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(54) Title: COMPOSITIONS AND METHODS FOR TREATING HAIR

(57) Abstract: Disclosed herein are compositions and methods for styling hair comprising at least two latex polymers, wherein at least one latex polymer is a film-forming polymer; at least one oil chosen from lower alkanes, hydrocarbon oils, plant/vegetable oils, fluoro oils, silicones, or mixtures thereof; and water; wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition. Also disclosed are compositions and methods for styling hair comprising at least two latex polymers; at least one amphoteric surfactant; at least one alkylpolyglucoside; at least one anionic thickening agent; and water; wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

COMPOSITIONS AND METHODS FOR TREATING HAIR

FIELD OF THE INVENTION

[0001] The disclosure relates to compositions for use on keratinous substances. In particular, it relates to a composition and methods for styling the hair.

BACKGROUND

[0002] Compositions for styling the hair are known, such as, for example, hair spray compositions, hair gels and mousses, hair volumizing compositions, hair smoothing creams, lotions, serums, oils, clays, etc. The goals of many hair styling compositions include holding or fixing the hair in a particular shape, imparting or increasing volume of the hair, smoothing the hair, and/or decreasing or eliminating the appearance of frizz.

[0003] Drawbacks associated with current products for styling the hair include that the product can be sticky or tacky and/or can produce a film that imparts a sticky or tacky feel. Moreover, hair styled with current products can be stiff and/or "crunchy" in that the film is hard and brittle resulting in a crunching feel or sound when the hair is touched, which is undesirable for most consumers.

[0004] Current products for styling the hair typically include water-soluble film-forming polymers. Depending on the chemical make-up of these polymers, they may be either soluble in water, or they may be water insoluble polymers which are made water soluble via various chemical modifications, such as neutralization. Solutions comprising these polymers tend to be viscous, and often as the concentration of the polymer increases, its viscosity rapidly increases. In styling applications, as the solvent evaporates, the polymer solution becomes thicker on the hair surface, resulting in a sticky or tacky film. These products also tend to exhibit problems with product spreadability, hair manageability, and humidity resistance, which is especially a problem in hot and humid environments.

[0005] Particularly, while previous compositions comprising latex polymers may provide clean properties to the hair given its anionic nature, the clean properties can translate into difficult application and/or distribution of the product, quick absorption, dryness, and/or possibly static in the hair. The presence of film formers can also leave the hair with a stiff, crunchy, and/or sticky feel. Often, other

ingredients and traditional silicones may be used in combination with latex polymers to overcome the brittleness and stiffness that may result from the use of latex polymers in hair compositions. However, this tends to make the hair feel greasy and oily and it can still be challenging for manufacturers to incorporate new ingredients into the compositions because this may negatively impact performance, certain cosmetic attributes, texture, and formulation stability. Alternative conditioning agents, such as non-ionic silicones and humectants, can actually plasticize the film produced by the product, thus affecting its high humidity curl retention, and creating build up, which weighs down the hair.

[0006] It has now been surprisingly and unexpectedly discovered that combining at least two latex polymers, wherein at least one latex polymer is a film-forming polymer, with at least one oil chosen from chosen from lower alkanes, hydrocarbon oils, plant/vegetable oils, fluoro oils, silicones, or mixtures thereof, and water, produces a composition that does not weigh down the hair, does not make the hair greasy or oily in appearance and to the touch and exhibits excellent cosmetic properties in wet and dry stages of hair while maintaining desirable care benefits and styling and shaping properties. Such compositions can allow for a clean, natural, and/or "invisible" feel; a lack of stickiness; frizz control; high humidity resistance; curl and/or wave definition; and styling hold, when heat is used or even when heat is not used for drying and/or shaping and styling the hair. These compositions may be useful in hair-styling applications wherein styling benefits such as natural look, curling or straightening, and/or various degrees of styling hold are imparted to hair.

SUMMARY

[0007] The disclosure relates, in various embodiments, to a cosmetic composition comprising at least two latex polymers, wherein at least one latex polymer is a film-forming polymer; at least one oil chosen from chosen from lower alkanes, hydrocarbon oils, plant/vegetable oils, fluoro oils, silicones, or mixtures thereof; and water; wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

[0008] In various embodiments, the disclosure relates to a cosmetic composition comprising at least two latex polymers, wherein at least one latex

polymer is a film-forming polymer; at least one aminofunctional silicone; at least one amphoteric surfactant; at least one alkylpolyglucoside; at least one anionic thickening agent; and water; wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

[0009] In various embodiments, the at least two latex polymers in the composition of the present invention are present in a combined amount ranging from about 0.25% to about 20% by weight, or from about 0.3 % to about 15% by weight, or from about 0.4 % to about 10% by weight, or from about 0.5% to about 5% by weight, relative to the total weight of the composition.

[0010] In an embodiment, the at least two latex polymers in the composition of the present invention comprise at least one acrylate latex polymer and at least one polyurethane latex polymer.

[0011] In an embodiment, the at least two latex polymers in the composition of the present invention comprise acrylates copolymer and polyurethane-34.

[0012] In various embodiments, the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer ranges from about 10:1 to about 1:10 or from about 8:1 to about 1:8 or from about 6:1 to about 1:6 or from about 5:1 to about 1:5 or from about 2:1 to about 1:2.

[0013] In various embodiments, the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is greater than 1, such as greater than 2, or ranges from greater than 1 to about 5 or from about 1.5 to about 3.

[0014] In an embodiment, the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is equal to or less than 1.

[0015] In an embodiment, the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is about 1.

[0016] In various embodiments, the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is equal to or more than 1 or equal to or more than 2.

[0017] In an embodiment, the at least one oil is chosen from lower alkanes, hydrocarbon oils, for example, mineral oil, or from silicones other than amino functional silicones, for example, dimethicone, or from plant/vegetable oils, preferably chosen from shea oil, alfalfa oil, poppy oil, winter squash oil, millet oil, barley oil, quinoa oil, rye oil, candlenut oil, passionflower oil, shea butter, aloe vera oil, sweet almond oil, peach stone oil, groundnut oil, argan oil, avocado oil, baobab oil, borage oil, broccoli oil, calendula oil, camelina oil, canola oil, carrot oil, safflower oil, flax oil, rapeseed oil, cotton 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, grapeseed oil, pistachio oil, winter squash oil, pumpkin oil, musk rose oil, sesame oil, soybean oil, sunflower oil, castor oil, watermelon seed oil, or mixtures thereof.

[0018] In an embodiment, the at least one oil is present in an amount ranging from about 0.01% to about 50% by weight, or from about 0.05% to about 30% by weight, or from about 0.1% to about 20% by weight, or from about 0.5% to about 10% by weight, or from about 1% to about 8% by weight, or from about 3% to about 6% by weight, relative to the total weight of the composition.

[0019] In an embodiment, the at least one aminofunctional silicone in the composition of the present invention is chosen from amodimethicone/morpholinomethyl silsesquioxane copolymer, amodimethicone, PEG-40/PPG-8 methylaminopropyl/hydroxypropyl dimethicone copolymers, trideceth-9 PG-amodimethicone, or mixtures thereof.

[0020] In various embodiments, the at least one amphoteric surfactant in the composition of the present invention is present in an amount ranging from about 0.01% to about 5% by weight, or from about 0.05% to about 4% by weight, or from about 0.06% to about 3% by weight, or relative to the total weight of the composition.

[0021] In an embodiment, the at least one amphoteric surfactant in the composition of the present invention is chosen from cocamidopropyl betaine, coco-betaine, cocoamphodiacetate and its salts, or mixtures thereof.

[0022] In various embodiments, the at least one alkylpolyglucoside in the composition of the present invention is present in an amount ranging from about

0.01% to about 5% by weight, or from about 0.05% to about 4% by weight, or from about 0.08% to about 3% by weight, relative to the total weight of the composition.

[0023] In an embodiment, the at least one alkylpolyglucoside in the composition of the present invention is chosen from decyl glucoside, lauryl glucoside, stearyl glucoside, coco-glucoside, or mixtures thereof.

[0024] In the at least one anionic thickening agent in the composition of the present invention is chosen from anionic acrylates copolymers, anionic polyacrylates, or mixtures thereof.

[0025] In an embodiment, the at least one anionic thickening agent in the composition of the present invention is chosen from copolymers of (meth)acrylic acid, methylacrylate and dimethyl meta-isopropenyl benzyl isocyanate of ethoxylated alcohols, such as polyacrylate-3.

[0026] In various embodiments, the at least one anionic thickening agent in the composition of the present invention is present in an amount ranging from about 0.01 % to about 15 % by weight, or from about 0.1 % to about 10 % by weight, or from about 0.2 % to about 5 % by weight, or from about 0.3 % to about 2 % by weight, relative to the total weight of the composition.

[0027] In one embodiment, the cosmetic composition of the present invention comprises:

at least one acrylate latex polymer;

at least one polyurethane latex polymer;

at least one oil chosen from plant/vegetable oils; and

water;

wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

[0028] In an embodiment, the compositions of the present invention further comprise at least one nonionic surfactant chosen from glyceryl esters, fatty alcohols, alkoxylated alcohols and lanolin, or mixtures thereof.

[0029] In an embodiment, the at least one nonionic surfactant includes glyceryl esters chosen from glyceryl oleate, glyceryl monostearate (or glyceryl stearate), glyceryl monoisostearate, glyceryl monopalmitate, glyceryl monobehenate, or mixtures thereof.

[0030] In an embodiment, the at least one nonionic surfactant is chosen from non-alkoxylated, saturated or unsaturated, linear or branched fatty alcohols having from 6 to 60 carbon atoms, or mixtures thereof.

[0031] In an embodiment, the at least one nonionic surfactant is chosen from cetyl alcohol, stearyl alcohol, cetearyl alcohol (mixture of cetyl alcohol and stearyl alcohol), PEG-40 hydrogenated castor oil, PEG-75 lanolin, laureth-7, laureth-12, trideceth-10, trideceth-12, or mixtures thereof.

[0032] In an embodiment, the compositions of the present invention further comprise at least one non-latex nonionic film forming polymer present in an amount ranging from about 0.05% to about 15% by weight, relative to the total weight of the composition.

[0033] In various embodiments, the cosmetic composition of the present invention further comprises a thickening agent. When at least one anionic thickening agent is present, the thickening agent may be an additional thickening agent in addition to the at least one anionic thickening agent. The thickening agent may be present in a total amount ranging from about 0.05% to about 10% by weight, and can chosen from polysaccharides, gums, guar gums, celluloses, glucans, silicas or hydrophobic silicas, nonionic homopolymers or copolymers containing ethylenically unsaturated monomers of the amide type, modified or unmodified carboxyvinyl polymers, sodium salts of polyhydroxycarboxylic acids, polymers comprising at least one hydrophilic unit and at least one fatty-chain allyl ether unit, a copolymer of ammonium acryloyldimethyltaurate and vinylpyrrolidone monomers; or mixtures thereof, and preferably, xanthan gum, guar gum, hydroxypropyl guar, guar hydroxypropyl trimonium chloride, hydroxyethyl cellulose, hydroxypropyl cellulose, cetyl hydroxyethyl cellulose, hydroxypropyl starch phosphate, ammonium acryloyldimethyltaurate/VP copolymer, optionally crosslinked and/or neutralized 2-acrylamido-2-methylpropanesulfonic acid polymers (AMPS) and copolymers, crosslinked anionic copolymers of acrylamide, crosslinked anionic copolymers of AMPS, emulsions of crosslinked anionic copolymers of acrylamide/nonionic surfactants, emulsions of AMPS/nonionic surfactants, or mixtures thereof.

[0034] In one embodiment, the cosmetic composition according to the invention, further comprises at least one coalescing agent and/or plasticizer, present

in a total amount ranging from about 0.1% to about 20% by weight, relative to the total weight of the composition.

[0035] In various embodiments, the at least one coalescing agent and/or plasticizer may be chosen from glycol ethers, glycol esters, sucrose esters, propylene glycol ethers, propylene glycol esters, propylene glycol dibenzoate, dipropylene glycol dibenzoate, propylene glycol butyl ether, or mixtures thereof.

[0036] In an embodiment, the cosmetic composition of the present invention further comprises a fatty ester.

[0037] In one embodiment, the cosmetic composition according to the invention, further comprises at least one cosmetically acceptable organic solvent chosen from volatile and non-volatile solvents.

[0038] In an embodiment, the cosmetic composition of the present invention further comprises at least one additional component chosen from nonionic surfactants, anionic surfactants, cationic surfactants, organic amines, carbonate compounds, emulsifying agents, fillers, pigments, conditioning agents, moisturizing agents, shine agents, sequestering agents, fragrances, preservatives, pH modifiers/neutralizing agents, stabilizers, salts, or mixtures thereof.

[0039] In an embodiment, the cosmetic composition of the present invention comprises:

at least one acrylate latex polymer;

at least one polyurethane latex polymer;

at least one aminofunctional silicone chosen from amodimethicone/morpholinomethyl silsesquioxane copolymer, amodimethicone, PEG-40/PPG-8 methylaminopropyl/hydroxypropyl dimethicone copolymers, trideceth-9 PG-amodimethicone, or mixtures thereof, and preferably chosen from amodimethicone/morpholinomethyl silsesquioxane copolymer, trideceth-9 PG-amodimethicone, or mixtures thereof;

at least one amphoteric surfactant chosen from cocamidopropyl betaine, coco-betaine, cocoamphodiacetate and its salts, or mixtures thereof;

at least one alkylpolyglucoside chosen from decyl glucoside, lauryl glucoside, stearyl glucoside, coco-glucoside, or mixtures thereof;

at least one anionic thickening agent comprising polyacrylate-3; and

water;

wherein the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is greater than 1.

[0040] In various embodiments, any of the above-described cosmetic compositions of the present invention is in the form of a mousse, a cream or a thick lotion, or a gel or an oil-gel.

[0041] In various embodiments, the disclosure relates to methods of styling or shaping the hair with the compositions described.

[0042] In one embodiment, the methods of the present invention include a step of air drying the hair after applying the composition to the hair.

[0043] In one embodiment, the methods of the present invention do not include treating the hair with heat during or after applying the composition onto the hair.

[0044] In one embodiment, the methods of the present invention further comprise a step of treating the hair with heat at a temperature ranging from about 25°C to about 250°C before, during, or after the application of said composition.

[0045] It was surprisingly and unexpectedly found that the compositions of the present invention imparted to hair the properties of natural look and feel and at the same time, the properties of conditioning, shine, disclipline or control (less frizz and/or fly-aways), definition, manageablility and softness which can be attributed to the combination of the latex polymers and oil. In addition, while it is generally known that oil can be heavy on the hair and cause the hair to loose desirable volume, it was surprisingly and unexpectedly found the hair does not feel weighed down when contacted with the inventive composition. Thus, the association of latex and oils in accordance with the invention can provide the right balance of care and style to hair.

[0046] Additional features and advantages of the disclosed embodiments as claimed will be set forth in the detailed description which follows, and in part will be readily apparent to those skilled in the art from that description or recognized by practicing the invention as claimed herein, including the detailed description which follows, as well as the claims.

[0047] It is to be understood that both the foregoing general description and the following detailed description present various embodiments of the disclosure, and are intended to provide an overview or framework for understanding the nature and character of the claims.

LATEX POLYMERS

[0048] The compositions according to the disclosed embodiments comprise at least two latex polymers, wherein at least one latex polymer is a film-forming polymer.

[0049] In various embodiments, the latex polymers may be identified as polymer A and polymer B. Compositions according to certain embodiments may comprise at least one polymer A and at least one polymer B, wherein at least one of polymer A and polymer B is a film-forming polymer.

[0050] According to some embodiments, polymer A may be chosen from latex polymers having a Young's modulus ranging from about 0.1 MPa to about 10 MPa and a strain, under stress at 0.5 MPa, of at least about 1%; and polymer B may be chosen from latex polymers having a Young's modulus ranging from about 10 MPa to about 6 GPa and a strain, under stress at 0.5 MPa, of less than about 5%.

[0051] In at least certain embodiments, polymer A may have a glass transition temperature (Tg) ranging from about -90°C to about 40°C, and polymer B may have a glass transition temperature (Tg) ranging from about 40°C to about 200°C.

[0052] In at least certain other embodiments, the weight ratio of polymer A to polymer B in the compositions of the disclosure is from about 1:10 to about 1:1, from about 3:1 to about 10:1, or from about 5:1 to about 10:1.

[0053] According to some embodiments, polymers A and B may be chosen from acrylate and polyurethane polymers, with the proviso that when polymer A is chosen from an acrylate polymer, polymer B is chosen from a polyurethane polymer; and when polymer A is chosen from a polyurethane polymer, polymer B is chosen from an acrylate polymer.

[0054] In some embodiments, latex polymers A and B may be chosen such that polymer A comprises at least one latex polymer which is optionally a film-forming polymer that is a relatively soft, flexible latex polymer, and polymer B comprises at least one latex polymer which is optionally a film-forming polymer that is a relatively hard, brittle polymer

[0055] At least one of polymer A and polymer B is a film-forming polymer. In various embodiments, latex polymer A is a film-forming polymer and latex polymer

B is a non-film-forming polymer. In other embodiments, latex polymer A is a non-film-forming polymer and latex polymer B is a film-forming polymer. In further embodiments, both latex polymer A and latex polymer B are film-forming polymers.

[0056] As used herein, a film-forming polymer is meant to include a polymer that is capable, by itself or in the presence of an auxiliary film-forming agent, of forming a macroscopically continuous film that adheres to keratin materials, and preferably a cohesive film, better still, a film whose cohesion and mechanical properties are such that said film can be isolated and manipulated individually, for example, when said film is prepared by pouring onto a non-stick surface such as Teflon-coated or silicone-coated surface. In addition, as used herein, a non-film-forming polymer is meant to include a polymer which will not form a film at or below ambient temperature, or in other words, will only form a film at temperatures above ambient. For purposes of this disclosure, ambient temperature is below about 40ºC, such as ranging from about 15ºC to about 30ºC.

[0057] In various embodiments, the latex polymers are provided in the form of aqueous dispersions prior to formulating the compositions of the disclosure. In other embodiments, the aqueous dispersions may be obtained through an emulsion polymerization of monomers wherein the resulting latex polymers have a particle size less than about 1µm. In certain other embodiments, a dispersion prepared by the polymerization in water of one or more monomers having a polymerizable double bond may be chosen. In other embodiments, the latex polymers are produced from condensation reactions between monomers and subsequently dispersed in an aqueous medium.

[0058] In various embodiments, the latex polymers may exist as dispersed polymer particles in a dispersion medium, such as an aqueous dispersion medium. In other embodiments, the latex polymers may be dispersed in independent dispersion media. In further embodiments, the latex polymers may be dispersed together in the same dispersion medium.

[0059] The dispersion medium comprises at least one solvent chosen from water. The dispersion medium may further comprise at least one solvent chosen from cosmetically acceptable organic solvents. Cosmetically acceptable organic solvents may, in various embodiments, be water-miscible, e.g. capable of forming at about 25ºC a homogeneous mixture that is transparent, or substantially

transparent, to the eye. For instance, cosmetically acceptable organic solvents may be chosen from lower monoalcohols, such as those containing from about 1 to 5 carbon atoms, for example ethanol or isopropanol; polyols, including glycols, such as those containing from about 2 to 8 carbon atoms, for example propylene glycol, ethylene glycol, 1,3-butylene glycol, dipropylene glycol, hexylene glycol, or glycerin; hydrocarbons, for example, isododecane or mineral oil; or silicones, for example dimethicones, cyclic dimethicones (INCI name: cyclomethicones), or cyclopentasiloxane; or mixtures thereof.

[0060] In other embodiments, the solvent of the dispersion medium comprises water. In other embodiments, the solvent of the dispersion medium comprises water and at least one cosmetically acceptable organic solvent. In further embodiments, the solvent comprises water. In further embodiments, the solvent of the dispersion medium primarily consists essentially of water. For example, the solvent of the dispersion medium may, in at least certain exemplary embodiments, comprise greater than about 50% water, greater than about 55% water, greater than about 60% water, greater than about 65% water, greater than about 70% water, greater than about 75% water, greater than about 80% water, greater than about 85% water, greater than about 90% water, greater than about 95% water, greater than about 96% water, greater than about 97% water, greater than about 98% water, or greater than about 99% water.

[0061] In various embodiments, the latex polymer particles are not soluble in the solvent of the dispersion medium, i.e. are not water soluble and/or are not soluble in the at least one cosmetically acceptable organic solvent. Accordingly, the latex polymers retain their particulate form in the solvent or solvents chosen.

[0062] In another embodiment, the aqueous dispersions obtained through an emulsion polymerization may be spray-dried.

[0063] In certain embodiments, latex particles according to the disclosure may have an average diameter ranging up to about 1000 nm, from about 50 nm to about 800 nm, or from about 100 nm to about 500 nm. Such particle sizes may be measured with a laser granulometer (e.g. Brookhaven BI90).

[0064] In various embodiments, the latex polymers may, independently, be neutralized, partially neutralized, or unneutralized. In other embodiments where the latex polymers are neutralized or partially neutralized, the particle size may be,

for example, greater than about 800 nm. In certain embodiments, the particulate form of the latex polymers is retained in the dispersion medium.

[0065] In various embodiments, the latex polymers may be chosen from uncharged or charged latex polymers. In other embodiments, the latex polymers may be chosen from nonionic latex polymers, cationic latex polymers, or anionic latex polymers.

[0066] In some embodiments, the latex polymers may be chosen, independently, from acrylate latex polymers and polyurethane latex polymers. As described herein, it is to be understood that when latex polymer A is chosen from an acrylate polymer, latex polymer B is chosen from a polyurethane polymer; and when latex polymer A is chosen from a polyurethane polymer, latex polymer B is chosen from an acrylate polymer.

[0067] In certain embodiments, one of the at least two latex polymers may be chosen from acrylate latex polymers, such as those resulting from the homopolymerization or copolymerization of monomers chosen from (meth)acrylics, (meth)acrylates, (meth)acrylamides and/or vinyl homopolymers or copolymers. The term "(meth)acryl" and variations thereof, as used herein, means acryl or methacryl.

[0068] In certain embodiments, the (meth)acrylic monomers may be chosen from acrylic acid, methacrylic acid, citraconic acid, itaconic acid, maleic acid, fumaric acid, crotonic acid, maleic anhydride, or mixtures thereof.

[0069] In certain embodiments, the (meth)acrylic monomers may be chosen from C1-C8 alkyl (meth)acrylic, methyl (meth)acrylic, ethyl (meth)acrylic, propyl (meth)acrylic, isopropyl (meth)acrylic, butyl (meth)acrylic, tert-butyl (meth)acrylic, pentyl(meth) acrylic, isopentyl (meth)acrylic, neopentyl (meth)acrylic, hexyl (meth)acrylic, isohexyl (meth)acrylic, 2-ethylhexyl (meth)acrylic, cyclohexyl (meth)acrylic, isohexyl (meth)acrylic, heptyl (meth)acrylic, isoheptyl (meth)acrylic, octyl (meth)acrylic, isooctyl (meth)acrylic, or mixtures thereof.

[0070] In certain embodiments, the esters of (meth)acrylic monomers may be chosen from C1-C8 alkyl (meth)acrylate, methyl (meth)acrylate, ethyl (meth)acrylate, propyl (meth)acrylate, isopropyl (meth)acrylate, butyl (meth)acrylate, tert-butyl (meth)acrylate, pentyl(meth) acrylate, isopentyl (meth)acrylate, neopentyl (meth)acrylate, hexyl (meth)acrylate, isohexyl (meth)acrylate, 2-ethylhexyl (meth)acrylate, cyclohexyl (meth)acrylate, isohexyl (meth)acrylate, heptyl

(meth)acrylate, isoheptyl (meth)acrylate, octyl (meth)acrylate, isooctyl (meth)acrylate, allyl (meth)acrylate, or combinations thereof.

[0071] In certain embodiments, the esters of (meth)acrylic monomers may be chosen from C1-C8 alkoxy (meth)acrylate, methoxy (meth)acrylate, ethoxy (meth)acrylate, propyl oxide (meth)acrylate, isopropyl oxide (meth)acrylate, butyl oxide (meth)acrylate, tert-butyl oxide (meth)acrylate, pentyl oxide (meth) acrylate, isopentyl oxide (meth)acrylate, neopentyl oxide (meth)acrylate, C2-C6 hydroxy alkyl (meth)acrylates, hydroxy ethyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, glycidyl (meth)acrylate, ethylene glycol di(meth)acrylate, polyethylene glycol mono(meth)acrylate, 1,4-butane diol di(meth)acrylate, 1,6,hexane diol di(meth)acrylate, aryl (meth)acrylates benzyl (meth)acrylate, phenyl (meth)acrylate, or mixtures thereof.

[0072] In certain embodiments, the esters can further contain amino groups such as aminoethyl (meth)acrylate, N,N-dimethylaminoethyl (meth)acrylate, N,N-dimethylaminopropyl (meth)acrylate, N,N-dimethylaminodimethylpropyl (meth)acrylate, N,N-diethyleaminoethyl (meth)acrylate, N,N,N-trimethylaminoethyl (meth)acrylate, salts of the ethylenic amines, or silicone macromonomers.

[0073] In various embodiments, the alkyl group of the esters may be either fluorinated or perfluorinated, for example one, some, or all of the hydrogen atoms of the alkyl group are substituted with fluorine atoms. In other embodiments, the monomers can also be fluorine-containing monomers, such as trifluoroethyl methacrylate, 2,2,3,3-tetrafluoropropyl methacrylate, 2,2,3,3,4,4-hexafluorobutyl methacrylate, perfluorooctyl methacrylate, or perfluorooctyl acrylate.

[0074] In certain embodiments, the amides of (meth)acrylic monomers can, for example, be made of (meth)acrylamide, N-alkyl (meth)acrylamides, N-(C1-C12) alkyl (meth)acrylates such as N-ethyl (meth)acrylamide, N-t-butyl (meth)acrylamide, N-t-octyl (meth)acrylamide, N-methylol (meth)acrylamide, N-diacetone (meth)acrylamide, or mixtures thereof.

[0075] In certain embodiments, the vinyl monomers can include, but are not limited to, vinyl cyanide compounds such as acrylonitrile or methacrylonitrile; vinyl esters such as vinyl formate, vinyl acetate, vinyl propionate, vinyl neodecanoate, vinyl pivalate, vinyl benzoate, vinyl t-butyl benzoate, or triallyl cyanurate; vinyl halides such as vinyl chloride or vinylidene chloride; aromatic mono-

or divinyl compounds such as styrene, α-methylstyrene, chlorostyrene, alkylstyrene, divinylbenzene or diallyl phthalate; or mixtures thereof. In other embodiments, the vinyl mononers can include include para-styrensulfonic, vinylsulfonic, 2-(meth)acryloyloxyethylsulfonic, or 2-(meth)acrylamido-2-methylpropylsulfonic acids.

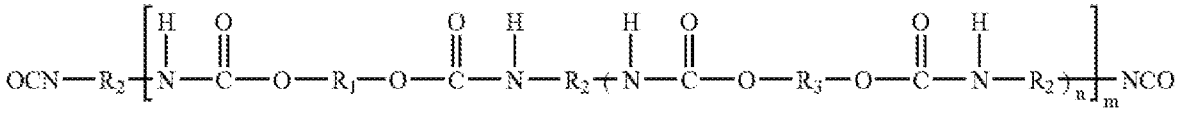
[0076] The list of monomers given is not limiting, and it should be understood that it is possible to use any monomer known to those skilled in the art which includes acrylic and/or vinyl monomers (including monomers modified with a silicone chain).

[0077] In certain embodiments, silicone acrylic polymers may also optionally be used as vinyl polymer in at least one exemplary and non-limiting embodiment.

[0078] In certain embodiments, acrylic latex polymers may be chosen from aqueous dispersions of Methacrylic Acid/Ethyl Acrylate copolymer (INCI name: Acrylates Copolymer, such as Luviflex® Soft sold by the company BASF), PEG/PPG-23/6 Dimethicone Citraconate/C10-30 Alkyl PEG-25 Methacrylate/Acrylic Acid/Methacrylic Acid/Ethyl Acrylate/Trimethylolpropane PEG-15 Triacrylate copolymer (INCI name: Polyacrylate-2 Crosspolymer, such as Fixate™ Superhold sold by the company Lubrizol), Butyl acrylate, PEG-10 acrylate, PPG-6 acrylate and dimethylacrylamide copolymer (INCI name: Polyacrylate-3 crosspolymer), Styrene/Acrylic copolymer (such as Neocryl® A-1120 sold by the company DSM), Ethylhexyl Acrylate/Methyl Methacrylate/Butyl Acrylate/Acrylic Acid/ Methacrylic Acid copolymer (INCI name: Acrylates/Ethylhexyl Acrylate Copolymer, such as Daitosol 5000SJ sold by the company Daito Kasei Kogyo), Acrylic/Acrylates Copolymer (INCI name: Acrylates Copolymer, such as Daitosol 5000AD sold by the company Daito Kasei Kogyo), or Acrylic copolymers and Acrylates Copolymers (such as VINYSOL 2140 sold by the company Daido Chemical, Aculyn™ 33 sold by the company Dow Chemical, Luvimer® MAE sold by the company BASF, or Balance® CR sold by the company Akzo Nobel).

[0079] In other embodiments, one of the at least two latex polymers may be chosen from polyurethane latex polymers, such as aqueous polyurethane dispersions comprising the reaction products of (i), (ii), and/or (iii), defined below.

[0080] Reaction product (i) may be any prepolymer according to the formula:



wherein R_1 is chosen from bivalent radicals of a dihydroxyl functional compound, R_2 is chosen from hydrocarbon radicals of an aliphatic or cycloaliphatic polyisocyanate, R_3 is chosen from radicals of a low molecular weight diol, optionally substituted with ionic groups, n ranges from about 0 to about 5, and m is greater than about 1.

[0081] Suitable dihydroxyl compounds for providing the bivalent radical R_1 include those having at least two hydroxy groups, and having number average molecular weights ranging from about 700 to about 16,000, such as, for example, from about 750 to about 5000. Non-limiting examples of the high molecular weight compounds include polyester polyols, polyether polyols, polyhydroxy polycarbonates, polyhydroxy polyacetals, polyhydroxy polyacrylates, polyhydroxy polyester amides, polyhydroxy polyalkadienes and polyhydroxy polythioethers. In various embodiments, polyester polyols, polyether polyols, or polyhydroxy polycarbonates may be chosen. Mixtures of such compounds are also within the scope of the disclosure.

[0082] In some embodiments, the polyester diol may optionally be prepared from aliphatic, cycloaliphatic, or aromatic dicarboxylic or polycarboxylic acids, or anhydrides thereof; or dihydric alcohols such as diols chosen from aliphatic, alicyclic, or aromatic diols.

[0083] In other embodiments, the aliphatic dicarboxylic or polycarboxylic acids may be chosen from succinic, fumaric, glutaric, 2,2-dimethylglutaric, adipic, itaconic, pimelic, suberic, azelaic, sebacic, maleic, malonic, 2,2-dimethylmalonic, nonanedicarboxylic, decanedicarboxylic, dodecanedioic, 1,3-cyclohexanedicarboxylic, 1,4-cyclohexanedicarboxylic, 2,5-norboranedicarboxylic, diglycolic, thiodipropionic, 2,5-naphthalenedicarboxylic, 2,6-naphthalenedicarboxylic, phthalic, terephthalic, isophthalic, oxanic, o-phthalic, tetrahydrophthalic, hexahydrophthalic, trimellitic acid, or mixtures thereof.

[0084] In various embodiments, the acid anhydrides may be chosen from o-phthalic, trimellitic, succinic acid anhydride or mixtures thereof. In another embodiment, the dicarboxylic acid may be adipic acid.

[0085] In certain embodiments, the dihydric alcohols may be chosen from, for example, ethanediol, ethylene glycol, diethylene glycol, triethylene glycol, trimethylene glycol, tetraethylene glycol, 1,2-propanediol, dipropylene glycol, tripropylene glycol, tetrapropylene glycol, 1,3-propanediol, 1,4-butanediol, 1,3-butanediol, 2,3-butanediol, 1,5-pentanediol, 1,6-hexanediol, 2,2-dimethyl-1,3-propanediol, 1,4-dihydroxycyclohexane, 1,4-dimethylolcyclohexane, cyclohexanedimethanol, 1,8-octanediol, 1,10-decanediol, 1,12-dodecanediol, neopentyl glycol, or mixtures thereof. In other embodiments, the cycloaliphatic and/or aromatic dihydroxyl compounds may also be suitable as the dihydric alcohol(s) for the preparation of the polyester polyol(s).

[0086] In certain embodiments, the polyester diols may be chosen from homopolymers or copolymers of lactones, which are, in at least certain embodiments, obtained by addition reactions of lactones or lactone mixtures, such as butyrolactone, ε-caprolactone and/or methyl-ε-caprolactone with the appropriate polyfunctional, for example difunctional, starter molecules such as, for example, the dihydric alcohols mentioned above. In some embodiments, the corresponding polymers of ε-caprolactone may be chosen.

[0087] In certain embodiments, the polyester polyol, for example polyester diol, radical R_1, may be obtained by polycondensation of dicarboxylic acids, such as adipic acid, with polyols, for example diols, such as hexanediol, neopentyl glycol, or mixtures thereof.

[0088] In certain embodiments, the polycarbonates containing hydroxyl groups comprise those known per se, such as the products obtained by reacting diols, such as (1,3)-propanediol, (1,4)-butanediol and/or (1,6)-hexanediol, diethylene glycol, triethylene glycol, or tetraethylene glycol with diaryl carbonates, for example diphenyl carbonate or phosgene.

[0089] In certain embodiments, optional polyether polyols may be obtained in any known manner by reacting starting compounds which contain reactive hydrogen atoms with alkylene oxides, such as ethylene oxide; propylene oxide; butylene oxide; styrene oxide; tetrahydrofuran; epichlorohydrin, or mixtures

thereof. In certain embodiments, the polyethers do not contain more than about 10% by weight of ethylene oxide units. In other embodiments, polyethers obtained without addition of ethylene oxide may be chosen.

[0090] In other embodiments, polyethers modified with vinyl polymers may be chosen. Products of this type can be obtained by polymerization, for example, of styrene and acrylonitrile in the presence of polyethers, for example as described in U.S. Patent Nos. 3,383,351; 3,304,273; 3,523,095; 3,110,695; and German patent 1 152 536, all incorporated by reference herein.

[0091] In certain embodiments, the polythioethers may be chosen from condensation products obtained from thiodiglycol per se and/or with other glycols, dicarboxylic acids, formaldehyde, aminocarboxylic acids, and/or amino alcohols. In other embodiments, the products obtained are either mixed polythioethers, polythioether esters, or polythioether ester amides, depending on the co-components.

[0092] In certain embodiments, the polyacetals may be chosen from compounds which can be prepared from aldehydes, such as formaldehyde, and from glycols, such as diethylene glycol, triethylene glycol, ethoxylated 4,4'-(dihydroxy)diphenyl-dimethylmethane, or (1,6)-hexanediol. Polyacetals according to various non-limiting embodiments of the disclosure can also be prepared by polymerization of cyclic acetals.

[0093] In certain embodiments, optional polyhydroxy polyesteramides and polyamines include, for example, the mainly linear condensation products obtained from saturated or unsaturated, polybasic carboxylic acids or anhydrides thereof; from saturated or unsaturated, polyvalent amino alcohols; from diamines; from polyamines; or mixtures thereof.

[0094] In certain embodiments, optional monomers for the production of polyacrylates having hydroxyl functionality include acrylic acid, methacrylic acid, crotonic acid, maleic anhydride, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl acrylate, 2-hydroxypropyl methacrylate, 3-hydroxypropyl acrylate, 3-hydroxypropyl methacrylate, glycidyl acrylate, glycidyl methacrylate, 2-isocyanatoethyl acrylate, or 2-isocyanatoethyl methacrylate.

[0095] In certain embodiments, mixtures of dihydroxy compounds may be chosen.

[0096] In various embodiments, optional polyisocyanates for providing the hydrocarbon-based radical R_2 include, for example, organic diisocyanates having a molecular weight ranging from about 100 to about 1500, from about 112 to about 1000, or from about 140 to about 400.

[0097] In other embodiments, optional diisocyanates are chosen from the general formula $R_2(NCO)_2$, in which R_2 represents a divalent aliphatic hydrocarbon group comprising from about 4 to 18 carbon atoms, a divalent cycloaliphatic hydrocarbon group comprising from about 5 to 15 carbon atoms, a divalent araliphatic hydrocarbon group comprising from about 7 to 15 carbon atoms, or a divalent aromatic hydrocarbon group comprising from about 6 to 15 carbon atoms. Examples of the organic diisocyanates include tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, dodecamethylene diisocyanate, cyclohexane-1,3-diisocyanate and cyclohexane-1,4-diisocyanate, 1-isocyanato-3-isocyanatomethyl-3,5,5-trimethylcyclohexane (isophorone diisocyanate or IPDI), bis(4-isocyanatocyclohexyl)-methane, 1,3-bis(isocyanatomethyl)cyclohexane, 1,4-bis(isocyanatomethyl)cyclohexane, bis(4-isocyanato-3-methylcyclohexyl)methane, or mixtures thereof.

[0098] In certain embodiments, the diisocyanates are chosen from aliphatic or cycloaliphatic diisocyanates, for example, 1,6-hexamethylene diisocyanate, isophorone diisocyanate, dicyclohexylmethane diisocyanate, or mixtures thereof.

[0099] In some embodiments, the use of diols, for example low molecular weight diols, R_3, may allow a stiffening of the polymer chain. The expression “low molecular weight diols” means diols having a molecular weight ranging from about 50 to about 800, such as about 60 to 700, or about 62 to 200. They may, in various embodiments, contain aliphatic, alicyclic, or aromatic groups. In certain embodiments, the compounds contain only aliphatic groups. In other embodiments, the diols may have up to about 20 carbon atoms, and may be chosen, for example, from ethylene glycol, diethylene glycol, propane-1,2-diol, propane-1,3-diol, butane-1,4-diol, 1,3-butylene glycol, neopentyl glycol, butylethylpropanediol, cyclohexanediol, 1,4-cyclohexanedimethanol, hexane-1,6-diol, bisphenol A (2,2-bis(4-hydroxyphenyl)propane), hydrogenated bisphenol A (2,2-bis(4-hydroxycyclohexyl)propane), or mixtures thereof.

[00100] In other embodiments, the low molecular weight diols may contain ionic or potentially ionic groups. Suitable low molecular weight diols containing ionic or potentially ionic groups may be chosen from those disclosed in U.S. Patent No. 3,412,054, incorporated by reference herein. In various embodiments, compounds may be chosen from dimethylolbutanoic acid (DMBA), dimethylolpropionic acid (DMPA), or carboxyl-containing caprolactone polyester diol. If low molecular weight diols containing ionic or potentially ionic groups are chosen, they may be used in an amount such that less than about 0.30 meq of -COOH is present per gram of polyurethane in the polyurethane dispersion. In certain embodiments, the low molecular weight diols containing ionic or potentially ionic groups are not used.

[00101] Reaction product (ii) may be chosen from at least one chain extender according to the formula:

$$H_2N - R4 - NH_2$$

wherein R4 is chosen from alkylene or alkylene oxide radicals, said radicals not being substituted with ionic or potentially ionic groups.

[00102] Reaction product (ii) may optionally be chosen from alkylene diamines, such as hydrazine, ethylenediamine, propylenediamine, 1,4-butylenediamine or piperazine; and alkylene oxide diamines such as dipropylamine diethylene glycol (such as DPA-DEG sold by the company Tomah Products), 2-methyl-1,5-pentanediamine (such as Dytec A sold by the company DuPont), hexanediamine, isophoronediamine, and 4,4-methylenedi(cyclohexylamine), and the DPA-series of ether amines available from the company Tomah Products, including dipropylamine propylene glycol, dipropylamine dipropylene glycol, dipropylamine tripropylene glycol, dipropylamine poly(propylene glycol), dipropylamine ethylene glycol, dipropylamine poly(ethylene glycol), dipropylamine 1,3-propanediol, dipropylamine 2-methyl-1,3-propanediol, dipropylamine 1,4-butanediol, dipropylamine 1,3-butanediol, dipropylamine 1,6-hexanediol, dipropylamine cyclohexane-1,4-dimethanol, or mixtures thereof.

[00103] Reaction product (iii) may be chosen from at least one chain extender according to the formula:

$$H_2N - R5 - NH_2$$

wherein R5 is chosen from alkylene radicals substituted with ionic or potentially ionic

groups. In certain exemplary embodiments, the compounds may have an ionic or potentially ionic group and two isocyanate-reactive groups.

[00104] As used herein, ionic or potentially ionic groups may include groups comprising ternary or quaternary ammonium groups, groups convertible into such groups, carboxyl groups, carboxylate groups, sulphonic acid groups, or sulphonate groups. At least partial conversion of the groups convertible into salt groups of the type mentioned may take place before or during the mixing with water. Specific compounds include diaminosulphonates, for example the sodium salt of N-(2-aminoethyl)-2-aminoethanesulphonic acid (AAS) or the sodium salt of N-(2-aminoethyl)-2- aminopropionic acid.

[00105] In certain embodiments, R5 represents an alkylene radical substituted with sulphonic acid or sulphonate groups. By way of example only, the reaction product (iii) is chosen from sodium salts of N-(2-aminoethyl)-2-aminoethanesulphonic acid.

[00106] In certain embodiments, such latexes include, but are not limited to, aqueous polyurethane dispersions comprising a reaction product of a prepolymer comprising a dihydroxyl compound, a polyisocyanate, a low molecular weight diol, at least two diamine compounds, or wherein the composition is substantially free of triethanolamine stearate such as, those sold under the tradename Baycusan® by Bayer such as, Baycusan® C1000 (INCI name: Polyurethane-34), Baycusan® C1001 (INCI name: Polyurethane-34), Baycusan® C1003 (INCI name: Polyurethane-32), Baycusan® C1004 (INCI name: Polyurethane-35) and Baycusan® C1008 (INCI name: Polyurethane-48). In various embodiments, polyurethane latexes may be chosen from, but are not limited to, aqueous polyurethane dispersion of Isophthalic Acid/Adipic Acid/Hexylene Glycol/Neopentyl glycol/Dimethylolpropanoic Acid/Isophorone Diisocyanate copolymer (INCI name: Polyurethane-1, such as Luviset® P.U.R sold by the company BASF), aliphatic polyurethane and aliphatic polyester polyurethane (INCI name: Polycarbamyl Polyglycon Ester such as the Neorez® series sold by the company DSM, including Neorez® R989).

[00107] In certain embodiments, the at least two latex polymers may be chosen from polyacrylic latex, polyacrylate latex, polystyrene latex, polyester latex,

polyamide latex, polyurea latex, polyurethane latex, epoxy resin latex, cellulose-acrylate latex, or their copolymers.

[00108] In various embodiments according to the disclosure, it may be possible to choose a polymer that comprises both acrylate and polyurethane parts at the molecular level.

[00109] In one embodiment, the compositions of the present disclosure contain two latex polymers comprising acrylates copolymer as sold under the tradename LUVIFLEX SOFT by BASF and polyurethane-34 as sold under the tradename Baycusan® by Bayer Material Science.

[00110] As described herein, certain embodiments according to the disclosure may comprise at least two latex polymers chosen from acrylate and polyurethane polymers, wherein at least one of the latex polymers is a film-forming polymer, with the proviso that when the first latex polymer is chosen from acrylate polymers, the second latex polymer is chosen from polyurethane polymers; and when the first latex polymer is chosen from polyurethane polymers, the second latex polymer is chosen from acrylate polymers.

[00111] In certain embodiments, each of the latex polymers is present in an amount ranging from about 0.001% to about 15% by weight, from 0.05% to about 10% by weight, from about 0.1% to about 7.5% by weight, from about 0.25% to about 5% by weight, from about 0.5% to about 2.5% by weight, or from about 0.5% to about 1.5% by weight, relative to the weight of the composition, including all ranges and subranges therebetween.

[00112] In other embodiments, each of the latex polymers is present in an amount ranging from about 0.5% to about 15% by weight, from about 1% to about 12% by weight, from about 1.2% to about 12% by weight, from about 1.5% to about 10% by weight, or less than about 10% by weight, relative to the weight of the composition, including all ranges and subranges therebetween.

[00113] In certain embodiments, the latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, from about 0.25% to about 20% by weight, or from about 0.3 % to about 15% by weight, or from about 0.4 % to about 10% by weight, or from about 0.5% to about 5% by weight,

relative to the weight of the composition, including all ranges and subranges therebetween.

[00114] In other embodiments, the combined amount of latex polymers may be about 0.1%, about 0.5%, about 0.6%, about 0.75, about 0.9%, about 1%, about 1.5%, about 2%, about 3%, about 4%, about 5%, about 6%, about 7%, about 8%, about 9%, about 10%, about 11%, about 12%, about 13%, about 14%, about 15%, about 16%, about 17%, about 18%, about 19%, about 20%, about 21%, about 22%, about 23%, about 24%, about 25%, about 26%, about 27%, about 28%, about 29%, or about 30%, by weight, relative to the weight of the composition.

[00115] In further embodiments, the combined amount of latex polymers ranges up to about 30%, up to about 29%, up to about 28%, up to about 27%, up to about 26%, up to about 25%, up to about 24%, up to about 23%, up to about 22%, up to about 21%, up to about 20%, up to about 19%, up to about 18%, up to about 17%, up to about 16%, up to about 15%, up to about 14%, up to about 13%, up to about 12%, up to about 11%, up to about 10%, up to about 10%, up to about 9%, up to about 8%, up to about 7%, up to about 6%, up to about 5%, up to about 4%, up to about 3%, up to about 2%, or up to about 1%, each by weight, relative to the weight of the composition.

[00116] In certain embodiments, the combined amount of latex polymers is less than about 10% by weight or less than about 5% by weight, relative to the weight of the composition.

[00117] In certain embodiments, the weight ratio of the at least two latex polymers, e.g. polymer A to polymer B, may range from about 10:1 to about 1:10, from about 9:1 to about 1:9, from about 8:1 to about 1:8, from about 7:1 to about 1:7, from about 6:1 to about 1:6, from about 5:1 to about 1:5, from about 4:1 to about 1:4, from about 3:1 to about 1:3, or from about 2:1 to about 1:2, including all ranges and subranges therebetween.

[00118] In other embodiments, the weight ratio of polymer A to polymer B is about 10:1, about 9:1, about 8:1, about 7:1, about 6:1, about 5:1, about 4:1, about 3:1, about 2:1, about 1:1, about 1:2, about 1:3, about 1:4, about 1:5, about 1:6, about 1:7, about 1:8, about 1:9, or about 1:10.

[00119] In certain embodiments, the at least two latex polymers composition of the present invention comprise at least one acrylate latex polymer and at least one polyurethane latex polymer and may range from about 10:1 to about 1:10, from about 9:1 to about 1:9, from about 8:1 to about 1:8, from about 7:1 to about 1:7, from about 6:1 to about 1:6, from about 5:1 to about 1:5, from about 4:1 to about 1:4, from about 3:1 to about 1:3, or from about 2:1 to about 1:2.

[00120] In some embodiments, the weight ratio of the acrylate latex polymer to the polyurethane latex polymer may range from about 1 to about 1:10, from about 1 to about 1:9, from about 1 to about 1:8, from about 1 to about 1:7, from about 1 to about 1:6, from about 1 to about 1:5, from about 1 to about 1:4, from about 1 to about 1:3, or from about 1 to about 1:2, including all ranges and subranges therebetween.

[00121] In some embodiments, the weight ratio of the acrylate latex polymer to the polyurethane latex polymer may range from about 10:1 to about 2:1, from about 9:1 to about 3:1, from about 8:1 to about 4:1, from about 7:1 to about 5:1, or from about 6:1 to about 5:1, including all ranges and subranges therebetween.

[00122] In other embodiments, the weight ratio of the acrylate latex polymer to the polyurethane latex polymer is about 1, about 1.1, about 1.2, about 1.3, about 1.4, about 1.5, about 1.6, about 1.7, about 1.8, about 1.9, about 2, about 2.5, about 3, about 3.5, about 4, about 4.5, about 5, about 5.5, about 6, about 6.5, about 7, about 7.5, about 8, about 8.5, about 9, about 9.5, or 10.

[00123] In other embodiments, when the first latex polymer is chosen from acrylate polymers, and the second latex polymer is chosen from polyurethane polymers, the weight ratio of the acrylate latex polymer to the polyurethane latex polymer is greater than about 1:1, greater than about 2:1, greater than about 3:1, greater than about 4:1, greater than about 5:1, greater than about 6:1, greater than about 7:1, greater than about 8:1, greater than about 9:1, or greater than about 10:1.

[00124] In certain embodiments, when polymer A is chosen from latex polymers having a Young's modulus ranging from about 0.1 MPa to about 10 MPa and a strain, under stress at 0.5 MPa, of at least about 1%, and polymer B is chosen from latex polymers having a Young's modulus ranging from about 10 MPa to about 6 GPa and a strain, under stress at 0.5 MPa, of less than about 5%, different weight

ratios of polymer A to polymer B may be chosen to correspond to different hair styling applications.

[00125] In other embodiments, various weight ratios of the two latex polymers provide different levels of style hold on hair ranging from a high level of style hold to a medium to high level of style hold to a light to a medium level of style hold or to a light hold.

[00126] In other embodiments, a weight ratio of polymer A to polymer B ranging from about 1:10 to about 1:1 may provide a high level of style hold; a weight ratio of polymer A to polymer B ranging from about 5:1 to about 10:1 may provide a medium to high level of style hold; and a weight ratio of polymer A to polymer B ranging from about 3:1 to about 10:1 may provide a light to medium level of style hold.

OIL

[00127] The at least one oil of the present invention may be of animal, plant, mineral, or synthetic origin. Thus, the at least one oil of the present invention is chosen from lower alkanes, hydrocarbon oils, plant/vegetable oils, fluoro oils, silicones, or mixtures thereof.

[00128] The particles or droplets of the at least one oil may have a size ranging up to about 12 μm, such as up to about 10 μm, or up to about 8 μm, for example from about 0.5 μm to about 10 μm.

[00129] With regard to the lower alkanes, in some embodiments, these have from 6 to 16 carbon atoms and are linear or branched, optionally cyclic. As examples, alkanes can be chosen from hexane or dodecane, or from isoparaffins such as isohexadecane or isodecane (also known as 2,2,4,4,6-pentamethylheptane), for instance the oils sold under the trade names ISOPAR or PERMETHYL.

[00130] Non-limiting examples of non-silicone oils usable in the composition of the disclosure, can be chosen from hydrocarbon oils, plant/vegetable oils, or fluoro oils. Such oils include: hydrocarbon oils of animal origin, such as perhydrosqualene; hydrocarbon-based oils of plant origin, such as phytostearyl esters, such as phytostearyl oleate, phytostearyl isostearate or lauroyl/octyldodecyl/phytostearyl glutamate (Ajinomoto, Eldew PS203), triglycerides formed from fatty acid esters of glycerol, in particular in which the fatty acids may

have chain lengths ranging from C_4 to C_{36} and especially from C_{18} to C_{36}, these oils possibly being linear or branched, and saturated or unsaturated; these oils may especially be heptanoic or octanoic triglycerides. Other examples are shea oil, alfalfa oil, poppy oil, winter squash oil, millet oil, barley oil, quinoa oil, rye oil, candlenut oil, passionflower oil, shea butter, aloe vera oil, sweet almond oil, peach stone oil, groundnut oil, argan oil, avocado oil, baobab oil, borage oil, broccoli oil, calendula oil, camelina oil, canola oil, carrot oil, safflower oil, flax oil, rapeseed oil, cotton 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, grapeseed oil, pistachio oil, winter squash oil, pumpkin oil, musk rose oil, sesame oil, soybean oil, sunflower oil, castor oil or watermelon seed oil, or mixtures thereof, or alternatively caprylic/capric acid triglycerides, such as those sold by the company Stearineries Dubois or those sold under the names MIGLYOL 810, 812 and 818 by the company Dynamit Nobel; or linear or branched hydrocarbons of mineral or synthetic origin, such as liquid paraffins or derivatives thereof, petroleum jelly, polydecenes, polybutenes, hydrogenated polyisobutene such as PARLEAM, or squalane.

[00131] Non-volatile oils may also be chosen from, for example, synthetic ethers containing from 10 to 40 carbon atoms or oils of high molar mass, in particular having a molar mass ranging from about 400 to about 10 000 g/mol, in particular from 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. As oils of high molar mass that may be used in the present invention, mention may especially be made of oils chosen from lipophilic polymers, silicone oils, oils of plant origin, or mixtures thereof.

[00132] Non-limiting examples of fluoro oils include: fluorinated, partially hydrocarbon oils; fluorinated oils, including perfluoromethylcyclopentane or perfluoro-1,3-dimethylcyclohexane, sold under the names "FLUTEC® PC1" or "FLUTEC® PC3" by the company BNFL Fluorochemicals; perfluoro-1,2-dimethylcyclobutane; perfluoroalkanes such as dodecafluoropentane or tetradecafluorohexane, sold under the names "PF 5050®" or "PF 5060®" by the 3M Company, or bromoperfluorooctyl sold under the name "FORALKYL®" by the

company Atochem; nonafluoro-methoxybutane or nonafluoroethoxyisobutane; derivatives of perfluoromorpholine, such as 4-trifluoromethyl perfluoromorpholine sold under the name "PF 5052®" by the 3M Company.

[00133] As used herein, the term “silicone” as used in reference to the at least one oil of the present invention means an oil comprising at least one silicon atom, and especially at least one Si-O group, and the term “fluoro oil” means an oil comprising at least one fluorine atom. The term “hydrocarbon-based oil” means an oil mainly containing hydrogen and carbon atoms. The oils may optionally comprise oxygen, nitrogen, sulfur and/or phosphorus atoms, for example in the form of hydroxyl or acid radicals.

[00134] The at least one oil selected from silicones may be chosen from silicone oils including volatile silicones, for instance volatile linear or cyclic silicone oils, especially those with a viscosity of less than or equal to 8 centistokes (cSt) (8 × 10-6 m2/s), and especially containing from 2 to 10 silicon atoms and in particular from 2 to 7 silicon atoms, these silicones optionally comprising alkyl or alkoxy groups containing from 1 to 10 carbon atoms.

[00135] As volatile silicone oils that may be used in the invention, mention may be made especially of dimethicones with viscosities of 5 and 6 cSt, octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, heptamethylhexyltrisiloxane, heptamethyl-octyltrisiloxane, hexamethyldisiloxane, octamethyltrisiloxane, decamethyl-tetrasiloxane or dodecamethylpentasiloxane, or mixtures thereof.

[00136] As additional exemplary non-volatile oils, optionally partially hydrocarbon-based and/or silicone fluoro oils, for instance fluorosilicone oils, fluoropolyethers or fluorosilicones, or silicone oils, for instance linear or cyclic non-volatile polydimethylsiloxanes (PDMS); polydimethylsiloxanes comprising alkyl, alkoxy or phenyl groups, which are pendant or at the end of a silicone chain, these groups containing from 2 to 24 carbon atoms; phenyl silicones, for instance phenyl trimethicones, phenyl dimethicones, phenyl trimethylsiloxy diphenyl siloxanes, diphenyl dimethicones, diphenyl methyldiphenyl trisiloxanes or 2-phenylethyl trimethylsiloxy silicates, may be mentioned.

[00137] In an embodiment, the at least one oil includes plant/vegetable oils chosen from shea oil, alfalfa oil, poppy oil, winter squash oil, millet oil, barley oil,

quinoa oil, rye oil, candlenut oil, passionflower oil, shea butter, aloe vera oil, sweet almond oil, peach stone oil, groundnut oil, argan oil, avocado oil, baobab oil, borage oil, broccoli oil, calendula oil, camelina oil, canola oil, carrot oil, safflower oil, flax oil, rapeseed oil, cotton 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, grapeseed oil, pistachio oil, winter squash oil, pumpkin oil, musk rose oil, sesame oil, soybean oil, sunflower oil, castor oil or watermelon seed oil, or mixtures thereof.

[00138] In various embodiments, the at least one oil may be present in an amount ranging from about 0.01% to about 50% by weight, or from about 0.05% to about 30% by weight, or from about 0.1% to about 20% by weight, or from about 0.5% to about 10% by weight, or from about 1% to about 8% by weight, or from about 3% to about 6% by weight, relative to the total weight of the composition, including all ranges and subranges therebetween.

[00139] In various embodiments, the at least one oil may be present in an amount of about 0.01%, 0.05%, 0.06%, 0.07%, 0.08%, 0.09%, 0.1%, 0.15%, 0.2%, 0.25% 0.3%, 0.35%, 0.4%, 0.45%, 0.5%,0.55%, 0.6%, 0.65%, 0.7%, 0.75%, 0.8%, 0.85%, 0.9%, 0.95%, 1%, 1.5%, 2%, 2.5%, 3%, 3.25%, 3.5%, 3.75%, 4%, 4.25%, 4.5%,4.75%, 5%, 5.25%, 5.5%,5.75%, 6%, 6.5%, 7%, 7.5%, 8%, 6.5%, 9%, 9.5%, or 10% by weight, relative to the total weight of the composition.

NONIONIC SURFACTANT

[00140] The compositions according to the present disclosure comprise at least one nonionic surfactant chosen from glyceryl esters, fatty alcohols, alkoxylated alcohols and lanolin, alkylpolyglucosides, or mixtures thereof. Nonionic surfactants can also be employed as emulsifying agents in the compositions of the present invention or in the emulsions comprising the at least one thickening agent chosen from emulsions of crosslinked anionic copolymers of acrylamide/nonionic surfactants, or emulsions of AMPS/nonionic surfactants.

[00141] Glyceryl Esters

[00142] The glyceryl esters that may be included in the compositions of the present invention include, but are not limited to, glyceryl monoesters, such as

glyceryl monoesters of C16-C22 saturated, unsaturated and branched chain fatty acids such as glyceryl oleate, glyceryl monostearate, glyceryl monoisostearate, glyceryl monopalmitate, glyceryl monobehenate, or mixtures thereof.

[00143] The glyceryl esters that may be included in the compositions of the present invention may also be referred to as nonionic co-emulsifiers.

[00144] In one embodiment, the glyceryl ester is chosen from glyceryl oleate, glyceryl monostearate (glyceryl stearate), glyceryl monoisostearate, glyceryl monopalmitate, glyceryl monobehenate, or mixtures thereof.

[00145] In one embodiment, the glyceryl ester is chosen from glyceryl stearate.

[00146] Fatty alcohols

[00147] The fatty alcohols that may be included in the composition of the disclosure include, but are not limited to, non-alkoxylated, saturated or unsaturated, linear or branched, and have from 6 to 60 carbon atoms, such as from 8 to 30 carbon atoms.

[00148] The fatty alcohols of the present disclosure are chosen from solid or liquid fatty alcohols.

[00149] The saturated liquid fatty alcohols can be branched. They can optionally comprise, in their structure, at least one aromatic or non-aromatic ring. They can be acyclic.

[00150] The unsaturated liquid fatty alcohols exhibit, in their structure, at least one double or triple bond and preferably one or more double bonds. When several double bonds are present, there are preferably 2 or 3 of them and they can be conjugated or unconjugated. These unsaturated fatty alcohols can be linear or branched. They can optionally comprise, in their structure, at least one aromatic or non-aromatic ring. They can be acyclic. Among the liquid unsaturated fatty alcohols, oleyl alcohol, linoleyl alcohol, linolenyl alcohol and undecylenyl alcohol may be mentioned.

[00151] Liquid fatty alcohols may be selected, for example, from octyldodecanol, 2-butyloctanol, 2-hexyldecanol, 2-undecylpentadecanol, oleyl alcohol or linoleyl alcohol, isostearyl alcohol, or mixtures thereof.

[00152] Solid fatty alcohols may be crystalline, amorphous or pasty. The solid fatty alcohols of the present invention are solid at room temperature (25

degrees centigrade) and at atmospheric pressure (1 atm) and are insoluble in water (i.e. they have a solubility in water of less than 1% by weight and preferably less than 0.5% by weight, at 25ºC and 1 atm) and are soluble, under the same temperature and pressure conditions, in at least one organic solvent (for example ethanol, chloroform, benzene or liquid petroleum jelly) to at least 1% by weight.

[00153] In an embodiment, the solid fatty alcohols preferably have a melting point of greater than or equal to 28ºC and have a viscosity, at a temperature of 40 ºC and at a shear rate of 1 s^{-1}, of greater than or equal to 1 Pa.s.

[00154] In an embodiment, the melting point of the fatty alcohols ranges from 30ºC to 250 ºC, such as from 32 ºC to 150ºC or such as from 35ºC to 150ºC.

[00155] The melting points may be measured by DSC or on a Kofler bench. The melting point may be measured by differential calorimetric analysis (DSC) with a temperature rise of 10ºC per minute. The melting point is then the temperature corresponding to the top of the melting endotherm peak obtained during the measurement.

[00156] The viscosity measurements may be taken at a temperature of about 40 ºC using an RS600 rheometer from Thermoelectron.

[00157] The solid fatty alcohols of the present invention are chosen from saturated or unsaturated, linear or branched, preferably linear and saturated, (mono) alcohols comprising from 6 to 60 carbon atoms, such as from 10 to 50 carbon atoms, or such as from 12 to 24 carbon atoms.

[00158] The solid fatty alcohols preferably have the structure of formula: R-OH in which R especially denotes a C6-C60, for example, C8-C60, preferably C10-C50 or even C12-C30 alkyl group, R possibly being substituted with one or more hydroxyl groups, R possibly being branched. The solid fatty alcohols of the invention may be non- oxyalkylenated and/or non-glycerolated. These fatty alcohols may be constituents of animal or plant waxes.

[00159] The solid fatty alcohol may represent a mixture of fatty alcohols, which means that several species of fatty alcohol may coexist, in the form of a mixture, in a commercial product. One example of such a commercial product is cetearyl alcohol, a mixture of cetyl alcohol and stearyl alcohol, commercially available under the trade name of LANETTE-O from the company BASF. Cetyl

alcohol may also be commercially available under the tradename of LANETTE 16 from the company BASF.

[00160] In an embodiment, the solid fatty alcohols of the present invention may be chosen from myristyl alcohol, cetyl alcohol, stearyl alcohol, cetearyl alcohol, or mixtures thereof, octyldodecanol, 2-butyloctanol, 2-hexyldecanol, 2-undecylpentadecanol, oleic alcohol, linoleic alcohol, behenyl alcohol, or mixtures thereof.

[00161] Other suitable examples of the solid fatty alcohol of the present invention include branched solid fatty alcohols chosen from 2-dodecylhexadecanol, 2-tetradecyl-1-octadecanol, 2-tetradecyl-1-eicosanol, 2-hexadecyl-1-octadecanol or 2-hexadecyl-1-eicosanol, or mixtures thereof.

[00162] In embodiment of the present invention, the fatty alcohol is chosen from cetyl alcohol.

[00163] In embodiment of the present invention, the fatty alcohol is chosen from cetearyl alcohol.

[00164] In embodiment of the present invention, the fatty alcohol comprises cetyl alcohol and cetearyl alcohol.

[00165] In embodiment of the present invention, the fatty alcohol comprises cetyl alcohol and stearyl alcohol.

[00166] In embodiment of the present invention, the fatty alcohol is chosen from cetyl alcohol, stearyl alcohol, cetearyl alcohol, or mixtures thereof.

[00167] In an embodiment, the fatty alcohols of the present invention are chosen from liquid fatty alcohol, solid fatty alcohols, or mixtures thereof.

[00168] Alkoxylated alcohols and lanolin

[00169] "Alkoxylated fatty alcohol" as used herein means a compound having at least one fatty portion (8 carbon atoms or more) and at least one alkoxylated portion (-(CH2)nO-, where n is an integer from 1 to 5, preferably 2 to 3). According to particularly preferred embodiments, the alkoxylated fatty alcohols of the present invention can be used as non-ionic surfactants, if desired. In this regard, the alkoxylated fatty alcohols of the present invention preferably have an HLB (hydrophilic-lipophilic balance) value from 1-20, including all ranges and subranges therebetween, with HLB values ranging from 1 to 5 (particularly 3 to 5) or from 15-20 (particularly 16 to 18) being most preferred. Preferably, the alkoxylated fatty alcohol

is chosen from ethoxylated fatty alcohols, propoxylated fatty alcohols, or mixtures thereof.

[00170] Preferably, the alkoxylated fatty alcohol can be chosen from di-alkyl, tri-alkyl- or combinations of di-alkyl and tri-alkyl substituted ethoxylated polymers. They can also be chosen from mono-alkyl, di-alkyl, tri-alkyl, tetra-alkyl substituted alkyl ethoxylated polymers, or all combinations thereof. The alkyl group can be saturated or unsaturated, branched or linear and contain a number of carbon atoms preferably from about 12 carbon atoms to about 50 carbon atoms, including all ranges and subranges therebetween, for example, 20 to 40 carbon atoms, 22 to 24 carbon atoms, 30 to 50 carbon atoms, and 40 to 60 carbon atoms. Most preferably, the fatty portion contains a mixture of compounds of varying carbon atoms such as, for example, C20-C40 compounds, C22-C24 compounds, C30-050 compounds, and C40-C60 compounds.

[00171] Preferably, the alkoxylated portion of the alkoxylated fatty alcohols of the present invention contain 2 or more alkoxylation units, preferably from 10 to 200 alkoxylation units, preferably from 20 to 150 alkoxylation units, and preferably from 25 to 100 alkoxylation units, including all ranges and subranges therebetween. Also preferably, the alkoxylation units contain 2 carbon atoms (ethoxylation units) and/or 3 carbon atoms (propoxylation units).

[00172] The amount of alkoxylation can also be determined by the percent by weight of the alkoxylated portion with respect to the total weight of the compound. Suitable weight percentages of the alkoxylated portion with respect to the total weight of the compound include, but are not limited to, 10 percent to 95 percent, preferably 20 percent to 90 percent, including all ranges and subranges therebetween with 75 percent to 90 percent (particularly 80 percent to 90 percent) or 20 percent to 50 percent being preferred.

[00173] Preferably, the alkoxylated fatty alcohols of the present invention have a number average molecular weight (Mn) greater than 500, preferably from 500 to 5,000, including all ranges and subranges therebetween such as, for example, Mn of 500 to 1250 or an Mn of 2,000 to 5,000.

[00174] Suitable examples of alkoxylated fatty alcohols include: laureth-3, laureth-7, laureth-9, laureth-12, laureth~23, ceteth-10, steareth-10, steareth-2, steareth-100, beheneth-5, beheneth-5, beheneth-10, oleth-10, Pareth alcohols,

trideceth-10, trideceth-12, C12-13 pareth-3, C12-13 pareth-23, C11-15 pareth-7, PEG hydrogenated castore oil, PEG-75 lanolin, polysorbate-80, polysobate-20, PPG-5 ceteth-20, PEG-55 Propylene Glycol Oleate, glycereth-26 (PEG-26 Glyceryl Ether), PEG 120 methyl glucose dioleate, PEG 120 methyl glucose trioleate, PEG 150 pentaerythrityl tetrastearate, or mixtures thereof.

[00175] In the present invention, the at least one nonionic surfactant may be employed in the composition of the present invention in an amount of from about 0.05% to 8% by weight, such as from about 0.075% to about 7% by weight, from about 0.1% to about 6% by weight, from about 0.2% to about 5% by weight, or from about 0.3% to about 5% by weight of active material, based on the total weight of the composition, including all ranges and subranges therebetween.

[00176] In various embodiments, the total amount of the at least one glyceryl ester is about 0.05%, 0.075%, 0.1%, 0.15%, 0.2%, 0.25%, 0.3%, 0.35%, 0.4%, 0.45%, 0.5%, 0.55%, 0.6%, 0.65%, 0.7%, 0.75%, 0.8%, 0.85%, 0.86%, 0.9%, 0.95%, 1%, 1.25%, 1.5%, 1.75%, 2%, 2.25%, 2.5%, 2.75%, 3%, 3.25%, 3.5%, 3.75%, 4%,4.25%, 4.5%, 4.75%, 5%, 5.25%, 5.5%, 5.75%, 6% or 6.5%, 7%, 7.5%, or 8% by weight of active material, based on the total weight of the composition.

NON-LATEX NONIONIC FILM FORMING POLYMER

[00177] The at least one non-latex nonionic film forming polymer which can be used according to the present disclosure is chosen from

- polyalkyloxazolines;
- vinyl acetate homopolymers;
- vinyl acetate copolymers, for instance copolymers of vinyl acetate and of acrylic ester, copolymers of vinyl acetate and of ethylene, or copolymers of vinyl acetate and of maleic ester, for example of dibutyl maleate;
- homopolymers and copolymers of acrylic esters, such as for example, copolymers of alkyl acrylates and alkyl methacrylates;
- copolymers of acrylonitrile and a nonionic monomer, chosen, for example, from butadiene and alkyl (meth)acrylates;
- styrene homopolymers;
- styrene copolymers, for instance copolymers of styrene and of an alkyl (meth)acrylate; copolymers of styrene, of alkyl methacrylate and of alkyl acrylate;

copolymers of styrene and of butadiene; or copolymers of styrene, of butadiene and of vinylpyridine;

- polyamides;
- vinylpyrrolidone homopolymers;
- copolymer of vinylpyrrolidone and vinyl acetate monomers;
- vinyllactam homopolymers such as vinylpyrrolidone homopolymers, or such as polyvinylcaprolactam; or
- vinyllactam copolymers such as a poly(vinylpyrrolidone/vinyllactam) copolymer, poly(vinylpyrrolidone/vinyl acetate) copolymers; or poly(vinylpyrrolidone/vinyl acetate/vinyl propionate) terpolymers.

[00178] Suitable examples include: vinylpyrrolidone homopolymers; copolymers of vinylpyrrolidone and of vinyl acetate; polyalkyloxazolines, such as the polyethyloxazolines provided by the company Polymer Chemistry Innovations under the names AQUAZOL HP, or AQUAZOL HVIS; vinyl acetate homopolymers, such as the product provided under the name UCAR™ 130 Latex Resin by the company Dow Chemical or the product provided under the name Ultrapure Polymer 2041-R 012 by the company Ultra Chemical, Inc.; copolymers of vinyl acetate and of acrylic ester, such as the product provided under the name RHODOPAS AD 310 from Rhone-Poulenc; copolymers of vinyl acetate and of ethylene, such as the product provided under the name DERMACRYL LOR by the company Akzo Nobel; copolymers of vinyl acetate and of maleic ester, for example of dibutyl maleate, such as the product provided under the nameAPPRETAN MB Extra by the company Clariant; copolymers of polyethylene and of maleic anhydride; alkyl acrylate homopolymers and alkyl methacrylate homopolymers, such as the product provided under the name MICROPEARL RQ 750 by the company Matsumoto or the product provided under the name LUHYDRAN A 848 S by the company BASF; acrylic ester copolymers, such as, for example, copolymers of alkyl acrylates and of alkyl methacrylates, such as the product provided by the company Dow Chemical under the name PRIMAL AC-261 K and the product provided by Evonik under the name EUDRAGIT NE 30 D, by the company BASF under the names ACRONAL 601, LUHYDRAN R 8833 or 8845, or by the company Clariant under the names APPRETAN N 9213 or N9212; copolymers of acrylonitrile and of a non-ionic monomer chosen, for example, from butadiene and alkyl (meth)acrylates; mention

may be made of the products provided under the names Nipol LX 531 B by the company Nippon Zeon or those provided under the name CJ 0601 B by the company Rohm and Haas; polyurethanes, such as the products provided under the names ACRYSOL RM 1020 or ACRYSOL RM 2020 by the company Dow Chemical or the products URAFLEX XP 401 UZ or URAFLEX XP 402 UZ by the company DSM Resins; copolymers of alkyl acrylate and of urethane, such as the product 8538-33 by the company National Starch; polyamides, such as the product ESTAPOR LO 11 provided by the company Rhone-Poulenc; or chemically modified or unmodified non-ionic guar gums.

[00179] The unmodified non-ionic guar gums are, for example, the products sold under the name VIDOGUM GH by the company Unipectine and under the name JAGUAR S by the company Rhodia. The modified non-ionic guar gums, which can be used according to the invention, are preferably modified by C1-C6 hydroxyalkyl groups. Mention may be made, by way of example, of the hydroxymethyl, hydroxyethyl, hydroxypropyl, and hydroxybutyl groups. These guar gums are well known in the state of the art and can, for example, be prepared by reacting the corresponding alkene oxides, such as, for example, propylene oxides, with guar gum, so as to obtain a guar gum modified by hydroxypropyl groups.

[00180] Other nonionic film forming polymers may be chosen from non-ionic guar gums optionally modified by hydroxyalkyl groups are, for example, sold under the trade names JAGUAR HP8, JAGUAR HP60, JAGUAR HP120, or JAGUAR HP 105 by the company Rhodia or under the name GALACTOSOL 4H4FD2 by the company Ashland Specialty Ingredients.

[00181] Preferred nonionic film forming polymers of the present disclosure are chosen from vinylpyrrolidone homopolymers or copolymers of vinylpyrrolidone and of vinyl acetate. Vinylpyrrolidone homopolymers (INCI name: polyvinylpyrrolidone) are commercially available from Ashland Specialty Ingredients under the tradename PVP K. Copolymers of vinylpyrrolidone and of vinyl acetate (INCI name: VP/VA copolymer) are commercially available from BASF under the tradename LUVISKOL VA.

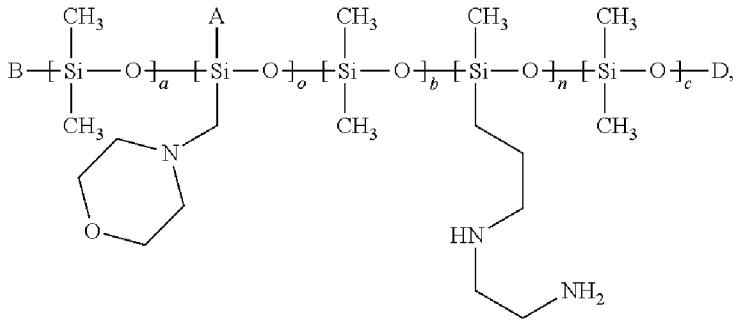
[00182] The at least one non-latex nonionic film forming polymer is present in the composition of the present disclosure in an amount of from about 0.05% to about 15% by weight, such as from about 0.1% to about 10% by weight, and from

about 0.5% to about 5% by weight, including all ranges and subranges therebetween, based on the total weight of the composition.

AMINOFUNCTIONAL SILICONE

[00183] The compositions according to various embodiments of the present disclosure may further comprise at least one aminofunctional silicone.

[00184] In certain embodiments, the aminofunctional silicone may be chosen from those having morpholino groups, corresponding to the compounds of formula (I) below:

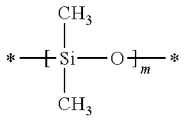


(I)

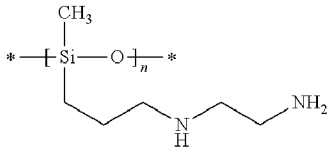
wherein

[00185] A represents –OH, or a structural unit (I), (II), or (III) bound via —O

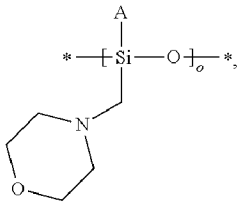
(I)



(II)



(III)



[00186] or an oligomeric or polymeric residue, bound via —O—, containing structural units of formulas (I), (II), or (III), or half of a connecting oxygen atom to a structural unit (III),

[00187] * represents a bond to one of the structural units (I), (II), or (III), or denotes a terminal group B (Si-bound) or D (O-bound),

[00188] B is chosen from an —OH, —O—$Si(CH_3)_3$, —O—$Si(CH_3)_2OH$, or —O—$Si(CH_3)_2OCH_3$ group,

[00189] D is chosen from an —H, —$Si(CH_3)_3$, —$Si(CH_3)_2OH$, or —$Si(CH_3)_2OCH_3$ group,

[00190] a, b, and c represent integers ranging from 0 to 1000, with the provision that a+b+c>0,

[00191] m, n, and o represent integers ranging from 1 to 1000.

[00192] Aminofunctional silicones of this kind bear the INCI name Amodimethicone/Morpholinomethyl Silsesquioxane Copolymer, for example those sold under the tradename Belsil® ADM 6300 E by the company Wacker.

[00193] In certain embodiments, the aminofunctional silicone may be chosen from those corresponding to formula (Si-2) below:

$$M(R_aQ_bSiO_{(4-a-b)/2})_x(R_cSiO_{(4-c)/2})_yM \quad \text{(Si-2);}$$

wherein,

[00194] R is a hydrocarbon or a hydrocarbon residue having 1 to approximately 6 carbon atoms;

[00195] Q is a polar residue of the general formula —R^1HZ, wherein

[00196] R^1 is a divalent connecting group that is bound to the hydrogen and to the Z residue, assembled from carbon and hydrogen atoms; carbon, hydrogen, and oxygen atoms; or carbon, hydrogen, and nitrogen atoms, and

[00197] Z is an organic aminofunctional residue that contains at least one aminofunctional group;

[00198] a is a number ranging from about 0 to about 2,

[00199] b is a number ranging from about 1 to about 3,

[00200] with the proviso that a+b is less than or equal to 3;

[00201] c is a number ranging from about 1 to about 3;

[00202] x is a number ranging from about 1 to about 2,000, from about 3 to about 50, or from about 3 to about 25;

[00203] y is a number ranging from about 20 to 10,000, from about 125 to about 10,000, or from about 150 to about 1,000; and

[00204] M is a suitable silicone terminal group known in the existing art, such as trimethylsiloxy.

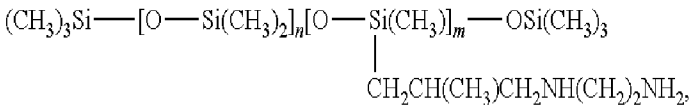
[00205] In other embodiments, Z according to formula (Si-2) may be an organic aminofunctional residue containing at least one functional amino group. In other embodiments, Z may correspond to the formula —$NH(CH_2)_zNH_2$, wherein z is an integer greater than or equal to 1. In other embodiments, Z may correspond to the formula —$NH(CH_2)_z(CH_2)_{zz}NH$, wherein both z and zz, independently of each other, are an integer greater than or equal to 1, and the said structure encompasses diamino ring structures such as piperazinyl. In other embodiments, Z may correspond to the formula —$NHCH_2CH_2NH_2$. In other embodiments, Z may correspond to the formula —$N(CH_2)_z(CH_2)_{zz}NX_2$ or —NX_2, wherein each X_2 is selected independently from the group consisting of hydrogen and alkyl groups having 1 to 12 carbon atoms, and zz is equal to 0.

[00206] In certain embodiments, Q according to formula (Si-2) may be a polar aminofunctional residue corresponding to the formula —$CH_2CH_2CH_2NHCH_2CH_2NH_2$.

[00207] Such silicones are sold under the tradenames Dow Corning (DC) 929 Emulsion, DC2-2078, and DC5-7113, by the company Dow Corning, SM2059 by the company General Electric, and SLM-55067 by the company Wacker.

[00208] In certain embodiments, the aminofunctional silicone may be chosen from those cationic aminofunctional silicone polymers corresponding to formula (Si3-a) below:

(Si-3a)

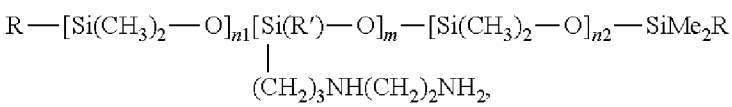


where m and n are numbers whose sum (m+n) ranges from 1 to 2000 or from 50 to 150, where n is a number chosen from 0 to 1999 or from 49 to 149, and m is a number chosen from 1 to 2000 or from 1 to 10.

[00209] These silicones are referred to by the INCI name trimethylsilylamodimethicones and are available, for example, under the tradename Q2-7224 by the company Dow Corning.

[00210] In certain embodiments, the aminofunctional silicone may be chosen from those corresponding to formula (Si-3b) below:

(Si-3b)



wherein

[00211] Me denotes a methyl group,

[00212] R may be the same or different, and at least one R is chosen from —OH, a (C_1 to C_{20}) alkyl group, an ethoxylated and/or propoxylated (C_1 to C_{20}) alkoxy group, a methoxy group, an ethoxy group, or a —CH_3 group,

[00213] R' is chosen from an —OH, a (C_1 to C_{20}) alkoxy group, or a —CH_3 group, and

[00215] m, n1, and n2 are numbers whose sum (m+n1+n2) ranges from 1 to 2000 or from 50 to 150, wherein the sum (n1+n2) ranges from 0 to 1999 or from 49 to 149, and m is a number ranging from 1 to 2000 or from 1 to 10.

[00216] These silicones are referred to by the INCI name Amodimethicones or as functionalized Amodimethicones, for example Bis(C13-15 Alkoxy) PG Amodimethicone, sold under the tradename DC 8500 by the company Dow Corning, Trideceth-9 PG-Amodimethicone, sold under the tradename Silcare® Silicone SEA by the company Clariant, and Amodimethicone (and) Trideceth-10, sold under the tradename Belsil® ADM 6102 E by the company Wacker, and those sold under the tradenames Wacker Belsil® ADM 652, Wacker Belsil® ADM 653, or Wacker Belsil® ADM 8020 by the company Wacker.

[00217] In other embodiments, the aminofunctional silicone may be chosen from polyammonium-polysiloxane compounds, which may be available under the tradename Baysilone®, including Baysilone® TP 3911, SME 253 and SFE 839, by the company GE Bayer Silicones. Polyammonium-polysiloxane compounds can be acquired, for example, from GE Bayer Silicones under the tradename Baysilone®.

[00218] According to certain embodiments of the disclosure, the aminofunctional silicone is chosen from those under the INCI name PEG-40/PPG-8 methylaminopropyl/hydroxypropyl dimethicone copolymer sold under the tradename Silsoft® A+ from Momentive, those under the INCI name amodimethicone/morpholinomethyl silsesquioxane copolymer sold under the tradename Belsil® ADM 8301 E from Wacker, an emulsion of amodimethicone/morpholinomethyl silsesquioxane copolymer (and) amodimethicone (and) trideceth-10 (and) acetic acid sold under the tradename Belsil® ADM 6300 E from Wacker, those under the INCI name amodimethicone, or mixtures thereof.

[00219] In some embodiments, the at least one aminofunctional silicone chosen from amodimethicone is provided as an emulsion that further comprises surfactants chosen from nonionic or cationic surfactants, or mixtures thereof. Examples of such nonionic surfactants include ethoxylated tridecanol (INCI name: Trideceth-5) and α-isotridecyl-ω-hydroxy polyglycol ether (INCI name: Trideceth-10). An example of the cationic surfactant that may be present in the emulsion is cetrimonium chloride. In certain other embodiments, the compositions of the

disclosure comprise at least one aminofunctional silicone chosen from amodimethicone which is provided as an emulsion that further comprises nonionic surfactants chosen from trideceth-5, trideceth-10, or mixtures thereof.

[00220] In certain embodiments, the at least one aminofunctional silicone is present in an amount ranging from about 0.05% to about 10% by weight, from about 0.1% to about 7.5% by weight, from about 0.2% to about 5% by weight, from about 0.25% to about 3%, or from about 0.5% to about 2.5% by weight, relative to the total weight of the composition, including all ranges and subranges therebetween.

[00221] In various embodiments, the total amount of amino functional silicone is about 0.05%, 0.1%, 0.2%, 0.3%, 0.4%, 0.5%, 0.6%, 0.7%, 0.8%, 0.9%, 1%, 1.25%, 1.5%, 2%, 2.5% 3%, 3.5%, 4%, 4.5%, or 5%, by weight, based on the total weight of the composition.

AMPHOTERIC SUFACTANT

[00222] The compositions according to the present disclosure can further comprise at one amphoteric surfactant (sometimes referred to as zwitterionic surfactants).

[00223] The amphoteric surfactant that may be used in the invention may be chosen from optionally quaternized secondary or tertiary aliphatic amine derivatives, in which the aliphatic group is a linear or branched chain comprising from 8 to 22 carbon atoms, said amine derivatives containing at least one anionic group, for instance a carboxylate, sulfonate, sulfate, phosphate or phosphonate group.

[00224] Mention may be made in particular of (C8-C20)alkylbetaines, sulfobetaines, (C8-C20)alkylsulfobetaines, (C8-C20)alkylamido(C1-C6)alkylbetaines, such as cocamidopropylbetaine, and (C8-C20)alkylamido(C1-C6)alkylsulfobetaines, and mixtures thereof.

[00225] Among the optionally quaternized secondary or tertiary aliphatic amine derivatives that may be used, mention may also be made of the products of respective structures (A1) and (A2) below:

(A1) R_a-CON(Z)CH_2-$(CH_2)_m$-$N^+(R_b)(R_c)(CH_2COO^-)$

wherein:

R_a represents a C_{10}-C_{30} alkyl or alkenyl group derived from an acid R_a-COOH preferably present in hydrolysed coconut oil, a heptyl group, a nonyl group or an undecyl group,

R_b represents a β-hydroxyethyl group,

R_c represents a carboxymethyl group;

m is equal to 0, 1 or 2,

Z represents a hydrogen atom or a hydroxyethyl or carboxymethyl group;

(A2) $R_{a'}$-CON(Z)CH_2-$(CH_2)_{m'}$-N(B)(B')

wherein:

B represents -CH_2CH_2OX', with X' representing -CH_2-COOH, CH_2-COOZ', -CH_2CH_2-COOH, -CH_2CH_2-COOZ', or a hydrogen atom,

B' represents -$(CH_2)_z$-Y', with z = 1 or 2, and Y' representing -COOH, -COOZ', -CH_2-CHOH-SO_3H or -CH_2-CHOH-SO_3Z',

m' is equal to 0, 1 or 2,

Z represents a hydrogen atom or a hydroxyethyl or carboxymethyl group,

Z' represents an ion resulting from an alkali or alkaline-earth metal, such as sodium, potassium or magnesium; an ammonium ion; or an ion resulting from an organic amine and in particular from an amino alcohol, such as monoethanolamine, diethanolamine and triethanolamine, monoisopropanolamine, diisopropanolamine or triisopropanolamine, 2-amino-2-methyl-1-propanol, 2-amino-2-methyl-1,3-propanediol and tris(hydroxymethyl)aminomethane,

$R_{a'}$ represents a C_{10}-C_{30} alkyl or alkenyl group of an acid $R_{a'}$COOH preferably present in hydrolysed linseed oil or coconut oil, an alkyl group, in particular a C_{17} alkyl group, and its iso form, or an unsaturated C_{17} group.

[00226] The compounds corresponding to formula (A2) are preferred.

[00227] Among the compounds corresponding to formula (A2) in which X' represents an hydrogen atom, mention may be made of compounds classified in the CTFA dictionary, under the names sodium cocoamphoacetate, sodium lauroamphoacetate, sodium caproamphoacetate and sodium capryloamphoacetate.

[00228] Other compounds corresponding to formula (A2) are disodium cocoamphodiacetate, disodium lauroamphodiacetate, disodium caproamphodiacetate, disodium capryloamphodiacetate, disodium cocoamphodipropionate, disodium lauroamphodipropionate, disodium

caproamphodipropionate, disodium capryloamphodipropionate, lauroamphodipropionic acid and cocoamphodipropionic acid.

[00229] Examples that may be mentioned include the cocoamphodiacetate sold by the company Rhodia under the trade name Miranol® C2M Concentrate, the sodium cocoamphoacetate sold under the trade name Miranol Ultra C 32 and the product sold by the company Chimex under the trade name CHIMEXANE HA.

[00230] Use may also be made of the compounds of formula (A3):

(A3) $R_{a''}$-NH-CH(Y")-(CH_2)n-C(O)-NH-(CH_2)n'-N$(R_d)(R_e)$

wherein:

- $R_{a''}$ represents a C_{10}-C_{30} alkyl or alkenyl group of an acid $R_{a''}$-C(O)OH preferably present in hydrolysed linseed oil or coconut oil;
- Y" represents the group –C(O)OH, -C(O)OZ", -CH_2-CH(OH)-SO_3H or the group -CH_2-CH(OH)-SO_3-Z", with Z" representing a cationic counterion resulting from an alkali metal or alkaline-earth metal, such as sodium, an ammonium ion or an ion resulting from an organic amine;
- R_d and R_e represent, independently of each other, a C1-C4 alkyl or hydroxyalkyl radical; and
- n and n' denote, independently of each other, an integer ranging from 1 to 3.

[00231] Among the compounds corresponding to formula (A3), mention may in particular be made of the compound classified in the CTFA dictionary under the name sodium diethylaminopropyl cocoaspartamide, such as the one sold by the company Chimex under the name CHIMEXANE HB.

[00232] Preferably, the amphoteric surfactant is chosen from (C8-C20)alkylbetaines, (C8-C20)alkylamido(C1-C6)alkylbetaines, (C8-C20)alkylamphoacetates and (C8-C20)alkylamphodiacetates, and mixtures thereof.

[00233] In preferred embodiments of the disclosure, the amphoteric surfactant is chosen from coco-betaine sold by BASF as DEHYTON AB 30

[00234] The total amount of amphoteric and/or zwitterionic surfactant present in the composition is from 0.01% to about 5% by weight, from about 0.05% to about 4% by weight, or from about 0.06% to about 3% by weight, relative to the total weight of the composition, including all ranges and subranges therebetween.

[00235] In various embodiments, the total amount of amphoteric and/or zwitterionic surfactant is about 0.01%, 0.02%, 0.03%, 0.04%, 0.05%, 0.06%, 0.07%, 0.075%, 0.08%, 0.09%, 0.1%, 0.125%, 0.15%, 0.2%, 0.25% 0.3%, 0.325%, 0.35%, 0.375%, 0.4%, 0.425%, 0.45%, 0.5%,0.6%, 0.7%, 0.8%, 0.9%, or 1% by weight, relative to the total weight of the composition.

ALYKYLPOLYGLUCOSIDE

[00236] The compositions according to various embodiments of the disclosure can further comprise at least one alkylpolyglucoside.

[00237] The alkyl(poly)glucoside (alkylpolyglycoside) in some embodiments is represented by the following general formula:

$R_1O\text{-}(R_2O)_t\text{-}(G)_v$

wherein:

- R_1 represents a linear or branched alkyl or alkenyl radical comprising 6 to 24 carbon atoms and especially 8 to 18 carbon atoms, or an alkylphenyl radical whose linear or branched alkyl radical comprises 6 to 24 carbon atoms and especially 8 to 18 carbon atoms;
- R_2 represents an alkylene radical comprising 2 to 4 carbon atoms,
- G represents a sugar unit comprising 5 to 6 carbon atoms,
- t denotes a value ranging from 0 to 10 and preferably 0 to 4,
- v denotes a value ranging from 1 to 15 and preferably 1 to 4.

[00238] Preferably, the alkylpolyglycoside surfactant is represented by a compound of the formula described above in which:

- R_1 denotes a linear or branched, saturated or unsaturated alkyl radical comprising from 8 to 18 carbon atoms,
- R_2 represents an alkylene radical comprising 2 to 4 carbon atoms,
- t denotes a value ranging from 0 to 3 and preferably equal to 0,
- G denotes glucose, fructose or galactose, preferably glucose;
- the degree of polymerization, i.e. the value of v, possibly ranging from 1 to 15 and preferably from 1 to 4; the mean degree of polymerization more particularly being between 1 and 2.

[00239] The glucoside bonds between the sugar units are generally of 1-6 or 1-4 type and preferably of 1-4 type. Preferably, the alkyl(poly)glycoside

surfactant is an alkyl(poly)glucoside surfactant. C8/C16 alkyl(poly)glycosides 1,4, and especially decyl glucosides and caprylyl/capryl glucosides, are most particularly preferred.

[00240] Among the commercial products, mention may be made of the products sold by the company COGNIS under the names PLANTAREN® (600 CS/U, 1200 and 2000) or PLANTACARE® (818, 1200 and 2000); the products sold by the company SEPPIC under the names ORAMIX CG 110 and ORAMIX NS 10; the products sold by the company BASF under the name LUTENSOL GD 70, or else the products sold by the company CHEM Y under the name AG10 LK.

[00241] Preferably, use is made of C8/C16-alkyl(poly)glucosides 1,4, especially as an aqueous 53% solution, such as those sold by Cognis under the reference Plantacare® 818 UP.

[00242] In an embodiment, the at least one alkylpolyglucoside is chosen from decyl glucoside, stearyl glucoside, lauryl glucoside, coco-glucoside, and mixtures thereof.

[00243] In an embodiment, the at least one alkylpolyglucoside is decyl glucoside.

[00244] In the present invention, the at least one alkylpolyglucoside may be employed in the composition of the present invention in an amount of from about 0.01% to about 5% by weight, or from about 0.05% to about 4% by weight, or from about 0.08% to about 3% by weight, relative to the total weight of the composition, including all ranges and subranges therebetween.

[00245] In various embodiments, the total amount of alkylpolyglucoside is about 0.01%, 0.02%, 0.03%, 0.04%, 0.05%, 0.06%, 0.07%, 0.075%, 0.08%, 0.09%, 0.1%, 0.125%, 0.15%, 0.2%, 0.25% 0.3%, 0.325%, 0.35%, 0.375%, 0.4%, 0.425%, 0.5%,0.6%, 0.7%, 0.8%, 0.9%, or 1% by weight, based on the total weight of the composition.

THICKENING AGENT

[00246] The compositions according to the present disclosure may further comprise at least one thickening agent, which may be the anionic thickening agent or may be an additional thickening agent. Thickening agents are generally used to modify the viscosity and/or rheology of the composition. As used herein, the term

"thickening agent" means compounds which, by their presence, increase the viscosity of the composition into which they are introduced by at least 20 cps, such as by at least 50 cps, at 25°C and at a shear rate of 1 s-1. The viscosity may be measured using a cone/plate viscometer, a Haake R600 rheometer, or the like.

[00247] The compositions according to the disclosed embodiments may further comprise an additional thickening agent, also referred to interchangeably herein as thickener or rheology modifier. Thickening agents may also sometimes be referred to as gellifying agents and/or viscosity modifying agents. The thickening agents may also have film forming properties.

[00248] In certain embodiments, the thickening agent may be chosen from those conventionally used in cosmetics, such as polymers of natural origin or synthetic polymers, for example, nonionic, anionic, cationic, amphiphilic, or amphoteric polymers, or other known rheology modifiers, such as cellulose-based thickeners.

[00249] In certain embodiments, the thickening agents can be an anionic thickening agent.

[00250] The anionic thickening agent of the present disclosure may be chosen from rheology modifiers such as acrylate- or acrylic-based polymers, carbomers, crosslinked homopolymers of acrylic acid or of acrylamidopropane-sulfonic acid, or crosslinked copolymers of (meth)acrylic acid and/or (C1-C6)alkyl esters.

[00251] Another example of an anionic thickening agent is a copolymer of ammonium acryloyldimethyltaurate and vinylpyrrolidone monomers, for example, Ammonium Acryloyldimethyltaurate/VP Copolymer, sold under the tradename ARISTOFLEX AVC by the company Clariant.

[00252] The anionic thickening agents may be chosen from hydrophilic thickeners. As used herein, the term “hydrophilic thickener” is meant to indicate that the thickening agent is soluble or dispersible in water. Non-limiting examples of hydrophilic thickeners include homopolymers or copolymers of acrylic or methacrylic acids or the salts thereof and the esters thereof, such as those sold under the tradenames Versicol F® or Versicol K® by the company Allied Colloid, or under the tradename Ultrahold 8® by the company Ciba-Geigy; polyacrylates and polymethacrylates such as copolymers of (meth)acrylic acid, copolymers of

(meth)acrylic acid, methylacrylate and dimethyl meta-isopropenyl benzyl isocyanate of ethoxylated alcohols such as methylacrylate and dimethyl meta-isopropenyl benzyl isocyanate of ethoxylated alcohol (INCI name: Polyacrylate-3) sold under the tradename Viscophobe® DB 1000 from The Dow Chemical Company, those sold under the tradenames Lubrajel and Norgel by the company Guardian, or under the tradename Hispajel by the company Hispano Chimica; and polyacrylic acids of Synthalen® K type, copolymers of acrylic acid and of acrylamide sold in the form of the sodium salt thereof, such as those sold under the tradenames Reten® by Hercules, sodium polymethacrylate such as those sold under the tradename Darvan® 7 by the company Vanderbilt, and the sodium salts of polyhydroxycarboxylic acids such as those sold under the tradename Hydagen F® by the company Henkel, optionally crosslinked and/or neutralized 2-acrylamido-2-methylpropanesulphonic acid polymers and copolymers, for instance poly(2-acrylamido-2-methylpropanesulphonic acid) such as those sold under the tradename Hostacerin® AMPS (CTFA name: ammonium polyacryldimethyltauramide) by the company Clariant, crosslinked anionic copolymers of acrylamide and of AMPS, e.g. in the form of a water-in-oil emulsion, such as those sold under the tradename Sepigel™ 305 (CTFA name: Polyacrylamide/C13-14 Isoparaffin/Laureth-7) and under the tradename Simugel™ 600 (CTFA name: Acrylamide/Sodium acryloyldimethyltaurate copolymer/Isohexadecane/Polysorbate 80) by the company Seppic, polyacrylic acid/alkyl acrylate copolymers of PemulenTM type, associative polymers, for instance PEG-150/stearyl alcohol/SMDI copolymer such those as sold under the tradename ACULYN™ 46 by the company Rohm & Haas, steareth-100/PEG-136/HDI copolymer such as those sold under the tradename Rheolate® FX 1100 by the company Elementis, or mixtures thereof.

[00253] As used herein, the term “copolymers” is intended to mean both copolymers obtained from two types of monomers and those obtained from more than two types of monomers, such as, for example, terpolymers obtained from three types of monomers. The chemical structure of the copolymers comprises at least one hydrophilic unit and at least one hydrophobic unit. The expression “hydrophobic unit” or “hydrophobic unit” is understood to mean a radical possessing a saturated or unsaturated and linear or branched hydrocarbon-based chain which comprises at least 8 carbon atoms, for example from 10 to 30 carbon atoms, as a further example

from 12 to 30 carbon atoms, and as yet a further example from 18 to 30 carbon atoms.

[00254] In certain embodiments, the hydrophilic thickener may be chosen from anionic associative polymers. As used herein, the term "associative polymer" is intended to mean any polymer comprising in its structure at least one fatty chain and at least one hydrophilic portion.

[00255] In certain embodiments, the associative polymers may be chosen from polymers comprising at least one hydrophilic unit and at least one fatty-chain allyl ether unit; polymers in which the hydrophilic unit is constituted of an ethylenic unsaturated anionic monomer, such as a vinylcarboxylic acid, acrylic acid, methacrylic acid, or mixtures thereof; and polymers in which the fatty-chain allyl ether unit corresponds to the monomer of formula (I) below:

$$CH2 = C(R')CH2OBnR \qquad (I)$$

[00256] in which R' is chosen from H or CH3, B is an ethyleneoxy radical, n is zero or is chosen from an integer ranging from 1 to 100, and R is a hydrocarbon-based radical chosen from alkyl, arylalkyl, aryl, alkylaryl, or cycloalkyl radicals containing from 8 to 30 carbon atoms, from 10 to 24 carbon atoms, or from 12 to 18 carbon atoms. Exemplary and non-limiting polymers of this type are described and prepared, according to an emulsion polymerization process, in patent EP 0 216 479, incorporated by reference herein.

[00257] In certain embodiments, the associative anionic polymer may be chosen from anionic polymers comprising at least one hydrophilic unit of olefinic unsaturated carboxylic acid type, and at least one hydrophobic unit exclusively of (C10 C30)alkyl ester of unsaturated carboxylic acid type.

[00258] In certain embodiments, the at least one thickening agent is chosen from copolymers resulting from the polymerization of at least one monomer (a) chosen from carboxylic acids possessing α,β-ethylenically unsaturated groups or their esters, with at least one monomer (b) possessing ethylenically unsaturated groups and comprising a hydrophobic group. Such copolymers may exhibit emulsifying properties.

[00259] As used herein, the term "copolymers" is intended to mean both copolymers obtained from two types of monomers and those obtained from more than two types of monomers, such as, for example, terpolymers obtained from three

types of monomers. The chemical structure of the copolymers comprises at least one hydrophilic unit and at least one hydrophobic unit. The expression “hydrophobic unit” or “hydrophobic unit” is understood to mean a radical possessing a saturated or unsaturated and linear or branched hydrocarbon-based chain which comprises at least 8 carbon atoms, for example from 10 to 30 carbon atoms, as a further example from 12 to 30 carbon atoms, and as yet a further example from 18 to 30 carbon atoms.

[00260] In certain embodiments, the thickening copolymer may be chosen from the copolymers resulting from the polymerization of:

[00261] (1) at least one monomer of formula (II):

CH2=CH(R1)COOH (II)

[00262] wherein R1 is chosen from H, CH3, or C2H5, providing acrylic acid, methacrylic acid, or ethacrylic acid monomers, and

[00263] (2) at least one monomer of (C10 C30)alkyl ester of unsaturated carboxylic acid type corresponding to the monomer of formula (III):

CH2=CH(R2)COOR3 (III)

[00264] wherein R2 is chosen from H, CH3, or C2H5, providing acrylate, methacrylate or ethacrylate units, and R3 denotes a C10 C30 alkyl radical, such as a C12 C22 alkyl radical.

[00265] In certain embodiments, the (C10 C30)alkyl esters of unsaturated carboxylic acids may be chosen from lauryl acrylate, stearyl acrylate, decyl acrylate, isodecyl acrylate, dodecyl acrylate or the corresponding methacrylates, such as lauryl methacrylate, stearyl methacrylate, decyl methacrylate, isodecyl methacrylate or dodecyl methacrylate, or mixtures thereof.

[00266] In certain embodiments, the crosslinked thickening polymer may be chosen from polymers resulting from the polymerization of a mixture of monomers comprising:

[00267] (1) acrylic acid,

[00268] (2) an ester of formula (III) described above, in which R2 is chosen from H or CH3, R3 denotes an alkyl radical having from 12 to 22 carbon atoms, and

[00269] (3) a crosslinking agent, which is a known copolymerizable polyethylenic unsaturated monomer, such as diallyl phthalate, allyl (meth)acrylate, divinylbenzene, (poly)ethylene glycol dimethacrylate and methylenebisacrylamide.

[00270] In various embodiments, the crosslinked thickening polymer may comprise from about 60 % to about 95 % by weight of acrylic acid (hydrophilic unit), from about 4 % to about 40 % by weight of C10 C30 alkyl acrylate (hydrophobic unit), and from about 0 % to about 6 % by weight of crosslinking polymerizable monomer. In further embodiments, the crosslinked thickening polymer may comprise from about 96 % to about 98 % by weight of acrylic acid (hydrophilic unit), from about 1 % to about 4 % by weight of C10 C30 alkyl acrylate (hydrophobic unit), and from about 0.1 % to 0.6 % by weight of crosslinking polymerizable monomer, such as those described above.

[00271] In some embodiments, the crosslinked thickening polymer may be chosen from acrylate/C10 C30 alkyl acrylate copolymers (INCI name: Acrylates/C10-30 Alkyl Acrylate Crosspolymer), such as the products sold under the tradenames Pemulen™ TR1, Pemulen™ TR2, Carbopol® 1382 and Carbopol® EDT 2020 by the company Lubrizol.

[00272] In an embodiment, the anionic thickening agent is chosen from polyacrylate-3, commercially known under the trade name of Viscophobe DB-100 and sold by The Dow Chemical Company, carbomers, commercially known under the trade name of Carbopol polymers and sold by Lubrizol Advance Materials, Inc, acrylates/C10-30 alkyl acrylate crosspolymers, commercially known the trade names of Pemulen TR-1 and Pemulen TR-2 polymers and sold by Lubrizol Advance Materials, Inc, Acrylates/C10-30 Alkyl Acrylate Crosspolymer such as Carbopol® Ultrez 20 Polymer by and sold by Lubrizol Advance Materials, Inc,, AMP-acrylates/allyl methacrylate copolymer, commercially known under the trade name of Fixate G-100 polymer and sold by Lubrizol Advance Materials, Inc., Polyacrylate Crosspolymer-6 such as SepimaxTM Zen by the company Seppic, and a crosslinked methacrylic acid/ethyl acrylate copolymer, also known as an acrylates copolymer in aqueous dispersion, such as the slightly cross-linked, alkali-swellable acrylate polymer known by the INCI name acrylates copolymer and sold by Lubrizol, under the tradename CARBOPOL Aqua SF-1 as an aqueous dispersion comprising about 30 percent by weight of total solids or active material.

[00273] In various embodiments, the thickening agents may be chosen from hydrophilic thickeners, for example cellulose polymers and gums, modified or unmodified carboxyvinyl polymers, such as those sold under the tradename

Carbopol® (CTFA name: carbomer) by the company Goodrich, polyacrylamides, copolymers of acrylic acid and of acrylamide sold in the form of the sodium salt thereof, such as those sold under the tradenames Reten® by Hercules, and the sodium salts of polyhydroxycarboxylic acids such as those sold under the tradename Hydagen F® by the company Henkel, optionally crosslinked and/or neutralized 2-acrylamido-2-methylpropanesulphonic acid polymers and copolymers, for instance poly(2-acrylamido-2-methylpropanesulphonic acid) such as those sold under the tradename Hostacerin® AMPS (CTFA name: ammonium polyacryldimethyltauramide) by the company Clariant, crosslinked anionic copolymers of acrylamide and of AMPS, e.g. in the form of a water-in-oil emulsion, such as those sold under the tradename Sepigel™ 305 (CTFA name: Polyacrylamide/C13-14 Isoparaffin/Laureth-7) and under the tradename Simugel™ 600 (CTFA name: Acrylamide/Sodium acryloyldimethyltaurate copolymer/Isohexadecane/Polysorbate 80) by the company Seppic, polyacrylic acid/alkyl acrylate copolymers of Pemulen™ type, associative polymers, for instance PEG-150/stearyl alcohol/SMDI copolymer such those as sold under the tradename ACULYN™ 46 by the company Rohm & Haas, steareth-100/PEG-136/HDI copolymer such as those sold under the tradename Rheolate® FX 1100 by the company Elementis, or mixtures thereof.

[00274] In certain embodiments, the hydrophilic thickener may be chosen from associative polymers. As used herein, the term “associative polymer” is intended to mean any amphiphilic polymer comprising in its structure at least one fatty chain and at least one hydrophilic portion. As used herein, the term “amphiphilic polymer” means a polymer composed of hydrophilic and hydrophobic parts.

[00275] In certain embodiments, the associative polymers may be anionic, cationic, nonionic, or amphoteric. In certain embodiments, the associative polymers may be chosen from polymers comprising at least one hydrophilic unit and at least one fatty-chain allyl ether unit; polymers in which the hydrophilic unit is constituted of an ethylenic unsaturated anionic monomer, such as a vinylcarboxylic acid, acrylic acid, methacrylic acid, or mixtures thereof; and polymers in which the fatty-chain allyl ether unit corresponds to the monomer of formula (I) below:

$$CH_2 = C(R')CH_2OB_nR \qquad (I)$$

in which R' is chosen from H or CH_3, B is an ethyleneoxy radical, n is zero or is chosen from an integer ranging from 1 to 100, and R is a hydrocarbon-based radical chosen from alkyl, arylalkyl, aryl, alkylaryl, or cycloalkyl radicals containing from 8 to 30 carbon atoms, from 10 to 24 carbon atoms, or from 12 to 18 carbon atoms. Exemplary and non-limiting polymers of this type are described and prepared, according to an emulsion polymerization process, in patent EP 0 216 479, incorporated by reference herein.

[00276] In other embodiments, the associative cationic polymer may be chosen from quaternized cellulose derivatives and polyacrylates containing amine side groups.

[00277] In other embodiments, the non-ionic associative polymer may be chosen from celluloses modified with groups comprising at least one fatty chain, for instance hydroxyethyl celluloses modified with groups comprising at least one fatty chain, such as alkyl groups, e.g. C_8-C_{22} alkyl groups, arylalkyl and alkylaryl groups; cetyl hydroxyethyl cellulose, also known under the tradename Natrosol® Plus (sold by the company Ashland), Bermocoll EHM 100 (sold by the company Berol Nobel), Amercell Polymer HM-1500® sold by the company Amerchol; hydroxyethylcellulose modified with a polyethylene glycol (15) nonylphenyl ether group, sold by the company Amerchol; celluloses modified with polyalkylene glycol alkylphenyl ether groups; guars such as hydroxypropyl guar, optionally modified with groups comprising at least one fatty chain such as an alkyl chain, for example Jaguar® XC-95/3 (C14 alkyl chain, sold by the company Rhodia Chimie), Esaflor HM 22 (C22 alkyl chain, sold by the company Lamberti), RE210-18 (C14 alkyl chain) and RE205-1 (C20 alkyl chain, sold by the company Rhodia Chimie); copolymers of vinylpyrrolidone and of fatty-chain hydrophobic monomers, for instance Antaron® or Ganex® V216 (vinylpyrrolidone/hexadecene copolymers), Antaron® or Ganex® V220 (vinylpyrrolidone/eicosene copolymers) sold by the company I.S.P.; copolymers of C_1-C_6 alkyl methacrylates, acrylates or amphiphilic monomers comprising at least one fatty chain; or copolymers of hydrophilic methacrylates, acrylates or hydrophobic monomers comprising at least one fatty chain, for instance the polyethylene glycol methacrylate/lauryl methacrylate copolymer.

[00278] Associative polyurethanes may also be chosen in various embodiments. As used herein, "associative polyurethanes" are nonionic block

copolymers comprising in the chain both hydrophilic blocks usually of polyoxyethylene nature, and hydrophobic blocks that may be aliphatic sequences alone and/or cycloaliphatic and/or aromatic sequences. Associative polyurethanes comprise at least two hydrocarbon-based lipophilic chains containing from C_6 to C_{30} carbon atoms, separated by a hydrophilic block, the hydrocarbon-based chains optionally being pendent chains or chains at the end of a hydrophilic block. For example, it is possible for one or more pendent chains to be provided. In addition, the polymer may comprise a hydrocarbon-based chain at one or both ends of a hydrophilic block. The associative polyurethanes may be arranged in triblock or multiblock form. The hydrophobic blocks may thus be at each end of the chain (for example, triblock copolymer with a hydrophilic central block) or distributed both at the ends and within the chain (for example, multiblock copolymer). These polymers may also be graft polymers or starburst polymers. In one embodiment, the associative polyurethanes may be triblock copolymers in which the hydrophilic block is a polyoxyethylene chain containing from 50 to 1000 oxyethylene groups.

[00279] In other embodiments, associative polymers of the polyurethane polyether type that may be used include the polymer C_{16}-OE_{120}-C_{16} from Servo Delden (under the tradename SER AD FX1100), which is a molecule containing a urethane function and having a weight-average molecular weight of 1300, OE being an oxyethylene unit; Nuvis® FX 1100 (European and US INCI name "Steareth-100/PEG-136/HMDI Copolymer" sold by the company Elementis Specialties); Acrysol RM 184® (sold by the company Rohm and Haas); Elfacos® T210® (C12-C14 alkyl chain); Elfacos® T212® (C18 alkyl chain) sold by the company Akzo; Rheolate® 205 containing a urea function, sold by the company Rheox; RHEOLATE® 208 or 204, or RHEOLATE® FX1100 sold by the company Elementis; or DW 1206B sold by the company Rohm & Haas containing a C_{20} alkyl chain with a urethane bond, sold at a solids content of 20% in water.

[00280] In further embodiments, solutions or dispersions of these polymers, especially in water or in aqueous-alcoholic medium, may be chosen. Examples of such polymers include SER AD FX1010, SER AD FX1035, and SER AD 1070 from the company Servo Delden, and Rheolate® 255, Rheolate® 278, and Rheolate® 244 sold by Rheox. Further examples include the products Aculyn™ 46, DW 1206F,

and DW 1206J, Acrysol RM 184 or Acrysol 44 from the company Rohm & Haas, and Borchi® Gel LW 44 from the company Borchers.

[00281] In further embodiments, the thickening agent may be chosen from nonionic homopolymers or copolymers containing ethylenically unsaturated monomers of the amide type, for example, the polyacrylamide products sold under the tradenames Cyanamer® P250 by the company CYTEC.

[00282] In further embodiments, the thickening agent chosen from polymers of natural origin may include thickening polymers comprising at least one sugar unit, for instance nonionic guar gums, optionally modified with C1-C6 hydroxyalkyl groups; biopolysaccharide gums of microbial origin, such as scleroglucan gum (also known as sclerotium gum) or xanthan gum; gums derived from plant exudates, such as gum arabic, ghatti gum, karaya gum, gum tragacanth, carrageenan gum, agar gum, carob gum, ceratonia siliqua gum or cyamopsis tetragonoloba (guar) gum; pectins; alginates; starches; hydroxy(C1-C6)alkylcelluloses; or carboxy(C1-C6)alkylcelluloses.

[00283] In certain embodiments, the nonionic, unmodified guar gums may be chosen from Guargel D/15 sold by the company Noveon, Vidogum GH 175 sold by the company Unipectine, Meypro-Guar 50 sold by the company Meyhall, or Jaguar® C sold by the company Rhodia Chimie. In other embodiments, the nonionic modified guar gums may be chosen from Jaguar® HP8, HP60, HP120, DC 293 and HP 105 sold by the companies Meyhall and Rhodia Chimie or Galactasol™ 4H4FD2 sold by the company Ashland.

[00284] In other embodiments, the thickening agents may be chosen from scleroglucans, for example, Actigum™ CS from Sanofi Bio Industries; Amigel® sold by the company Alban Muller International; xanthan gums, for instance Keltrol®, Keltrol® T, Keltrol® Tf, Keltrol® Bt, Keltrol® Rd, and Keltrol® Cg sold by the company CP Kelco, Rhodicare® S and Rhodicare® H sold by the company Rhodia Chimie; starch derivatives, for instance Primogel® sold by the company Avebe; hydroxyethylcelluloses such as Cellosize® QP3L, QP4400H, QP30000H, HEC30000A and Polymer PCG10 sold by the company Amerchol, Natrosol™ 250HHR, 250MR, 250M, 250HHXR, 250HHX, 250HR, and 250 HX, sold by the company Hercules, or Tylose® H1000 sold by the company Hoechst; hydroxypropylcelluloses, for instance Klucel™ EF, H, LHF, MF, and G, sold by the

company Ashland; carboxymethylcelluloses, for instance Blanose® 7M8/SF, refined 7M, 7LF, 7MF, 9M31F, 12M31XP, 12M31P, 9M31XF, 7H, 7M31, and 7H3SXF, sold by the company Ashland, Aquasorb® A500 sold by the company Hercules, Ambergum® 1221 sold by the company Hercules, Cellogen® HP810A and HP6HS9 sold by the company Montello and Primellose® sold by the company Avebe.

[00285] In other embodiments, the modified nonionic guar gums may, for example, be modified with C1-C6 hydroxyalkyl groups. Such hydroxyalkyl groups may be chosen from hydroxymethyl, hydroxyethyl, hydroxypropyl, or hydroxybutyl groups.

[00286] In certain embodiments, guar gums may be prepared by reacting the corresponding alkylene oxides, such as for example propylene oxides, with guar gum so as to obtain a guar gum modified with hydroxypropyl groups. The hydroxyalkylation ratio, which corresponds to the number of alkylene oxide molecules consumed to the number of free hydroxyl functional groups present on the guar gum, may in certain embodiments range from about 0.4 to about 1.2.

[00287] Examples of nonionic guar gums, optionally modified with hydroxyalkyl groups, include those sold under the tradenames Jaguar® HP8, Jaguar® HP60, Jaguar® HP120, Jaguar® DC 293, and Jaguar® HP 105 by the company Rhodia Chimie, and under the tradename Galactasol™ 4H4FD2 by the company Ashland.

[00288] In other embodiments, the guar gum may be chosen from those modified with a quaternary ammonium group, such as guar hydroxypropyltrimonium chloride, also sold under the tradename Jaguar® C-13S by the company Rhodia Chimie.

[00289] In other embodiments, the celluloses may be chosen from hydroxyethylcelluloses and hydroxypropylcelluloses, such as those sold under the tradenames Klucel™ EF, Klucel™ H, Klucel™ LHF, Klucel™ MF, Klucel™ G, by the company Ashland and under the tradename Cellosize™ PCG-10 by the company Amerchol.

[00290] In other embodiments, non-limiting thickening polysaccharides may be chosen from glucans; modified or unmodified starches such as those derived, for example, from cereals such as wheat, corn or rice, vegetables such as golden pea, or tubers such as potato or cassava; amylose, amylopectin, glycogen, dextrans,

celluloses or derivatives thereof (methylcelluloses, hydroxyalkylcelluloses, ethylhydroxyethylcelluloses), mannans, xylans, lignins, arabans, galactans, galacturonans, chitin, chitosans, glucoronoxylans, arabinoxylans, xyloglucans, glucomannans, pectic acids or pectins, arabinogalactans, carrageenans, agars, gums arabic, gums tragacanth, Ghatti gums, Karaya gums, carob gums, galactomannans such as guar gums and their nonionic derivatives such as hydroxypropylguar, or mixtures thereof.

[00291] In other embodiments, the thickening agent may be chosen from silicas or hydrophobic silicas, such as those described in EP-A-898960, incorporated by reference herein. Examples of such silicas include those sold under the tradename Aerosil® R812 by the company Degussa, CAB-O-SIL® TS-530, CAB-O-SIL® TS-610, CAB-O-SIL® TS-720 by the company Cabot, or Aerosil® R972 and Aerosil® R974 by the company Degussa; clays, such as montmorillonite; modified clays such as the bentones, for example, stearalkonium hectorite, stearalkonium bentonite; or polysaccharide alkyl ethers, optionally with the alkyl group having from 1 to 24 carbon atoms, for example from 1 to 10 carbon atoms, from 1 to 6 carbon atoms, or from 1 to 3 carbon atoms, such as those described in document EP-A-898958, incorporated by reference herein.

[00292] In certain embodiments, when an anionic thickening agent is used, it is generally neutralized before being included in, or as it is added to the compositions of the disclosure. Such an anionic thickening agent may be neutralized by employing traditional neutralizing agents such as alkanolamines, for example, monoethanolamine and diethanolamine; aminomethyl propanol; basic amino acids, for example arginine and lysine; or ammonium compounds and their salts. The anionic thickening agent may also be neutralized by at least one latex polyurethane polymer of the disclosure wherein said latex polyurethane polymer has at least one free amino group and/or is provided in a dispersion medium that has a pH of greater than 7.

[00293] In certain embodiments, the thickening agent may be chosen from non-associative cationic polymers

[00294] In one embodiment, the thickening agent is chosen from xanthan gum, guar gum, hydroxypropyl guar, guar hydroxypropyl trimonium chloride, hydroxyethyl cellulose, hydroxypropyl cellulose, cetyl hydroxyethyl cellulose,

hydroxypropyl starch phosphate, ammonium acryloyldimethyltaurate/VP copolymer or mixtures thereof.

[00295] According to various embodiments, the total amount of anionic thickening agent ranges from about 0.01% to about 15% by weight, or from about 0.01% to about 10% by weight, or from about 0.05% to about 5% by weight, or from about 0.1% to about 5% by weight, or from about 0.1% to about 3% by weight, or from about 0.3% to about 2% by weight, relative to the total weight of the composition, including all ranges and subranges therebetween.

[00296] In various embodiments, the anionic thickening agent may be present in a total amount of about 0.01%, 0.02%, 0.03%, 0.04%, 0.05%, 0.06%, 0.07%, 0.075%, 0.08%, 0.09%, 0.1%, 0.125%, 0.15%, 0.2%, 0.25% 0.3%, 0.325%, 0.35%, 0.375%, 0.4%, 0.425%, 0.45%, 0.5%,0.55%, 0.6%, 0.65%, 0.7%, 0.75%, 0.8%, 0.85%, 0.9%, 0.95%, 1%, 1.5%, 2%, 2.5%, or 3% by weight, relative to the total weight of the composition.

[00297] In various embodiments, the additional thickening agent may be present in an amount ranging from about 0.01% to about 10% by weight, or from about 0.05% to about 5% by weight, or from about 0.1% to about 3% by weight, relative to the total weight of the composition, including all ranges and subranges therebetween.

[00298] In various embodiments, the additional thickening agent may be present in an amount of about 0.01%, 0.02%, 0.03%, 0.04%, 0.05%, 0.06%, 0.07%, 0.075%, 0.08%, 0.09%, 0.1%, 0.125%, 0.15%, 0.2%, 0.25% 0.3%, 0.325%, 0.35%, 0.375%, 0.4%, 0.425%, 0.45%, 0.5%,0.55%, 0.6%, 0.65%, 0.7%, 0.75%, 0.8%, 0.85%, 0.9%, 0.95%, 1%, 1.5%, 2%, 2.5%, or 3% by weight, relative to the total weight of the composition.

[00299] The additional thickening agent of the present disclosure may be chosen from rheology modifiers such as crosslinked homopolymers of acrylamidopropane-sulfonic acid.

[00300] Non-limiting examples of the additional thickening agent include Polyacrylamide(and)C13-14 Isoparaffin(and)Laureth-7 such as Sepigel™ 305 by the company Seppic, Hydroxypropyl Guar such as Jaguar® HP105 by the company Rhodia, Cyamopsis Tetragonoloba (Guar) Gum such as Supercol® U Guar Gum by

the company Ashland, Sclerotium Gum such as Amigum by the company Alban Muller, Xanthan Gum(and)Ceratonia Siliqua Gum such as Nomcort CG by the company Nisshin Oil Lio, Hydroxypropyl Guar such as Jaguar® HP8 by the company Rhodia, Guar Hydroxypropyl Trimonium Chloride such as Jaguar® C-13-S by the company Rhodia, or Hydroxyethyl Cellulose such as Natrosol™ 250 MR by the company Ashland.

NEUTRALIZING BASE

[00301] In certain embodiments, when the at least one anionic thickening agent is present, the at least one anionic thickening agent is generally neutralized before being included in, or as it is, added to the compositions of the disclosure. The anionic thickening agent may be neutralized by employing traditional neutralizing agents, also known as neutralizing bases. As used herein, a "neutralizing base" is an alkaline compound that partially or totally neutralizes the negative charge of the anionic thickener.

[00302] According to some embodiments of the disclosure, the composition comprises at least two different alkaline components employed as neutralizing bases.

[00303] Nonlimiting examples of neutralizing bases include hydroxide-containing compounds chosen from alkali metal hydroxides, alkaline-earth metal hydroxides, transition metal hydroxides such as sodium hydroxide, potassium hydroxide, lithium hydroxide, calcium hydroxide, magnesium hydroxide, barium hydroxide, strontium hydroxide, manganese hydroxide, and zinc hydroxide; ammonia; organic amines such as monoethanolamine, diethanolamine, triethanolamine, N-methylglucamine, aminomethyl propanol, aminomethyl propanediol, ethoxylated amines, PEG-25 cocamine, polyoxyethylene (5) cocamine, polyoxyethylene (25) cocamine, polyoxyethylene (5) octadecylamine, polyoxyethylene (25) octadecylamine, polyoxyethylene (5) tallowamine, polyoxyethylene (I5) oleylamine, polyethylene (5) soyamine, and polyoxyethylene (25) soyamine; basic amino acids such as arginine and lysine; and mixtures thereof.

[00304] According to some embodiments, the neutralizing base is chosen from aminomethyl propanol and triethanolamine.

[00305] In certain embodiments, a first neutralizing base and a

second neutralizing base are added to the composition at different times. According to some embodiments, a first neutralizing base is added to the composition including an anionic thickener, and a second neutralizing base is added to the composition at a later time. In some embodiments, the first neutralizing base is triethanolamine and the second neutralizing base is aminomethyl propanol.

[00306] According to various embodiments of the disclosure, the addition of at least two neutralizing bases will slightly thicken the composition. Without wishing to be bound by theory, in some embodiments a slightly thickened composition may provide a foam having better structure and/or better stability.

[00307] In certain embodiments, each of the neutralizing bases is present in an amount ranging from about 0.001 % to about 10 % by weight, from 0.005 % to about 5 % by weight, from about 0.01 % to about 3 % by weight, from about 0.05 % to about 2 % by weight, from about 0.05 % to about 1 % by weight, from about 0.05 % to about 0.5 % by weight, from about 0.1 % to about 1.5 % by weight, or from about 0.2 % to about 1.0 % by weight, relative to the weight of the composition.

[00308] In certain embodiments, the neutralizing bases are present in a combined amount ranging from 0.001 % to about 10 % by weight, from 0.005 % to about 8 % by weight, from about 0.01 % to about 6 % by weight, from about 0.05 % to about 5 % by weight, from about 0.1 % to about 3 % by weight, from about 0.15 % to about 1.0 % by weight, or from about 0.2 % to about 1.0 % by weight, relative to the weight of the composition.

[00309] In other embodiments, the combined amount of neutralizing bases may be about 0.1 %, about 0.15 %, about 0.2 %, about 0.25 %, about 0.3 %, about 0.4 %, about 0.5 %, about 0.6 %, about 0.7 %, about 0.8 %, about 0.9 %, about 1.0 %, about 2 %, about 3 %, or about 4% by weight, relative to the weight of the composition.

COALESCING AGENTS AND PLASTICIZERS

[00310] The compositions according to the disclosed embodiments may optionally comprise at least one component chosen from coalescing agents and plasticizers. Without wishing to be bound by theory, it is believed that the addition of

coalescing agents and/or plasticizers may lower the glass transition temperature (Tg), decrease the Young's modulus, and/or increase the strain of latex polymers and/or the films formed by latex polymers. Further, the at least one coalescing agent and/or plasticizer may also be used to aid coating formation of the latex film to form a continuous and homogeneous film or coating and to improve adhesion. While the lowering of the Tg of the latex polymers can result in a softening of the film or coating formed by the latex polymers, it has been found that the coating or film produced on hair treated with the compositions of the disclosure imparts a stronger styling hold to the hair and a more balanced coating or film.

[00311] In various embodiments, the coalescing agents and/or plasticizers may be chosen from glycols and their derivatives, such as glycol ethers, for example, ethylene glycol, propylene glycol, diethylene glycol ethyl ether, diethylene glycol methyl ether, diethylene glycol butyl ether, diethylene glycol hexyl ether, diethylene glycol dibutyl ether, ethylene glycol methyl ether, ethylene glycol ethyl ether, ethylene glycol butyl ether, or ethylene glycol hexyl ether; glycol esters, such as diethylene glycol butyl ether acetate, propylene glycol dibenzoate or dipropylene glycol dibenzoate; cellulose esters, such as sucrose acetate; propylene glycol derivatives, such as propylene glycol phenyl ether, propylene glycol diacetate, dipropylene glycol butyl ether, tripropylene glycol butyl ether, propylene glycol methyl ether, dipropylene glycol ethyl ether, tripropylene glycol methyl ether, diethylene glycol methyl ether, or propylene glycol butyl ether.

[00312] In other embodiments, the coalescing agents and/or plasticizers may be chosen from acid esters, such as carboxylic acid esters. In other embodiments, the component chosen from coalescing agents and plasticizers may be chosen from acetates, such as glycerol triacetate; citrates, such as triethyl citrate, tributyl citrate, triethyl acetylcitrate, tributyl acetylcitrate, or tri(2-ethylhexyl)acetylcitrate; phthalates, such as diethyl phthalate, dibutyl phthalate, dioctyl phthalate, dipentyl phthalate, dimethoxyethyl phthalate, butyl phthalate, or 2-ethylhexyl phthalate; phosphates, such as tricresyl phosphate, tributyl phosphate, triphenyl phosphate, or tributoxyethyl phosphate; tartrates, such as dibutyl tartrate; or sebacates, such as dimethyl sebacate or dibutyl sebacate.

[00313] In other embodiments, the coalescing agents and/or plasticizers may be chosen from, fatty acid esters, such as adipic acid esters, for example,

diisobutyl adipate or diethyl adipate; stearic acid esters, such as ethyl stearate; or palmitic acid esters, such as 2-ethylhexyl palmitate, succinates, abietates, caprylates, caproates, enanthates, or myristates.

[00314] In further embodiments, the coalescing agents and/or plasticizers may be chosen from carbonates, such as ethylene carbonate or propylene carbonate; benzyl benzoate, sucrose benzoate, butyl acetylricinoleate, glyceryl acetylricinoleate, butyl glycolate, camphor, N-ethyl-o,p-toluenesulphonamide, or ethyl tosylamide.

[00315] In further embodiments, the coalescing agents and/or plasticizers may be chosen from compounds comprising at least one fatty acid chosen from caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, ricinoleic acid, linoleic acid, linolenic acid, arachidic acid, gadoleic acid, behenic acid, erucic acid, brassidic acid, cetoleic acid, lignoceric acid, or nervonic acid.

[00316] In further embodiments, the coalescing agents and/or plasticizers may be chosen from alcohols such as hexanol or benzyl alcohol.

[00317] In preferred embodiments, the coalescing agents and/or plasticizers may be chosen from propylene glycol dibenzoate, sold under the tradename Lexfeel® Shine by the company Inolex, dipropylene glycol dibenzoate, sold under the tradename Dermol DPG-2b by the company Alzo, and propylene glycol butyl ether, sold under the tradename Dowanol™ PnB by the company Dow Chemical.

[00318] It should be understood that mixtures of the above agents may be used according to various embodiments.

[00319] In various embodiments, the at least one component chosen from coalescing agents and plasticizers may be present in an amount ranging from about 0.1% to about 20% by weight, from about 0.1% to about 10% by weight, or from about 0.1% to about 5% by weight, with respect to the total weight of the composition.

[00320] In various embodiments, the at least one component chosen from coalescing agents and plasticizers may be present in an amount ranging from about 0.1% to about 2% by weight or from about 0.1% to about 1% by weight, with respect to the total weight of the composition.

[00321] In other embodiments, compositions of the disclosure may comprise at least one water-soluble resin such as polyethylene oxide having a molecular weight ranging from about 100,000 to about 10,000,000. Examples of such polyethylene oxides include, but are not limited to, Polyox water-soluble resins manufactured by the company Dow under the INCI names of PEG-2M, PEG-5M, PEG-7M, PEG-14M, PEG-23M, PEG-45M, PEG-90M, PEG-160M, and PEG-180M. PEG-90M is known under the tradename Polyox™ WSR 301 and PEG-45M is known under the tradename Polyox™ WSR 60k. The amounts of water-soluble resins in the compositions, when present, may range from about 0.1% to about 2% by weight, relative to the total weight of the composition.

[00322] It is to be understood that any combination of the above mentioned agents is contemplated according to various exemplary embodiments of the disclosure.

FATTY ESTER

[00323] The compositions of the present invention may further include at least one fatty ester other than plant oils, preferably containing from 12 to 50 carbon atoms.

[00324] In one embodiment, the fatty ester is chosen from solid fatty esters of monoalcohols, especially of monoalcohols comprising at least 10 carbon atoms, and better still of saturated monoalcohols comprising at least 10 carbon atoms or from 10 to 30 carbon atoms and more particularly from 12 to 24 carbon atoms. Solid fatty esters are esters of saturated carboxylic acids comprising at least 10 carbon atoms and of saturated monoalcohols comprising at least 10 carbon atoms or from 10 to 30 carbon atoms and more particularly from 12 to 24 carbon atoms. The saturated carboxylic acids and/or monoalcohols may be linear or branched or optionally be hydroxylated.

[00325] Solid fatty esters may be chosen from myristyl myristate, cetyl myristate, stearyl myristate, myristyl palmitate, cetyl palmitate, stearyl palmitate, myristyl stearate, cetyl stearate and stearyl stearate, or also mixtures thereof.

[00326] The fatty ester(s) are preferably present in the composition in an amount of between 0.1% and 10% by weight and preferably between 0.5% and 5% by weight relative to the total weight of the composition.

SOLVENT

[00327] In addition to a solvent chosen from water, the compositions according to the disclosed embodiments may further comprise at least one cosmetically acceptable organic solvent. In certain embodiments, the at least one solvent in the compositions of the invention may be chosen from water, at least one cosmetically acceptable organic solvent, or a mixture of water and at least one cosmetically acceptable organic solvent. The cosmetically acceptable organic solvent may be chosen from volatile or non-volatile organic solvents.

[00328] In various embodiments, the cosmetically acceptable organic solvents may be water-miscible, e.g. a mixture capable of forming at 25ºC a homogeneous mixture that is transparent, or substantially transparent, to the eye, chosen from lower monoalcohols, such as those containing from about 1 to 5 carbon atoms, for example ethanol or isopropanol; polyols, including glycols, such as those containing from about 2 to 8 carbon atoms, for example propylene glycol, ethylene glycol, 1,3-butylene glycol, dipropylene glycol, pentylene glycol, hexylene glycol, glycerin, ethylhexylglycerin; hydrocarbons, such as, for example, isododecane or mineral oil; silicones, such as dimethicones, trisiloxanes, cyclomethicones, or cyclopentasiloxane; or mixtures thereof.

[00329] In some embodiments, the cosmetically acceptable organic solvent is chosen from propylene glycol, glycerin, ethylhexylglycerin, trisiloxane, dimethicone, isododecane, mineral oil, or mixtures thereof.

[00330] In certain embodiments, the latex polymer particles are not soluble in the solvent of the composition, and thus remain in particulate form while in the composition and after evaporation of the solvent. For example, in embodiments where the composition comprises alcohol as a cosmetically acceptable organic solvent, the latex particles may remain in particulate form upon evaporation of the alcohol, such as once the composition is applied to a substrate.

[00331] According to various embodiments, the at least one solvent may be present in an amount ranging up to about 95% by weight, from about 1% to about 90% by weight, or from about 5% to about 80% by weight, relative to the total weight of the composition.

PROPELLANT

[00332] The compositions according to the disclosed embodiments may further comprise at least one propellant. As used herein, the term "propellant" is meant to indicate a liquid or gas that is packaged with the composition in a device under pressure, which serves to dispense the composition from the device with force and/or facilitate or enhance the foaming of the composition.

[00333] Nonlimiting examples of propellants that are suitable for use include gases usually used in the cosmetic field, in particular optionally halogenated volatile hydrocarbons, for example n-butane, propane, isobutane, or pentane, and halogenated derivatives thereof; carbon dioxide, nitrous oxide, dimethyl ether, hydrofluorocarbons, and nitrogen, alone or as mixtures.

[00334] In certain embodiments of the disclosure, the propellant is chosen from alkanes and in particular from n-butane, propane, and isobutane, and mixtures thereof.

[00335] According to various embodiments, the propellant is under pressure, and at least partially in liquid form.

[00336] In certain embodiments, the total amount of propellant ranges from about 1 % to about 30 % by weight, relative to the weight of the composition, such as from about 2 % to about 15 % by weight relative to the weight of the composition.

COMPOSITIONS

[00337] The compositions according to the disclosed embodiments may further comprise additional components that are typically used in hair cosmetic compositions. Such components are known to those of skill in the art, or are within the ability of those of skill in the art to determine depending on the particular application, such as, for example, aminofunctional silicones, alkylpolyglucosides, anionic surfactants, cationic surfactants, cationic polymers, organic amines, carbonate compounds, emulsifying agents, fillers, pigments, conditioning agents, moisturizing agents, shine agents, sequestering agents, fragrances, preservatives, pH modifiers/neutralizing agents, stabilizers, salts, or mixtures thereof.

[00338] In various embodiments, the composition described herein may have a pH ranging from about 2 to about 9, such as about 3 to about 8, or about 5 to about 7.

[00339] In some embodiments, the compositions are in the form of hair styling compositions, in any form, such as, for example, a gel, an oil-gel, a lotion, an emulsion, or a liquid that may be sprayed onto or otherwise applied to the hair. In certain exemplary embodiments, the composition is provided in the form of a cream, mousse, or a spray.

[00340] In various embodiments, the composition is a hair styling or a hair care composition that provides styling or shaping benefits to the hair (e.g., styling hold, straightening, curling, curl definition). In other embodiments, the hair styling or hair care composition provides manageability benefits to hair (e.g., anti-frizz, smoothing, softness, conditioning). According to various embodiments, by "hair styling composition" or by "hair care composition", the composition is meant to be applied to hair on the head other than eyelashes and/or eyebrows. Hair styling and hair care compositions and mascaras are sometimes distinguishable based on the components of the compositions and/or the effects of the compositions when applied. In some embodiments, at least one component of a hair styling composition is not compatible for use in a mascara. In other embodiments, at least one component of a mascara is not compatible for use in a hair styling or hair care composition.

[00341] According to some embodiments, the composition is not applied to the eyelashes and/or eyebrows. In certain embodiments, the composition is not a mascara.

[00342] In certain embodiments, the composition may be applied to the hair by first applying to the hands, and then contacting the hair with the hands. In other embodiments, the composition may be applied directly onto the hair, such as by spraying. In other embodiments, the composition may be applied to wet or dry hair. The compositions may, in various embodiments, be applied to the hair as a leave-on treatment.

[00343] Also disclosed herein are methods for styling or shaping the hair, said methods comprising applying a composition according to the disclosure to the hair, either before, during, or after styling or shaping the hair.

[00344] In one embodiment, the hair is allowed to air dry after application of the composition, and no heat is applied to the hair.

[00345] In one embodiment, the hair is allowed to air dry after application of the composition, and is styled or shaped with no heat being applied to the hair.

[00346] Styling or shaping the hair may involve the use of devices on hair such as a brush, a comb or running the fingers of the hand through the hair.

[00347] In one embodiment, the application of an external stimuli, such as heat, may be part of the hair styling process. By way of example only, before, during, or after the composition is applied to wet or dry hair, the hair may optionally be further treated with an external stimuli, for example with heat ranging from about 25°C to about 250°C. In at least certain embodiments, the hair may also be shaped or positioned as desired while exposed to external stimuli, such as while heated or exposed to heat.

[00348] Professional and consumer heating tools can be used as a means to deliver heat or an elevated temperature to the hair. The heating tools can generate heat through electrical current or heating lamps. Depending upon the desired style, these tools include, but are not limited to, heaters, blow dryers, flat irons, hot combs, hot curler sets, heated crimpers, heated lash curlers, heated wands/brushes, and hood driers or their combinations thereof.

[00349] Also disclosed herein are methods of imparting a natural/clean feel and/or frizz control and/or smoothing benefits to hair comprising applying a composition according to the disclosure to the hair.

[00350] As described, compositions according to the disclosure may impart a film on a substrate, such as on the hair or on the hand during or after application to the hair. A film formed by the composition according to certain embodiments may be surprisingly clean-feeling and not sticky, as with traditional hair styling or hair care compositions. Also surprisingly, the composition may impart a film on the hair that leaves the hair relatively natural and clean-feeling, yet has a flexible coating, leaving little to no residue, has light-weight feel on the hair, allows the hair to be bouncy and springy with little to no frizz or flaking, may impart relatively high definition with individualized curls, style control, volume, and/or shine, and/or may allow for relatively long-lasting hold and style memory. Furthermore, in at least certain embodiments according to the disclosure, the compositions are not sticky or tacky.

In certain embodiments, the hair treated with the compositions of the invention was not greasy or oily in appearance or to the touch. A user of hair compositions according to various embodiments described herein may thus feel that the composition is not perceptible or is "invisible," yet still effectively style and/or hold the hair. Additionally, the compositions may have effective hair styling and/or hold properties, even in conditions of high, or relatively high, humidity. In at least certain embodiments according to the disclosure, the compositions may be quick-drying, which may allow drying and/or styling time to be reduced, as well as further improve ease of styling and curl retention.

[00351] Furthermore, as described, compositions prepared according to the disclosed embodiments may provide for varying degrees of hold to be imparted to a hair style. By way of non-limiting example only, in order to obtain a spiky look to hair of a very short length, a high level of styling hold may be desirable. Or, as a further non-limiting example, in order to obtain a flowing look or to maintain hair curls for hair of medium length or longer length, a light to medium level of style hold may be desirable. By altering the weight ratio of the first and second latex polymers, and/or the amounts of the at least one oil of the present invention relative to the first and second latex polymers, it is possible to formulate compositions having high levels of style hold, medium to high levels of style hold, medium levels of style hold, or light to medium levels of style hold.

[00352] In at least certain embodiments, a film formed by the compositions described herein may be clear and/or stable. In such embodiments, phase separation and dramatic aggregation are minimized.

[00353] In addition, hair styled or treated with compositions according to the disclosure, in at least certain exemplary embodiments, may be hydrophobic, may appear less frizzy, and/or may be less prone to breakage, relative to hair subjected to the same conditions but not having been styled or treated with a composition according to the disclosure.

[00354] It should be noted, however, that compositions and films, as well as hair to which the composition or film has been applied, according to the disclosure may not have one or more of the herein-referenced properties, yet are intended to be within the scope of the disclosure.

[00355] Also disclosed herein are methods for styling the hair, said methods comprising applying a composition according to the disclosure to the hair, either before, during, or after styling the hair. One or more steps of treating the hair with an external stimuli, such as heat, before, during, or after the composition has been applied to the hair are also contemplated. Additional methods comprise applying a composition according to disclosure to dry hair to achieve a desired shape.

[00356] It is to be understood that both the foregoing description and the following Examples are exemplary and explanatory only, and are not to be interpreted as restrictive of the disclosure. Moreover, it should be understood that various features and/or characteristics of differing embodiments herein may be combined with one another. It is therefore to be understood that numerous modifications may be made to the illustrative embodiments and that other arrangements may be devised without departing from the scope of the disclosure. Other embodiments will be apparent to those skilled in the art from consideration of the disclosure and practice of the various exemplary embodiments disclosed herein.

[00357] It is also to be understood that, as used herein the terms "the," "a," or "an," mean "at least one," and should not be limited to "only one" unless explicitly indicated to the contrary. Thus, for example, the use of "a surfactant" is intended to mean at least one surfactant unless the context clearly indicates otherwise.

[00358] It should be understood that all patents and published patent applications referenced are incorporated herein in their entireties.

[00359] While various features, elements or steps of particular embodiments may be disclosed using the transitional phrase "comprising," it is to be understood that alternative embodiments, including those that may be described using the transitional phrases "consisting" or "consisting essentially of," are implied. Thus, for example, implied alternative embodiments to a method that comprises A+B+C include embodiments where a method consists of A+B+C and embodiments where a method consists essentially of A+B+C. As described, the phrase "at least one of A, B, and C" is intended to include "at least one A or at least one B or at least one C," and is also intended to include "at least one A and at least one B and at least one C."

[00360] All ranges and amounts given herein are intended to include subranges and amounts using any disclosed point as an end point. Thus, a range of "1% to 10%, such as 2% to 8%, such as 3% to 5%," is intended to encompass ranges of "1% to 8%," "1% to 5%," "2% to 10%," and so on.

[00361] All numbers, amounts, ranges, etc., are intended to be modified by the term "about," whether or not so expressly stated. Similarly, a range given of "about 1% to 10%" is intended to have the term "about" modifying both the 1% and the 10% endpoints.

[00362] Unless otherwise expressly stated, it is in no way intended that any method set forth herein be construed as requiring that its steps be performed in a specific order. Accordingly, where a method claim does not expressly recite an order to be followed by its steps or it is not otherwise specifically stated in the claims or descriptions that the steps are to be limited to a specific order, it is no way intended that any particular order be inferred.

[00363] It should be understood that compositions according to various embodiments of the disclosure form a film when applied to a substrate. However, the various properties of the film described herein are intended to include any film provided by compositions according to the disclosure, regardless of whether the film is attached or bonded to the substrate or not. By way of example only, once the compositions are applied to a substrate and a film is formed, the film may subsequently be removed in order to evaluate properties such as strain and Young's modulus.

[00364] Unless otherwise indicated, all numbers expressing quantities of ingredients, reaction conditions, and so forth used in the specification and claims are to be understood as being modified in all instances by the term "about." Accordingly, unless indicated to the contrary, the numerical parameters set forth in the following specification and attached claims are approximations that may vary depending upon the desired properties sought to be obtained by the present disclosure. For example, the term "about" can mean within 10% of the indicated number (e.g. "about 10%" means 9% – 11% and "about 2%" means 1.8% - 2.2%), such as within 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, or 1%, according to various embodiments.

[00365] Notwithstanding that the numerical ranges and parameters setting forth the broad scope of the disclosure are approximations, unless otherwise

indicated the numerical values set forth in the specific examples are reported as precisely as possible. Any numerical value, however, inherently contains certain errors necessarily resulting from the standard deviation found in their respective testing measurements. The example that follows serves to illustrate embodiments of the present disclosure without, however, being limiting in nature.

[00366] It is understood that when an amount of a component is given, it is intended to signify the amount of the active material, unless otherwise indicated.

[00367] The compositions and methods according to the present disclosure can comprise, consist of, or consist essentially of the elements and limitations described herein, as well as any additional or optional ingredients, components, or limitations described herein or otherwise known in the art.

EXAMPLES

[00368] The following Examples are intended to be non-restrictive and explanatory only, with the scope of the disclosed embodiments.

[00369] The ingredient amounts in the compositions/formulas described below are expressed in % by weight, based on the total weight of the composition.

[00370] Table 1

US INCI NAME	**Example 1A**	**Example 2A**	**Example 3A**	**Example 4A**	**Example 5A**
Acrylates copolymer	0.45	0.5	0.5	0.5	0.5
Polyurethane-34	0.54	0.5	0.5	0.5	0.5
Butyrospermum ParkII (Shea) Butter	3	3	-	3	-
Cocos Nucifera (Coconut) Oil	-	-	4	-	4
Dimethicone	-	-	0.88	-	0.88
Trideceth-9 PG Amodimethicone	0.83	-	0.83		0.83
Dimethiconol	-	-	0.12	-	0.12
Polyacrylamide (and) C13-14 Isoparaffin (and) Laureth-7	0.5	-	2	1.5	2
Ammonium Acryloyldimethyltaurate/VP	0.95	-	-	-	-

Copolymer					
Sodium Acrylates Copolymer	-	1.2	-	-	-
Glyceryl Stearate	-	0.5	-	0.5	-
PEG-75 Lanolin	-	0.5	-	0.5	-
Cetearyl Alcohol	-	-	-		-
PEG-40 Hydrogenated Castor Oil	-	1.5	-	1.5	-
Propylene Glycol	6	2	-	2	-
Hydrogenated Starch Hydrolysate	3.5	-	-	-	-
Lactamide MEA (and) Acetamide MEA	-	-	1	-	1
Nonionic surfactants (Polysorbate 80, and Trideceth-12)	0.16	0.043	0.17	0.043	0.17
Additional Components (e.g., anionic surfactants, fatty alcohol cyclodextrin, t-butyl alcohol, preservatives, lecithin, neutralizing agents, salt, and fragrances) and Water	QS 100	QS 100	QS 100	QS 100	QS 100

[00371] The formulation examples above were prepared based on the following general protocol:

[00372] Water was added and heated in main tank. Then fatty alcohols (nonionic surfactants) were heated and melted in a separate beaker and added to the heated main tank. Once an emulsion was formed, the emulsion was cooled down. The latex polymers were then added. Preservatives and fragrance were also added. If a thickening agent was used, it was added last.

[00373] The formulation examples were tested on the hair on human heads and on mannequin heads. It was found that the formulas imparted to hair the properties of:

- natural look and feel with no residue that is touchable
- hair felt conditioned, shiny, controlled, manageable and soft
- hair did not feel weigh down
- the right balance of care and style to provide control and definition and at the same time, conditioning and natural feel.

[00374] Table 2

US INCI NAME	Example 1B	Example 2B	Example 3B	Comparative Example 4B	Comparative Example 5B
Acrylates copolymer	0.62	0.62	1.411	1.44	1.41
Polyurethane-34	0.31	0.31	0.47	0.48	0.47
Polyacrylate-3	0.43	0.43	0.43	0.62	0.61
Amodimethicone/ Morpholinomethylsilsesquioxane copolymer	0.26	0.26	0.26	-	-
Amodimethicone	0.40	0.40	0.40	-	-
Caprylyl Methicone	-	-	-	0.29	-
Dimethicone	-	-	-	0.17	-
Dimethiconol	-	-	-	0.02	-
Cocamidopropyl Betaine	0.07	0.07	0.07	0.07	-
Decyl Glucoside	0.1	0.1	0.1	-	-
Hydroxypropyl Guar	0.09	0.09	0.09	-	-
Propylene Glycol	0.94	0.94	0.94	0.96	-
Isopropane (and) Butane	6.9	6.0	6.0	4.0	6.0
Nonionic surfactants (Polysorbate 20,Polysorbate 80, and Trideceth-10)	0.32	0.32	0.38	-	
Nonionic surfactants (Polysorbate 20, Polysorbate 80)	-	-	-	0.31	-
Nonionic surfactants (Polysorbate 80)	-	-	-		0.12
Lauramine Oxide	-	-	-	0.086	-
Additional Components (e.g., surfactants, organic solvents, preservatives, neutralizing agents, salt, and fragrances)	1.38	1.67	1.72	1.51	1.40
Water qs	100	100	100	100	100

[00375] Table 3

US INCI NAME	Example 6B	Example 7B
Acrylates copolymer	0.66	1.41

Polyurethane-34	0.33	0.47
Polyacrylate-3	0.46	0.43
Trideceth-9 PG Amodimethicone	0.35	0.33
PEG PEG-40/PPG-8 Methylaminopropyl/hydroxylpropyl dimethicone copolymer	0.6	-
Amodimethicone		0.33
Cocamidopropyl Betaine	0.076	0.071
Decyl Glucoside	0.11	0.10
Hydroxypropyl Guar	-	0.094
Isopropane (and) Butane	-	6.0
Nonionic surfactants (Polysorbate 20,Polysorbate 80, and Trideceth-12)	0.31	-
Nonionic surfactants (Polysorbate 20, Polysorbate 80, Trideceth-10, and Trideceth-12)	-	0.40
Additional Components (e.g., surfactants, organic solvents, preservatives, neutralizing agents, salt, and fragrances)	1.12	1.08
Water qs	100	100

[00376] According to Tables 2 and 3 above, Examples 1B, 2B, 3B, 6B and 7B and Comparative Examples 4B and 5B were prepared based on the following protocol:

[00377] A tank contained water. Polyacrylate-3 was added to the tank and the ingredients in the tank were mixed until uniform. Then, a neutralizing agent was added, at which point the batch thickened and turned clear. Surfactants and polymers, including acrylates copolymer and polyurethane-34, were added to the batch. Then, additional surfactants and aminofunctional silicones were added to the batch in Examples 1B-3B; additional surfactants and non-aminofunctional silicones were added to the batch in Comparative Example 4B; and additional surfactants were added to the batch in Comparative Example 5B. Solvents, preservatives, and other additional components were added to the batch. The batch was mixed between the additions until it was uniform. Each of the compositions containing propellants (isobutane and propane) was packaged in respective vacuum-sealed

pressurized cans; propellants were released through a valve into the vacuum-sealed pressurized cans, wherein the propellants and composition could mix together.

[00378] Examples 1B-3B and Comparative Examples 4B and 5B were then applied to corresponding locks of wet hair and hair on mannequin heads. A panel of experts evaluated the compositions based on ease of application and distribution on the hair. The panel of experts also evaluated the locks of hair based on hair volume, feel of the hair, and conditioning effects. The treated locks of hair were then blow dried with a round brush, and the panel of experts evaluated the dry treated hair based on the same criteria.

[00379] Examples 1B, 2B, and 3B, provided great conditioning properties in both wet and dry stages while maintaining a clean feel and high resistance to humidity. The hair locks treated with Examples 1 B, 2 B, and 3 B had a clean, natural, and/or "invisible" feel and a lack of stickiness.

[00380] In contrast, Comparative Examples 4 B and 5 B did not provide desirable hair care benefits. Specifically, the hair treated with Comparative Example 4 B was heavy and had low volume and a greasy feel. Comparative Example 5 B imparted a dry and super clean feel to the hair, which led to difficult application and distribution of the product, dryness, and static in the hair. Further, Comparative Examples 4 and 5 did not provide conditioning effects after the treated hair locks were blow dried.

[00381] Both examples 6 B and 7 B imparted to hair a natural/clean feel (no residue, no flaking, not sticky), a touchable feel, frizz control, long lasting natural shape control and lightweight feel to the hair (did not give a heavy feeling to the hair).

[00382] Example 6 B provided to the hair more flexible hold and additional shine while providing a hold that resulted in a textured look.

[00383] Example 7 B provided a strong hold and enhanced the natural waves and curls of the hair.

WHAT IS CLAIMED IS:

1. A cosmetic composition comprising:

at least two latex polymers, wherein at least one latex polymer is a film-forming polymer; and

at least one oil chosen from lower alkanes, hydrocarbon oils, plant/vegetable oils, fluoro oils, silicones, or mixtures thereof; and

water;

wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

2. The cosmetic composition according to claim 1, wherein the at least two latex polymers are present in a combined amount ranging from about 0.25% to about 20% by weight, relative to the total weight of the composition.

3. The cosmetic composition according to claim 1 or 2, wherein the at least two latex polymers comprise at least one acrylate latex polymer and at least one polyurethane latex polymer.

4. The cosmetic composition according to claim 3, wherein the at least two latex polymers comprise acrylates copolymer and polyurethane-34.

5. The cosmetic composition according to claim 3, wherein the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer ranges from about 10:1 to 1:10, particularly from about 5:1 to about 1:5, most particularly about 1.

6. The cosmetic composition according to any one of the preceding claims, wherein the at least one oil is chosen from lower alkanes.

7. The cosmetic composition according to any one of the preceding claims, wherein the at least one oil is chosen from hydrocarbon oils.

8. The cosmetic composition according to any one of the preceding claims, wherein the at least one oil is chosen from plant/vegetable oils.

9. The cosmetic composition according to any one of the preceding claims, wherein the at least one oil includes plant/vegetable oils chosen from shea oil, alfalfa oil, poppy oil, winter squash oil, millet oil, barley oil, quinoa oil, rye oil, candlenut oil, passionflower oil, shea butter, aloe vera oil, sweet almond oil, peach stone oil, groundnut oil, argan oil, avocado oil, baobab oil, borage oil, broccoli oil, calendula oil, camelina oil, canola oil, carrot oil, safflower oil, flax oil, rapeseed oil, cotton 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, grapeseed oil, pistachio oil, winter squash oil, pumpkin oil, musk rose oil, sesame oil, soybean oil, sunflower oil, castor oil or watermelon seed oil, or mixtures thereof.

10. The cosmetic composition according to any one of the preceding claims, wherein the at least one oil is chosen from silicones other than amino functional silicones.

11. The cosmetic composition according to any one of the preceding claims, wherein the at least one oil includes silicones chosen from dimethicone.

12. The cosmetic composition according to any one of the preceding claims, wherein the at least one oil is present in an amount ranging from about 0.01% to about 50% by weight, relative to the total weight of the composition, particularly from about 0.05% to about 30% by weight, relative to the total weight of the composition.

13. The cosmetic composition according to any one of the preceding claims, further comprising at least one nonionic surfactant present in an amount ranging from about 0.01% to about 15% by weight, relative to the total weight of the composition.

14. The cosmetic composition according to claim 13, wherein the at least one nonionic surfactant is chosen from glyceryl esters, fatty alcohols, alkoxylated alcohols and lanolin, or mixtures thereof.

15. The cosmetic composition according to claim 13, wherein the at least one nonionic surfactant comprises at least one glyceryl ester chosen from glyceryl oleate, glyceryl monostearate (or glyceryl stearate), glyceryl monoisostearate, glyceryl monopalmitate, glyceryl monobehenate, or mixtures thereof.

16. The cosmetic composition according to claim 13, wherein the at least one nonionic surfactant comprises at least one fatty alcohol chosen from non-alkoxylated, saturated or unsaturated, linear or branched fatty alcohols having from 6 to 60 carbon atoms, or mixtures thereof.

17. The cosmetic composition according to claim 13, wherein the at least one nonionic surfactant comprises at least one fatty alcohol chosen from cetyl alcohol, stearyl alcohol, cetearyl alcohol (mixture of cetyl alcohol and stearyl alcohol), octyldodecanol, 2-butyloctanol, 2-hexyldecanol, 2-undecylpentadecanol, oleic alcohol, linoleic alcohol, behenyl alcohol, 2-dodecylhexadecanol, 2-tetradecyl-1-octadecanol, 2-tetradecyl-1-eicosanol, 2-hexadecyl-1-octadecanol or 2-hexadecyl-1-eicosanol, octyldodecanol, 2-butyloctanol, 2-hexyldecanol, 2-undecylpentadecanol, oleyl alcohol or linoleyl alcohol, isostearyl alcohol, or mixtures thereof.

18. The cosmetic composition according to claim 13, wherein the at least one nonionic surfactant comprises at least one alkoxylated alcohol and/or lanolin chosen from PEG-40 hydrogenated castor oil, PEG-75 lanolin, laureth-7, laureth-12, trideceth-10, trideceth-12, or mixtures thereof.

19. The cosmetic composition according to any one of the preceding claims, further comprising at least one non-latex nonionic film forming polymer present in an amount ranging from about 0.05% to about 15% by weight, relative to the total weight of the composition.

20. The cosmetic composition according to any one of the preceding claims, further comprising at least one thickening agent present in an amount ranging from about 0.05% to about 10% by weight, relative to the total weight of the composition.

21. The cosmetic composition according to any one of the preceding claims, further comprising at least one coalescing agent and/or plasticizer, present in a total amount ranging from about 0.1% to about 20% by weight, relative to the total weight of the composition.

22. The cosmetic composition according to any one of the preceding claims, further comprising at least one cosmetically acceptable organic solvent.

23. A cosmetic composition comprising:

at least one acrylate latex polymer;

at least one polyurethane latex polymer;

at least one oil chosen from plant/vegetable oils; and

water;

wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

24. A method of styling or shaping hair, the method comprising applying to the hair a composition comprising:

at least two latex polymers, wherein at least one latex polymer is a film-forming polymer;

at least one at least one oil chosen from chosen from lower alkanes, hydrocarbon oils, plant/vegetable oils, fluoro oils, silicones, or mixtures thereof; and water;

wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

25. A method of imparting a natural/clean feel and/or frizz control and/or smoothing benefits to hair, the method comprising applying to the hair a composition comprising:

at least two latex polymers, wherein at least one latex polymer is a film-forming polymer;

at least one at least one oil chosen from chosen from lower alkanes, hydrocarbon oils, plant/vegetable oils, fluoro oils, silicones, or mixtures thereof; and

water;

wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

26. A cosmetic composition comprising:

at least two latex polymers, wherein at least one latex polymer is a film-forming polymer;

at least one aminofunctional silicone;

at least one amphoteric surfactant;

at least one alkylpolyglucoside;

at least one anionic thickening agent; and

water;

wherein the at least two latex polymers are present in a combined amount ranging from about 0.1% to about 30% by weight, relative to the weight of the composition.

27. The cosmetic composition according to claim 26, wherein the at least two latex polymers are present in a combined amount ranging from about 0.25% to about 20% by weight, relative to the total weight of the composition.

28. The cosmetic composition according to claim 26, wherein the at least two latex polymers comprise at least one acrylate latex polymer and at least one polyurethane latex polymer.

29. The cosmetic composition according to any one of claims 26-28, wherein the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is greater than 1.

30. The cosmetic composition according to claim 29, wherein the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is greater than 2, or preferentially from greater than 1 to about 5.

31. The cosmetic composition according to claim 26, wherein the at least one aminofunctional silicone is present in an amount ranging from about 0.05% to about 10% by weight, relative to the total weight of the composition, or preferentially from about 0.25% to about 3% by weight, relative to the total weight of the composition.

32. The cosmetic composition according to claim 26, wherein the at least one aminofunctional silicone is chosen from amodimethicone/morpholinomethyl silsesquioxane copolymer, amodimethicone, PEG-40/PPG-8 methylaminopropyl/ hydroxypropyl dimethicone copolymers, trideceth-9 PG-amodimethicone, or mixtures thereof.

33. The cosmetic composition according to claim 26, wherein the at least one amphoteric surfactant is present in an amount ranging from about 0.01% to about 5% by weight, relative to the total weight of the composition, or preferentially from about 0.06% to about 3% by weight, relative to the total weight of the composition.

34. The cosmetic composition according to claim 26, wherein the at least one amphoteric surfactant is chosen from cocamidopropyl betaine, coco-betaine, cocoamphodiacetate and its salts, or mixtures thereof.

35. The cosmetic composition according to claim 26, wherein the at least one alkylpolyglucoside is present in an amount ranging from about 0.01% to about 5% by weight, relative to the total weight of the composition, or preferentially from about 0.08% to about 3% by weight, relative to the total weight of the composition.

36. The cosmetic composition according to claim 26, wherein the at least one alkylpolyglucoside is chosen from decyl glucoside, lauryl glucoside, stearyl glucoside, coco-glucoside, or mixtures thereof.

37. The cosmetic composition according to claim 26, wherein the at least one anionic thickening agent is chosen from anionic acrylates copolymers, anionic polyacrylates; preferentially from copolymers of (meth)acrylic acid, methylacrylate and dimethyl meta-isopropenyl benzyl isocyanate of ethoxylated alcohols; or mixtures thereof.

38. The cosmetic composition according to claim 26, wherein the at least one anionic thickening agent is neutralized with alkaline compounds chosen from sodium hydroxide, potassium hydroxide, lithium hydroxide, calcium hydroxide, magnesium hydroxide, barium hydroxide, strontium hydroxide, manganese hydroxide, zinc hydroxide, ammonia, monoethanolamine, diethanolamine, triethanolamine, N-methylglucamine, aminomethyl propanol, aminomethyl propanediol, ethoxylated amines, PEG-25 cocamine, polyoxyethylene (5) cocamine, polyoxyethylene (25) cocamine, polyoxyethylene (5) octadecylamine, polyoxyethylene (25) octadecylamine, polyoxyethylene (5) tallowamine, polyoxyethylene (15) oleylamine, polyethylene (5) soyamine, polyoxyethylene (25) soyamine, arginine, lysine or mixtures thereof.

39. The cosmetic composition according to claim 26, wherein the at least one anionic thickening agent is present in an amount ranging from about 0.01% to about 15% by weight, relative to the total weight of the composition, preferentially from about 0.3% to about 2% by weight, relative to the total weight of the composition.

40. The cosmetic composition according to claim 26, further comprising an additional thickening agent other than the anionic thickening agent and present in a total amount ranging from about 0.01% to about 15% by weight, relative to the total weight of the composition.

41. The cosmetic composition according to claim 26, further comprising at least one propellant.

42. The cosmetic composition according to claim 26, further comprising at least one coalescing agent and/or plasticizer, present in a total amount ranging from about 0.1% to about 20% by weight, relative to the total weight of the composition.

43. The cosmetic composition according to claim 26, further comprising at least one organic solvent.

44. A cosmetic composition comprising:

at least one acrylate latex polymer;

at least one polyurethane latex polymer;

at least one aminofunctional silicone chosen from amodimethicone/ morpholinomethyl silsesquioxane copolymer, amodimethicone, PEG-40/PPG-8 methylaminopropyl/hydroxypropyl dimethicone copolymers, trideceth-9 PG-amodimethicone, or mixtures thereof;

at least one amphoteric surfactant chosen from cocamidopropyl betaine, coco-betaine, cocoamphodiacetate and its salts, or mixtures thereof;

at least one alkylpolyglucoside chosen from decyl glucoside, lauryl glucoside, stearyl glucoside, coco-glucoside, or mixtures thereof;

at least one anionic thickening agent chosen from copolymers of (meth)acrylic acid, methylacrylate and dimethyl meta-isopropenyl benzyl isocyanate of ethoxylated alcohols; and

water;

wherein the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is greater than 1.

45. A method of styling or shaping hair, the method comprising applying to the hair a composition comprising:

at least two latex polymers, wherein at least one latex polymer is a film-forming polymer; and

at least one aminofunctional silicone;

at least one amphoteric surfactant;

at least one alkylpolyglucoside;

at least one anionic thickening agent; and

water.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61Q5/06 A61K8/31 A61K8/44 A61K8/58 A61K8/60
A61K8/81 A61K8/87 A61K8/898 A61K8/92
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61Q A61K

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2016/184195 A1 (TAN SILIU [US] ET AL) 30 June 2016 (2016-06-30)	1-5, 8-15,19, 20,22-25
Y	paragraph [0008] - paragraph [0014] paragraph [0026] - paragraph [0071] paragraph [0101] - paragraph [0112] examples 1-5	1-25

X	US 2016/175206 A1 (TAN SILIU [US] ET AL) 23 June 2016 (2016-06-23)	1-5, 7-12, 23-25
Y	paragraph [0010] - paragraph [0013] paragraph [0028] - paragraph [0073] paragraph [0104] - paragraph [0116] paragraph [0185] - paragraph [0193] examples 1-3	1-25

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 November 2017	12/02/2018

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Diebold, Alain

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/054791

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2016/175237 A1 (SHIN CHRISTINE [US] ET AL) 23 June 2016 (2016-06-23)	1-5,8, 12,13, 18,20-25
Y	paragraphs [0001], [0011] - [0019] paragraph [0076] - paragraph [0144] paragraph [0159] - paragraph [0193] paragraph [0195] - paragraph [0245] Formula 1-4; example 2	1-25

X	WO 2016/100885 A1 (OREAL [FR]; SHIN CHRISTINE [US]; VASILENKO ALISA VICTORIA [US]; SULEIM) 23 June 2016 (2016-06-23)	1-5,8, 12,13, 18,20-25
Y	paragraph [0013] paragraph [0059] - paragraph [0132] paragraph [0152] - paragraph [0165] paragraph [0243] - paragraph [0262] Formula A; example 1 Formula 1-4; example 5	1-25

X	US 2015/004116 A1 (TAN SILIU [US] ET AL) 1 January 2015 (2015-01-01) paragraph [0001] paragraph [0016] - paragraph [0075] paragraph [0119] - paragraph [0128] paragraph [0130] - paragraph [0132] claims	1-25

X	WO 2014/210480 A1 (OREAL [FR]; TAN SILIU [US]; SIMONNET JEAN-THIERRY [FR]; SINGER JIM [US) 31 December 2014 (2014-12-31) paragraph [0002] paragraph [0017] - paragraph [0076] paragraph [0123] - paragraph [0133] paragraph [0135] - paragraph [0137]	1-25

Y	US 2015/004114 A1 (TAN SILIU [US] ET AL) 1 January 2015 (2015-01-01) paragraph [0001] paragraph [0016] - paragraph [0062] paragraph [0106] paragraph [0112] - paragraph [0113] paragraph [0117] - paragraph [0125] claims	1-25

E	WO 2017/165931 A1 (OREAL [FR]; AGUIAR SINTIA [BR]) 5 October 2017 (2017-10-05) page 1, line 4 - line 7 page 2, line 1 - page 7, line 13 page 10, line 17 - page 18, line 17 page 41, line 8 - page 44, line 28 Formula A-M; example 2	1-5,7, 12-20, 23-25

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2017/054791

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-25

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-25

A cosmetic composition comprising at least two latex polymers, wherein at least one latex polymer is a film-forming polymer, and at least one oil chosen from lower alkanes, hydrocarbon oils, plant/vegetable oils, fluoro oils, silicones or mixtures thereof and water, wherein the at least two latex polymers are present in a combined amount ranging from 0.1% to 30% by weight, relative to the weight of the composition. A cosmetic composition comprising at least one acrylate latex polymer, at least one polyurethane latex polymer, at least one oil chosen from plant/vegetable oils and water, wherein the at least two latex polymers are present in a combined amount ranging from 0.1% to 30% by weight, relative to the weight of the composition. A method of styling or shaping hair or a method of imparting a natural/clean feel and/or frizz control and/or smoothing benefits to hair comprising the application of said composition to the hair.

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2. claims: 26-45

A cosmetic composition comprising at least two latex polymers, wherein at least one latex polymer is a film-forming polymer, at least one aminofunctional silicone, at least one amphoteric surfactant, at least one alkylpolyglucoside, at least one anionic thickening agent and water, wherein the at least two latex polymers are present in a combined amount ranging from 0.1% to 30% by weight, relative to the weight of the composition. A cosmetic composition comprising at least one acrylate latex polymer, at least one polyurethane latex polymer, at least one aminofunctional silicone chosen from amodimethicone/ morpholinomethyl silsesquioxane copolymer, amodimethicone, PEG-40/PPG-8 methylaminopropyl/hydroxypropyl dimethicone copolymers, trideceth-9 PG-amodimethicone, or mixtures thereof, at least one amphoteric surfactant chosen from cocamidopropyl betaine, coco-betaine, cocoamphodiacetate and its salts, or mixtures thereof, at least one alkylpolyglucoside chosen from decyl glucoside, lauryl glucoside, stearyl glucoside, coco-glucoside, or mixtures thereof, at least one anionic thickening agent chosen from copolymers of (meth)acrylic acid, methylacrylate and dimethyl meta-isopropenyl benzyl isocyanate of ethoxylated alcohols and water, wherein the weight ratio of the at least one acrylate latex polymer to the at least one polyurethane latex polymer is greater than 1. A method of styling or shaping hair comprising the application of said composition to the hair.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2017/054791

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