredient	INCI name	Supplier	%
A	DI Water	Water		36.2
A	Glycerin	Glycerin	Jeen Int'l	3.0
B	Jeelate ES-270	Sodium Lauryl Sulfate	Jeen Int'l	10.0
B	Jeeteric CDX-38	Disodium Cocoamphocarboxy Glycinate	Jeen Int'l	6.0
B	Jeemate CAB-LC	Cocoamidopropyl Betaine	Jeen Int'l	6.0
B	Jeemate 6000DS	PEG-12 Ditearate	Jeen Int'l	0.4
B	Jeechem EGMS	Glycol Stearate	Jeen Int'l	1.0
C	Structure Plus (20% aq)	Acrylates/Aminoacrylates/C10-30 Alkyl PEG-20 Itaconate Copolymer	National Starch	5.0
C	DI Water	Water		10.0
D	Citric Acid (10%)	Citric Acid		5.0
E	Celquat SC-230M (2% aq)	Polyquaternium-10	National Starch	10.5
E	Celquat SC-240C (2% aq)	Polyquaternium-10	National Starch	4.5
F	Jeesilc DMLV	Bis-Vinyl Dimethicone/Dimethicone Copolymer	Jeen Int'l	1.0
F	Jeecide CAP-5	Phenoxyethanol & Caprylyl Glycol & Potassium Sorbate & Water & Hexylene Glycol	Jeen Int'l	1.0
G	Matrixyl 3000	Glycerin & Water & Butylene Glycol & Carbomer & Polysorbate-20 & Palmitoyl Oligopeptide & Palmitoyl Tetrapeptide-3	Sederma	2.0
H	Jeechem FS-102	Hexylene Glycol & PEG-25 Hydrogenated Castor Oil & PEG-40 Hydrogenated Castor Oil	Jeen Int'l	0.2
H	Fragrance	Fragrance		0.2

I	FD&C #40 (0.2%)	FD&C #40		q.s.

[0124] The above-described composition is a hazy gel with a direct pH of 4.8 – 5.1. It conditions the skin, leaving a soft "post rinse" after-feel, and is prepared as follows: Heat A to 64-70°C. Premix Phase B ingredients and add to A. Mix for 15 minutes. Premix C and add to A+B. Add D. Add E one at a time. Cool the batch to 40°C. Add Phase F ingredients one at a time and mix well. Add Phase G and mix well. Pre-mix Phase H and add to the batch. Add Phase I and mix well.

[0125] **<u>"Super Cushion" Foundation (Example CC)</u>**

Phase	Ingredient	INCI name	Supplier	J1/77A %	J1/77B %
A	JEESILC PTMF	Phenyl Trimethicone	JEEN International	33.00	20.00
A	JEESILC O-CM	Cyclopentasiloxane & Bis-Vinyl Dimethicone/Dimethicone Copolymer & Dimethicone Copolyol & Polyethylene & Dimethicone	Jeen Intl	12.00	35.00
A	Jeesilc CPS-312	Cyclomethicone	Jeen Intl	30.00	20.00
B	Spheron L-1500	Silica	Preperse	6.50	6.50
B	Ganzpearl GPA-550	Nylon 12	Presperse	2.50	2.50
B	TIO2 SI2	Titanium Dioxide and Methicone	LCW/Sensient	13.95	13.95
B	Yellow Iron Oxide SI	Iron Oxides and Methicone	LCW/Sensient	1.32	1.32
B	Red Iron Oxide SI	Iron Oxides and Methicone	LCW/Sensient	0.40	0.40
B	Black Iron Oxide SI	Iron Oxides and Methicone	LCW/Sensient	0.33	0.33

[0126] The above-described composition is prepared as follows: Using a homogenizer in the main tank, combine Phase A and heat to 65°C. Pre-blend the Nylon 12, Silica, TiO_2 and Iron Oxides using an osterizer. Add to the main tank, and mix with a homogenizer at moderate agitation for 30 minutes.

[0127] **Anti-Oxidant Tan Booster (Example DD)**

Phase	Ingredient	INCI name	Supplier	%
A	DI Water	Water		52.34
A	Ultrez® 10	Carbomer	Noveon	0.16
A	Glycerin	Glycerin	JEEN Int'l	3.00
B	Stearic Acid	Stearic Acid	JEEN Int'l	0.50
B	Cetyl Alcohol	Cetyl Alcohol	JEEN Int'l	0.40
B	Jeechem GMS-165	Glyceryl Stearate & PEG-100 Stearate	JEEN Int'l	1.50
B	Jeechem ISP	Isostearyl Palmitate	JEEN Int'l	7.00
B	Jeechem EGMS	Glycol Stearate	JEEN Int'l	1.00
C	Tyrosine	Tyrosine	Caribbean Aloe Vera	1.00
C	DI Water	Water		5.00
D	Jeesilc PS-CM	Cyclopentasiloxane & Bis-Vinyl Dimethicone/Dimethicone Copolymer	JEEN Int'l	13.00
D	Jeesilc CPS-312	Cyclomethicone	JEEN Int'l	4.50
E	Unipertan VEG-242	Butylene Glycol & Acetyl Tyrosine & Hydrolyzed Vegetable Protein & Adenosine Triphosphate	Induchem	5.00
F	Triethanolamine 99%	Triethanolamine	JEEN Int'l	1.00
F	DI Water	Water		2.00
G	Jeecide G-II	Diazolidinyl Urea & Methylparaben & Propylparaben & Propylene Glycol	JEEN Int'l	1.00
G	Cranberol	Cranberry Seed Oil	JEEN Int'l	0.10
G	Jeechem FS-102	Hexylene Glycol & PEG-25 Hydrogenated Castor Oil & PEG-40 Hydrogenated Castor Oil	JEEN Int'l	1.00
G	Fragrance	Fragrance		0.50

[0128] The above-described composition is prepared as follows: Add D.I. Water and Glycerin and sprinkle in Ultrez® 10 under propeller mixing. Heat Phase A to 70°C. Combine Phase B ingredients and heat to 75°C. When phases are at temperature, insert homomixer into Phase A and add Phase B. Cool batch to 55-60°C and add Phase C. When uniform, add pre-mix Phase D slowly with homogenization. Change to sweep and add Phase E. Pre-mix Phase F and add to batch slowly. Cool batch to 45°C and pre-mix Phase G and add to batch with homogenization for 5-10 minutes. Change to sweep mixer and cool the batch to room temperature.

[0129] **Mascara (Example EE)**

INCI Name	%
Acacia Senegal gum	1.00
Triethanolamine	1.75
Lecithin/polysorbate 20/sorbitan laurate/propylene laurate/propylene	2.25
Glycol stearate/propylene glycol laurate Simethicone	0.20
Hydroxyethylcellulose	0.20
Panthenol	0.20
Nylon-12	0.50
Methylparaben	1.50
Polyethylene	0.30
Iron oxides	0.80
Polysilicone 6	9.00
Isododecane	3.00
Nylon 611/dimethicone copolymer/PPG-3	5.00
Myristyl ether Stearic acid	2.00
Paraffin	5.60
Beeswax	10.80
Glyceryl stearate	2.80
Phenoxyethanol	2.30
Propyl paraben	1.00
Carnauba wax	0.10
Cyclomethicone/dimethiconol	3.50
Example 26	2.70
Hydrogenated polyisobutene/cyclomethicone Phytantriol	0.30
Polyglycery-3 distearate/polysorbate 60/myristic acid/	0.40
{almitic acid/guar hydroxypropyltrimonium chloride/tritcum vulgare (wheat) flour lipids/avocado oil	0.60
Water	qs100

[0130] The above-described composition is prepared as follows: Combine the water-soluble pigments and other water phase ingredients and mix well. Mix the oil phase ingredients separately. Combine both phases and emulsify to form a mascara which when applied to the eyelashes imparts a rich black color.

[0131] **Sunscreen (Example FF)**

INCI Name	%
Glycerin	6.00
Xanthan gum	5.00
Trisodium EDTA	0.30
Aloe Barbadensis leaf juice	0.05
Methylparaben	0.50
Butylene glycol	0.25
Magnesium aluminum silicate	1.00
Magnesium ascorbyl phosphate	1.00
Phenyl trimethicone	0.20
Tocopheryl acetate	3.00
Butylene glycol dicaprylate/dicaprate	1.00
Dimethicone 350 cps visxosity	9.00
C12-15 alkyl benzoate	1.00
Propylparaben	0.50
Phenoxyethanol	0.10
Cetyl alcohol	1.00
Example 35	4.00
Polyisobutene cyclomethicone	2.00
Oxybenzone	2.00
Octinoxate	7.50
Tetrahexyldecyl palmitate	1.00
Glyceryl stearate/stearic acid/cetearyl	5.00
Water	qs100

[0132] The above-described composition is prepared as follows: Combine the oil phase and water phase ingredients separately, then combine and mix them well to emulsify.

[0133] **Eyeliner (Example GG)**

INCI Name	%
Isododecane	7.00
Nylon 611/dimethicone copolymer/	19.60
PPG-3 myristyl ether Polysilicone-6	5.00
Blue 1 lake	25.00
Red 40 lake	4.00
Yellow 5 lake	3.60
Green 5	0.80
Silica	0.05
Isododecane/quaternium-18 hectorite	7.00
Propylene carbonate Dibutyl adipate	25.80

Methylparaben	2.95
Dehydroacetic acid	0.35
Propyl paraben	0.20
Sorbic acid	0.10
Example 36	5.56

[0134] **Makeup Remover (Example HH)**

INCI Name	%
Butylene glycol dicaprylate/dicaprate	8.00
Example 25	10.00
Phenoxyethanol	5.00
Propylparaben	1.00
Isododecane/quaternium-18 hectorite/	0.10
Propylene carbonate Cetyl dimethicone copolyol	20.00
Cyclomethicone	2.50
Butylene glycol	5.00
Trisodium EDTA	0.01
Methylparaben	0.25
Water	qs100

[0135] The above-described composition is prepared as follows: Separately combine the oil phase ingredients and the water phase ingredients. Then, mix well to emulsify.

[0136] While the illustrative embodiments of the invention have been described with particularity, it will be understood that various other modifications will be apparent to and can be readily made by those skilled in the art without departing from the spirit and scope of the invention. Accordingly, it is not intended that the scope of the claims appended hereto be limited to the examples and descriptions set forth hereinabove but rather that the claims be construed as encompassing all the features of patentable novelty which reside in the present invention, including all features which would be treated as equivalents thereof by those skilled in the art to which the invention pertains.

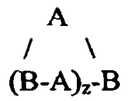
A. Perle; C. Tarletsky; A. O'Lenick, Jr.
Personal Care and Dermatologic Compositions
Attorney Docket 538-004

Claims

We Claim:

1. A topically-applied personal care or dermatologic composition comprising

(a) a non-crosslinked ("NXL") silicone polymer dissolved in at least one solvent selected from the group consisting of linear silicones, cyclic silicones, paraffinic hydrocarbons and mixtures thereof, wherein the NXL silicone polymer conforms to the structure:

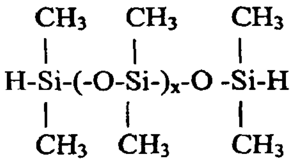


$$\begin{array}{c} A \\ / \quad \backslash \\ (B\text{-}A)_z\text{-}B \end{array}$$

Formula 1

wherein

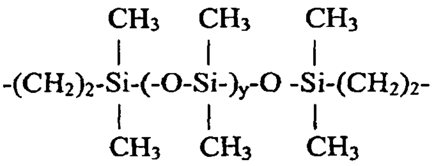
(i) A is a terminal disilanic-hydrogen silicone polymer conforming to the structure:



$$H\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-}(\text{-}O\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-})_x\text{-}O\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-}H$$

Formula 2

(ii) B is a terminal divinyl silicone polymer conforming to the structure:



$$\text{-}(CH_2)_2\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-}(\text{-}O\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-})_y\text{-}O\text{-}\underset{CH_3}{\overset{CH_3}{Si}}\text{-}(CH_2)_2\text{-}$$

Formula 3

wherein

x is an integer ranging from 0 to 5000;

y is an integer ranging from 0 to 5000; and

z is an integer ranging from 2 to 2000; and

(b) in a cosmetically-acceptable carrier.

2. The composition of Claim 1 wherein the ratio of NXL silicone polymer to solvent is from about 2:98 to about 55:45.

3. The composition of Claim 1 wherein the NXL silicone polymer dissolved in at least one solvent is present at a concentration of at least about 0.01% by weight of the total composition.

4. The composition of Claim 1 further comprising a water-immiscible material selected from the group consisting of volatile silicones, volatile paraffinic hydrocarbons, non-volatile silicones, non-volatile paraffinic hydrocarbons, cosmetically-acceptable esters, lanolin and derivatives thereof, glyceryl esters of fatty acids or triglycerides, fluorinated oils and Guerbet esters.

5. The composition of Claim 4 which is a water-in-oil emulsion, a water-in-silicone emulsion, an oil-in-water emulsion, a silicone-in-water emulsion, a water-in- water-in-oil emulsion or an oil-in-water-in-oil emulsion.

6. An oil-in-water emulsion or silicone-in-water emulsion composition according to Claim 5, wherein the oil phase or the silicone phase comprises less than about 20% by weight of the total composition.

7. An oil-in-water emulsion or silicone-in-water emulsion composition according to Claim 6, wherein the oil phase or the silicone phase comprises less than about 15% by weight of the total composition.

8. An oil-in-water emulsion or silicone-in-water emulsion composition according to Claim 6, wherein the oil phase or the silicone phase comprises less than about 10% by weight of the total composition.

9. A topically-applied personal care or dermatologic composition of Claim 1 which is anhydrous.

10. A topically-applied personal care or dermatologic composition of Claim 1 further comprising further comprising at least one colorant.

11. A topically-applied personal care or dermatologic composition of Claim 1 that helps to reduce the appearance of and/or prevent a skin condition selected from the group consisting of fine lines, wrinkles, age spots, sallowness, blotchiness, redness, dark circles under the eyes or skin oiliness.

12. A topically-applied personal care or dermatologic composition of Claim 1 that helps to reduce transepidermal water loss, improve skin retention of moisture or improve skin elasticity.

13. A topically-applied personal care or dermatologic composition of Claim 1 further comprising a sunscreen or sunblock agent.

14. A topically-applied personal care or dermatologic composition of Claim 1 further comprising a skin or hair benefit ingredient selected from the group consisting of anti-inflammatory agents, skin bleaching/lightening agents, humectants, skin soothing agents, antioxidants, vitamins and derivatives thereof, anti-aging ingredients, self-tanning agents, anti-acne agents, and antimicrobial agents.

15. A topically-applied personal care or dermatologic composition of Claim 1 further comprising at least one additional film forming polymer.

16. The composition of Claim 14 wherein the at least one additional film forming polymer is a non-silicone polymer.

17. The composition of Claim 15 wherein the non-silicone polymer is a polymer comprised of polymerized ethylenically unsaturated monomers either alone or in combination with one or more organic moieties.

18. A topically-applied personal care or dermatologic composition of Claim 1 further comprising a plasticizer in an amount sufficient to improve spreadibility and application of the composition to the desired surface.

19. The composition of Claim 17 wherein the plasticizer is present at about 0.01-60% by weight of the total composition.

20. A topically-applied personal care or dermatologic composition of Claim 1 further comprising one or more viscosity modifiers.

21. A method for imparting a long-wear and gloss to the skin, hair, lips, eyelashes or nails of a person comprising topically-applying the composition of Claim 1.

22. A method for cleansing and moisturizing the skin or hair of a person comprising topically-applying the composition of Claim 1.

23. A method for imparting a long-wear color to the skin, hair, lips, eyelashes or nails of a person comprising topically-applying the composition of Claim 1.