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(71) Applicant: **THE PROCTER & GAMBLE COMPANY**

[US/US]; One Procter & Gamble Plaza, Cincinnati, Ohio 45202 (US).

(72) Inventor: **CATALAN, Kemal, Vatansever**; 1085 Witt-

shire Lane, Cincinnati, Ohio 45255 (US).

(74) Agent: **GUFFEY, Timothy B.**; C/o The Procter & Gamble

Company, Global Patent Services, 299 East 6th Street, Sycamore Building, 4th Floor, Cincinnati, Ohio 45202 (US).

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(54) Title: SUPERABSORBENT POLYMERS AND SILICONE ELASTOMER FOR USE IN HAIR CARE COMPOSITIONS

(57) Abstract: A hair composition containing from about 0.01% to about 10%, of an superabsorbent polymer, from about 0.1% to about 70%, of a silicone elastomer; from about 1% to about 30% humectants, and from about 20% to about 98% of water.

SUPERABSORBENT POLYMERS AND SILICONE ELASTOMER FOR USE IN HAIR CARE COMPOSITIONS

FIELD OF THE INVENTION

5 The present invention relates to the combination of superabsorbent polymers and silicone elastomers for use in improving the look of hair and the in use characteristics of hair care products.

BACKGROUND OF THE INVENTION

10 There is a continuing need for hair care compositions that give hair shiny appearance without an oily feel and look. In addition, there is a need for composition with good in-use experience, that look and feel better, and are more stable over time in terms of phase separation and aggregation.

 Today's hair care treatments that deliver shiny hair appearance are based on oils and
15 silicone fluids. These types of treatments can bring along a negative trade-off of oily look and feel.

 Therefore, it is desired to have a have a consumer desirable hair styling product which can deliver the benefits of hair shine without the associated negative trade-offs of oily look and
20 feel.

SUMMARY OF THE INVENTION

 A hair composition containing from about 0.01% to about 10%, by weight, of an superabsorbent polymer, from about 0.1% to about 20%, of a silicone elastomer; and from about
25 20% to about 98% of water.

 The hair composition provides a shiny hair appearance without the oily feel and look and without weighing down the hair. The present invention also improves conditioning properties such as wet & dry comb-ability, wet & dry detangling, wet & dry smooth feel, less frizz, natural dry look, moisturizing. In addition, the in use experience it provides include good dispensing
30 properties, smooth feel to the hand, easy application to hair with less run-off, good spread ability and smooth feel on the hair.

DETAILED DESCRIPTION OF THE INVENTION

All percentages and ratios used herein are by weight of the total composition, unless otherwise designated. All measurements are understood to be made at ambient conditions, where “ambient conditions” means conditions at about 25 °C, under about one atmosphere of pressure, and at about 50% relative humidity, unless otherwise designated. All numeric ranges are inclusive of narrower ranges; delineated upper and lower range limits are combinable to create further ranges not explicitly delineated.

The compositions of the present invention can comprise, consist essentially of, or consist of, the essential components as well as optional ingredients described herein. As used herein, “consisting essentially of” means that the composition or component may include additional ingredients, but only if the additional ingredients do not materially alter the basic and novel characteristics of the claimed compositions or methods.

“Apply” or “application,” as used in reference to a composition, means to apply or spread the compositions of the present invention onto keratinous tissue such as the hair.

“Dermatologically acceptable” means that the compositions or components described are suitable for use in contact with human skin tissue without undue toxicity, incompatibility, instability, allergic response, and the like.

“Safe and effective amount” means an amount of a compound or composition sufficient to significantly induce a positive benefit.

“Leave-on,” in reference to compositions, means compositions intended to be applied to and allowed to remain on the keratinous tissue. These leave-on compositions are to be distinguished from compositions, which are applied to the hair and subsequently (in a few minutes or less) removed either by washing, rinsing, wiping, or the like. Leave-on compositions exclude rinse-off applications such as shampoos, rinse-off conditioners, facial cleansers, hand cleansers, body wash, or body cleansers. The leave-on compositions may be substantially free of cleansing or detergent surfactants. For example, “leave-on compositions” may be left on the keratinous tissue for at least 15 minutes. For example, leave-on compositions may comprise less than 1% detergent surfactants, less than 0.5% detergent surfactants, or 0% detergent surfactants. The compositions may, however, contain emulsifying, dispersing or other processing surfactants that are not intended to provide any significant cleansing benefits when applied topically to the hair.

“Derivatives” means an ester, ether, amide, hydroxy, and/or salt structural analogue of the relevant compound.

"Soluble" means at least about 0.1 g of solute dissolves in 100 ml of solvent, at 25 °C and 1 atm of pressure.

Superabsorbent Polymer

5 The term "superabsorbent polymer" (SAP) is understood to mean a polymer which is capable, in its dry state, of spontaneously absorbing at least 20 times its own weight of aqueous fluid, in particular of water and especially of distilled water. Such superabsorbent polymers are described in the work "Absorbent Polymer Technology, Studies in Polymer Science 8" by L. Brannon-Pappas and R. Harland, published by Elsevier, 1990.

10 These polymers have a high capacity for absorbing and retaining water and aqueous fluids. After absorption of the aqueous liquid, the particles of the polymer thus impregnated with aqueous fluid remain insoluble in the aqueous fluid and thus retain their separated particulate state.

 Superabsorbent polymers are now commonly made from the polymerization of acrylic acid blended with sodium hydroxide in the presence of an initiator to form a poly-acrylic acid sodium salt (sometimes referred to as sodium polyacrylate). This polymer is the most common type of superabsorbent polymers made in the world today. Other materials are also used to make a superabsorbent polymer, such as polyacrylamide copolymer, ethylene maleic anhydride copolymer, cross-linked carboxymethylcellulose, polyvinyl alcohol copolymers, cross-linked polyethylene oxide, and starch grafted copolymer of polyacrylonitrile to name a few. The latter is one of the oldest superabsorbent polymers forms created. Today superabsorbent polymers are made using one of three primary methods; gel, polymerization, suspension polymerization or solution polymerization.

 Gel Polymerization involves a mixture of frozen acrylic acid, water, cross-linking agents and UV initiator chemicals are blended and placed either on a moving belt or in large tubs. The liquid mixture then goes into a "reactor" which is a long chamber with a series of strong UV lights. The UV radiation drives the polymerization and cross-linking reactions. The resulting "logs" are sticky gels containing 60-70% water. The logs are shredded or ground and placed in various sorts of driers. Additional cross-linking agent may be sprayed on the particles' surface; this "surface cross-linking" increases the product's ability to swell under pressure -- a property measured as Absorbency Under Load (AUL) or Absorbency Against Pressure (AAP). The dried polymer particles are then screened for proper particle size distribution and packaging. The Gel Polymerization (GP) method is currently the most popular method for making the sodium

polyacrylate superabsorbent polymers now used in baby diapers and other disposable hygienic articles.

Solution polymers, those made by solution polymerization, offer the absorbency of a granular polymer supplied in solution form. The solution polymers can be diluted with water prior to application and coat most substrates or used saturated. After drying at a specific temperature for a specific time, the result is a coated substrate with superabsorbent functionality. For example, this chemistry can be applied directly onto wires & cables, though it is especially optimized for use on components such as rolled goods or sheeted substrates.

Solution based polymerization is commonly used today for SAP manufacture of copolymers -- particularly those with the toxic acrylamide monomer. This process is efficient and generally has a lower capital cost base. The solution process uses a water based monomer solution to produce a mass of reactant polymerized gel. The polymerization's own reaction energy (exothermic) is used to drive much of the process, helping reduce manufacturing cost. The reactant polymer gel is then chopped, dried and ground to its final granule size. Any treatments to enhance performance characteristics of the SAP are usually accomplished after the final granule size is created.

Superabsorbent polymers can also be made by suspension polymerization. This process suspends the water-based reactant in a hydrocarbon-based solvent. The net result is that the suspension polymerization creates the primary polymer particle in the reactor rather than mechanically in post-reaction stages. Performance enhancements can also be made during, or just after, the reaction stage.

The superabsorbent polymer can have a water-absorbing capacity ranging from 20 to 2000 times its own weight (i.e., 20 g to 2000 g of water absorbed per gram of absorbent polymer), from 30 to 1500 times and also ranging from 50 to 1000 times, and about 400 times. These water-absorbing characteristics are defined at standard temperature (25°C.) and pressure (760 mm Hg, i.e. 100 000 Pa) conditions and for distilled water. The value of the water-absorbing capacity of a polymer can be determined by dispersing 0.5 g of polymer(s) in 150 g of a water solution, by waiting 20 minutes, by filtering the nonabsorbed solution through a 150 μ m filter for 20 minutes and by weighing the nonabsorbed water.

The superabsorbent polymer used in the composition of the invention can be provided in the form of particles which, once hydrated, swell with the formation of soft beads having a number-average diameter of about 10 μ m to about 1000 μ m.

The superabsorbent polymers used may be crosslinked acrylic homo- or copolymers which can be neutralized and also can be provided in the particulate form.

Suitable polymers can be chosen from: crosslinked sodium polyacrylates, such as, for example, those sold under the names Octacare X100, X110 and RM100 by Avecia, those sold
5 under the names Flocare GB300 and Flosorb 500 by SNF, those sold under the names Luquasorb 1003, Luquasorb 1010, Luquasorb 1280 and Luquasorb 1100 by BASF, those sold under the names Water Lock G400 and G430 (INCI name: Acrylamide/Sodium Acrylate Copolymer) by Grain Processing, or Aqua Keep 10 SH NF, Aqua Keep 10 SH NFC, sodium acrylate crosspolymer-2, provided by Sumitomo Seika, starches grafted by an acrylic polymer
10 (homopolymer or copolymer) and by sodium polyacrylate, such as those sold under the names Sanfresh ST-100C, ST100MC and IM-300MC by Sanyo Chemical Industries (INCI name: Sodium Polyacrylate Starch), hydrolysed starches grafted by an acrylic polymer (homopolymer or copolymer), the acryloacrylamide/sodium acrylate copolymer, such as those sold under the names Water Lock A-240, A-180, B-204, D-223, A-100, C-200 and D-223 by Grain Processing
15 (INCI name: Starch/Acrylamide/Sodium Acrylate Copolymer),

The superabsorbent polymer can be a sodium polyacrylate starch that in its non-swollen state exhibits a number-average size of less than or equal to from about 100 μm , to less than or equal to about 50 μm , for example ranging from about 2 μm to about 100 μm , with a median
20 particle size of about 25, or in the range of about about 2 μm to about about 40 μm with a median particle size of about 12. The viscosity of a solution in 1% water can be in the range of 20 to 30 Pas, and in the range of 22 to 29 Pas, at a pH of 4, and in the range of 23 to 28 Pas, at a pH of 7. Suitable superabsorbent polymers include Makimousse 12 and Makimousse 25 supplied by Kobo Products Inc.

The superabsorbent polymer can be present in the composition of the invention in a
25 content as active material ranging, for example, from about 0.01 to 10% by weight, from about 0.05 to 6% by weight, from about 0.1 to 4% by weight, from about 0.1 to 3% by weight, and from about 0.1 to 2% by weight, with respect to the total weight of the composition.

Silicone Elastomer

30 The composition of the present invention comprises a silicone elastomer, useful for achieving the alignment of hair fibers resulting in improved shiny appearance. In addition, it provides a pleasant feel in use and upon application. One non-limiting example of useful silicone elastomers is crosslinked organopolysiloxane (or siloxane) elastomers, as described in U.S.

patent publication 2003/0049212A1. The elastomers may comprise emulsifying and non-emulsifying silicone elastomers. "Emulsifying," as used herein, means crosslinked organopolysiloxane elastomers having at least one polyoxyalkylene (e.g., polyoxyethylene or polyoxypropylene) or polyglycerin moiety, whereas "non-emulsifying" means crosslinked
5 organopolysiloxane elastomers essentially free of polyoxyalkylene or polyglycerin moieties.

The composition of the present invention may comprise from about 0.1% to about 70%, and from about 2% to about 60%, and from about 30% to about 50% of a non-emulsifying crosslinked organopolysiloxane elastomer. Non-limiting examples of suitable non-emulsifying crosslinked organopolysiloxane elastomers include dimethicone crosspolymers,
10 dimethicone/vinyl dimethicone crosspolymers, and copolymers, derivatives and mixtures thereof, supplied by Dow Corning™ (e.g. DC 9040, 9041, 9045, 8509, 9546, 9506); C30-45 alkyl cetearyl dimethicone crosspolymer, cetearyl dimethicone crosspolymer, and copolymers, derivatives and mixtures thereof, supplied by Momentive™ (e.g. SFE839, Velvesil™ 125 and Velvesil™ DM); dimethicone/phenyl vinyl dimethicone crosspolymer, vinyl dimethicone/lauryl
15 dimethicone crosspolymer, trifluoropropyl dimethicone/trifluoropropyl divinyl dimethicone crosspolymer, and copolymers, derivatives and mixtures thereof, supplied by Shin Etsu™ (KSG-15, -15AP, -16, -17, -18, -41, -42, -43, -44, -51, -103), and the Grant Industries line of elastomers, available as GRANSIL™.

The composition of the present invention may comprise from about 0.1% to about 70%,
20 and alternatively from about 2% to about 60%, of an emulsifying crosslinked organopolysiloxane elastomer, described in US Patents 5,412,004; 5,837,793; and 5,811,487. Non-limiting examples of suitable emulsifying elastomers include PEG-12 dimethicone crosspolymers, dimethicone/PEG-10/15 crosspolymer, dimethicone/PEG-10 crosspolymer, PEG-15/lauryl dimethicone crosspolymer, trifluoropropyl dimethicone/PEG-10 crosspolymer,
25 dimethicone/polyglycerin-3 crosspolymer, lauryl dimethicone/polyglycerin-3 crosspolymer, all supplied by Shin Etsu™ (KSG-24, -21/210, -31/310, -32/320, -33/330, -34/340, -710, -810, -820, -830, and -840); polyoxyalkylene-modified elastomers formed from divinyl compounds, e.g. siloxane polymers with at least two free vinyl groups bonded via Si-H linkages on a polysiloxane backbone.

30 Suitable silicone elastomers include many commercial materials. An exemplary polyoxyethylene silicone elastomer includes dimethicone/PEG-10/15 crosspolymer (KSG-210 from Shin-Etsu Chemical Co, Ltd.).

Examples of alkyl-containing polyoxyethylene silicone elastomers include PEG-15 lauryl dimethicone crosspolymer (KSG-310, KSG-320, KSG-330, & KSG-340 from Shin-Etsu Chemical Co., Ltd.).

An example of polyglycerin-modified silicone elastomers includes dimethicone/
5 polyglycerin-3 crosspolymer (KSG-710 from Shin-Etsu Chemical Co., Ltd.).

Examples of alkyl-containing polyglycerin-modified silicone elastomers include lauryl dimethicone/polyglycerin-3 crosspolymer (KSG-810, KSG-820, KSG-830, & KSG-840 from Shin-Etsu Chemical Co., Ltd.).

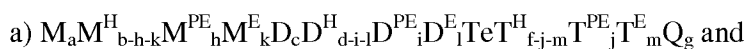
Examples of polyoxypropylene silicone elastomer include dimethicone/bis-isobutyl PPG-
10 20 crosspolymer (Dow Corning EL-8050, EL-8051, & EL-8052 from Dow Corning Corp.).

In some embodiments, the silicone elastomer is chosen from alkyl dimethicone/polyglycerin crosspolymers, dimethicone/polyglycerin crosspolymers, dimethicone/poly(propylene glycol) crosspolymers, dimethicone/poly(ethylene glycol) crosspolymers, alkyl dimethicone/poly(propylene glycol) crosspolymers, alkyl
15 dimethicone/poly(ethylene glycol) crosspolymers, and alkyl dimethicone crosspolymers.

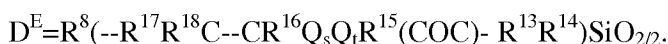
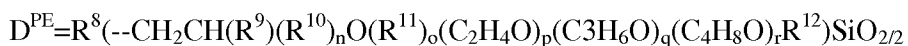
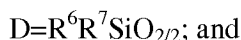
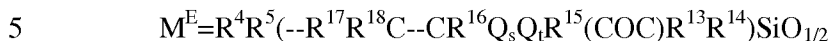
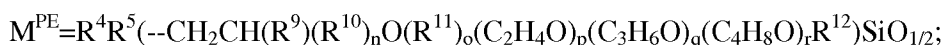
Additional Thickening Agents

The composition of the present invention may include one or more additional thickening agents. The composition of the present invention may comprise from about 0.1% to about 5%,
20 or, alternatively, from about 0.2% to about 2%, of a thickening agent when present. Suitable classes of thickening agents include but are not limited to carboxylic acid polymers, polyacrylamide polymers, sulfonated polymers, copolymers thereof, hydrophobically modified derivatives thereof, and mixtures thereof.

A thickener suitable for use in the present invention is an acrylate cross linked silicone
25 copolymer network (also sometimes referred to as “polyacrylate siloxane copolymer network”) and its method of making are disclosed in US Patent Publication 2008/0051497 A1, Lu et. al, which published on February 28, 2008. These copolymers comprise the reaction product of:



b) a stoichiometric or super-stoichiometric quantity of acrylate where:



15 where $R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8$ and R^9 are each independently selected from the group of monovalent hydrocarbon radicals having from 1 to 60 carbon atoms;

R^9 is H or a 1 to 6 carbon atom alkyl group; R^{10} is a divalent alkyl radical of 1 to 6 carbons;

20 R^{11} is selected from the group of divalent radicals consisting of $--C_2H_4O--$, $--C_3H_6O--$, and $--C_4H_8O--$; R^{12} is H, a monofunctional hydrocarbon radical of 1 to 6 carbons, or acetyl; $R^{13}, R^{14}, R^{15}, R^{16}, R^{17}$ and R^{18} are each independently selected from the group of hydrogen and monovalent hydrocarbon radicals having from one to sixty carbon atoms.

25 Q_t is a di- or trivalent hydrocarbon radical having from one to sixty carbon atoms, Q_s is a divalent hydrocarbon radical having from one to sixty carbon atoms subject to the limitation that when Q_t is trivalent R^{14} is absent and Q_s forms a bond with the carbon bearing R^{13} where R^{16} and R^{18} may be either cis- or trans- to each other; the subscript a may be zero or positive subject to the limitation that when the subscript a is zero, b must be positive; the subscript b may be zero or positive subject to the limitation that when b is zero, the subscript a must be positive; the subscript c is positive and has a value ranging from about 5 to about 1,000; the subscript d is positive and has a value ranging from about 3 to about 400; the subscript e is zero or positive and has a value ranging from 0 to about 50; the subscript f is zero or positive and has a value ranging from 0 to about 30; the subscript g is zero or positive and has a value ranging from 0 to about 20; the subscript h is zero or positive and has a value ranging from 0 to about 2 subject to the limitation that the sum of the subscripts h, i and j is positive; the subscript i is zero or positive

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and has a value ranging from 0 to about 200 subject to the limitation that the sum of the subscripts h, i and j is positive; the subscript j is zero or positive and has a value ranging from 0 to about 30 subject to the limitation that the sum of the subscripts h, i and j is positive; the subscript k is zero or positive and has a value ranging from 0 to about 2 subject to the limitation
5 that the sum of the subscripts k, l and m is positive; the subscript l is zero or positive and has a value ranging from 0 to about 200 subject to the limitation that the sum of the subscripts k, l and m is positive; the subscript m is zero or positive and has a value ranging from 0 to about 30 subject to the limitation that the sum of the subscripts k, l and m is positive; the subscript n is zero or one; the subscript o is zero or one; the subscript p is zero or positive and has a value
10 ranging from 0 to about 100 subject to the limitation that $(p+q+r)>0$; the subscript q is zero or positive and has a value ranging from 0 to about 100 subject to the limitation that $(p+q+r)>0$; the subscript r is zero or positive and has a value ranging from 0 to about 100 subject to the limitation that $(p+q+r)>0$; the subscript s is zero or one; the subscript t is zero or one; and
c) a free radical initiator.

15 As used herein, integer values of stoichiometric subscripts refer to molecular species and non-integer values of stoichiometric subscripts refer to a mixture of molecular species on a molecular weight average basis, a number average basis or a mole fraction basis. The phrases sub-stoichiometric and super stoichiometric refer to relationships between reactants. Sub stoichiometric refers to a quantity of reactant that is less than the quantity of reactant required for
20 full stoichiometric reaction of a substrate moiety with that reactant. Super stoichiometric refers to a quantity of reactant that is more than that quantity of reactant required for full stoichiometric reaction of a substrate moiety with that reactant. As used herein "super stoichiometric" can under some circumstances be equivalent to an excess that is either a stoichiometric excess, i.e. a whole number multiple of a stoichiometric quantity, or a non-stoichiometric excess.

25 As used herein the word "acrylate" is a collective noun for the following chemical species: acrylic acid and methacrylic acid or ester derivatives thereof such as methyl, ethyl, butyl, amyl, 2-ethylhexyl, cyclohexyl, vinyl, ally, hydroxyethyl, perfluoroethyl, isobornyl, phenoxyethyl, tetraethylene glycol, tripropylene glycol, trimethylolpropane, polyoxyalkylene, organic modified polysiloxane (for example, the acrylated hydrophilic polysiloxane used as the
30 emulsion precursor in U.S. Pat. No. 6,207,782), anionic acrylates/methacrylates such as sulfate, sulfonate or phosphate functionalized acrylate or mixtures thereof and any catalyst necessary for reaction with the epoxy or oxirane group. A single acrylate or various combinations of acrylates

and methacrylates may be employed. A preferred acrylate cross linked silicone copolymer is a polyacrylate cross polymer from Momentive.

Suitable thickening agents include carboxylic acid polymers such as the carbomers (*e.g.*, the CARBOPOL[®] 900 series such as CARBOPOL[®] 954). Other suitable carboxylic acid
5 polymeric agents include copolymers of C₁₀₋₃₀ alkyl acrylates with one or more monomers of acrylic acid, methacrylic acid, or one of their short chain (*i.e.*, C₁₋₄ alcohol) esters, wherein the crosslinking agent is an allyl ether of sucrose or pentaerytritol. These copolymers are known as acrylates/C₁₀₋₃₀ alkyl acrylate crosspolymers and are commercially available as CARBOPOL[®] 1342, CARBOPOL[®] 1382, PEMULEN TR-1, and PEMULEN TR-2, from Noveon, Inc.

10 Other suitable thickening agents include the polyacrylamide polymers and copolymers. An exemplary polyacrylamide polymer has the CTFA designation “polyacrylamide and isoparaffin and laureth-7” and is available under the trade name SEPIGEL 305 from Seppic Corporation (Fairfield, N.J.). Other polyacrylamide polymers useful herein include multi-block copolymers of acrylamides and substituted acrylamides with acrylic acids and substituted acrylic
15 acids. Commercially available examples of these multi-block copolymers include HYPAN SR150H, SS500V, SS500 W, SSSA100H, from Lipo Chemicals, Inc., (Patterson, N.J.).

Other suitable thickening agents useful herein are sulfonated polymers such as the CTFA designated sodium polyacryloyldimethyl taurate available under the trade name Simulgel 800 from Seppic Corp. and Viscolam At 100 P available from Lamberti S.p.A. (Gallarate, Italy).
20 Another commercially available material comprising a sulfonated polymer is Sepiplus 400 available from Seppic Corp.

“Gum” materials are also suitable for use herein. Gums include acacia, agar, algin, alginic acid, ammonium alginate, amylopectin, calcium alginate, calcium carrageenan, carnitine, carrageenan, dextrin, gelatin, gellan gum, guar gum, guar hydroxypropyltrimonium chloride,
25 hectorite, hyaluronic acid, hydrated silica, hydroxypropyl chitosan, hydroxypropyl guar, karaya gum, kelp, locust bean gum, natto gum, potassium alginate, potassium carrageenan, propylene glycol alginate, sclerotium gum, sodium carboxymethyl dextran, sodium carrageenan, tragacanth gum, xanthan gum, derivatives thereof and mixtures thereof.

Natural gums are polysaccharides of natural origin, capable of causing a large viscosity
30 increase in solution, even at small concentrations. They can be used as thickening agents, gelling agents, emulsifying agents, and stabilizers. Most often these gums are found in the woody elements of plants or in seed coatings. Natural gums can be classified according to their origin. They can also be classified as uncharged or ionic polymers (polyelectrolytes), examples of which

include the following. Natural gums obtained from seaweeds, such as: agar; alginic acid; sodium alginate; and carrageenan. Natural gums obtained from non-marine botanical resources include: gum arabic, from the sap of *Acacia* trees; gum ghatti, from the sap of *Anogeissus* trees; gum tragacanth, from the sap of *Astragalus* shrubs; karaya gum, from the sap of *Sterculia* trees.

5 Examples of uncharged gums include: guar gum, from guar beans, locust bean gum, from the seeds of the carob tree; beta-glucan, from oat or barley bran; chicle gum, an older base for chewing gum obtained from the chicle tree; dammar gum, from the sap of Dipterocarpaceae trees; glucomannan from the konjac plant; mastic gum, a chewing gum from ancient Greece obtained from the mastic tree; psyllium seed husks, from the *Plantago* plant; spruce gum, a
10 chewing gum of American Indians obtained from spruce trees; tara gum, from the seeds of the tara tree. Natural gums produced by bacterial fermentation include gellan gum and xanthan gum.

Clays may be useful to provide structure or thickening. Suitable clays can be selected, e.g., from montmorillonites, bentonites, hectorites, attapulgites, sepiolites, laponites, silicates and mixtures thereof. Suitable water dispersible clays include bentonite and hectorite (such as
15 Bentone EW, LT from Rheox); magnesium aluminum silicate (such as Veegum from Vanderbilt Co.); attapulgite (such as Attasorb or Pharamasorb from Engelhard, Inc.); laponite and montmorillonite (such as Gelwhite from ECC America); and mixtures thereof.

Suitable thickening agents include cellulose and modified cellulosic compositions such as, carboxymethyl hydroxyethylcellulose, cellulose acetate propionate carboxylate,
20 hydroxyethylcellulose, hydroxyethyl ethylcellulose, hydroxypropylcellulose, hydroxypropyl methylcellulose, methyl hydroxyethylcellulose, microcrystalline cellulose, sodium cellulose sulfate, and mixtures thereof. Also useful herein are the alkyl substituted celluloses. In these polymers some portion of the hydroxy groups of the cellulose polymer are hydroxyalkylated (preferably hydroxyethylated or hydroxypropylated) to form a hydroxyalkylated cellulose which
25 is then further modified with a C₁₀-C₃₀ straight chain or branched chain alkyl group through an ether linkage. Typically these polymers are ethers of C₁₀-C₃₀ straight or branched chain alcohols with hydroxyalkylcelluloses. Examples of alkyl groups useful herein include those selected from the group consisting of stearyl, isostearyl, lauryl, myristyl, cetyl, isocetyl, cocoyl (i.e. alkyl groups derived from the alcohols of coconut oil), palmityl, oleyl, linoleyl, linolenyl, ricinoleyl,
30 behenyl, and mixtures thereof. Preferred among the alkyl hydroxyalkyl cellulose ethers is the material given the CTFA designation cetyl hydroxyethylcellulose, which is the ether of cetyl alcohol and hydroxyethylcellulose. This material is sold under the tradename Natrosol® CS Plus from Aqualon Corporation.

Humectants

The compositions of the present invention may include one or more humectants. The composition of the present invention may comprise from about 1% to about 30%; from about 2% to about 20%; or, from about 3% to about 15% of the humectant, when present. Exemplary
5 suitable class of humectants is polyhydric alcohols. Polyhydric alcohols include, but are not limited to polyalkylene glycols and alkylene polyols and their derivatives, including propylene glycol, dipropylene glycol, polypropylene glycol, polyethylene glycol and derivatives thereof; sorbitol; hydroxypropyl sorbitol; erythritol; threitol; pentaerythritol; xylitol; glucitol; mannitol; hexylene glycol; butylene glycol (*e.g.*, 1,3-butylene glycol); pentylene glycol; hexane triol (*e.g.*,
10 1,2,6-hexanetriol); glycerine; ethoxylated glycerine; and propoxylated glycerine.

Other suitable humectants include sodium 2-pyrrolidone-5-carboxylate, guanidine; glycolic acid and glycolate salts (*e.g.*, ammonium and quaternary alkyl ammonium); lactic acid and lactate salts (*e.g.*, ammonium and quaternary alkyl ammonium); aloe vera in any of its variety of forms (*e.g.*, aloe vera gel); hyaluronic acid and derivatives thereof (*e.g.*, salt derivatives
15 such as sodium hyaluronate); lactamide monoethanolamine; acetamide monoethanolamine; urea; panthenol; sodium pyroglutamate (NaPCA), water-soluble glyceryl poly(meth)acrylate lubricants (such as Hispagel[®]) and mixtures thereof.

Oil Phase

The aqueous phase of this invention may be combined with, or emulsified with an oil
20 phase to form an oil-in-water emulsion or a water-in-oil-in-water emulsion. Oils may be used to solubilize, disperse, or carry materials that are not suitable for water or water soluble solvents. Oils may be fluid at room temperature. The oils may be volatile or nonvolatile. "Non-volatile" means a material that exhibit a vapor pressure of no more than about 0.2 mm Hg at 25°C at one atmosphere and/or a material that has a boiling point at one atmosphere of at least about 300°C.
25 "Volatile" means that the material exhibits a vapor pressure of at least about 0.2 mm of mercury at 20° C. Volatile oils may be used to provide a lighter feel when a heavy, greasy film is undesirable. Suitable oils include hydrocarbons, esters, amides, ethers, silicones, and mixtures thereof. The composition of the present invention may comprise from about 0% to about 5%; from about 1% to about 4%; or, from about 2% to about 3% of the oil phase.

30 Suitable hydrocarbon oils include straight, branched, or cyclic alkanes and alkenes. The chain length may be selected based on desired functional characteristics such as volatility. Suitable volatile hydrocarbons may have between 5-20 carbon atoms or, alternately, between 8-16 carbon atoms.

Other suitable oils include esters. These esters include esters with hydrocarbyl chains derived from fatty acids or alcohols (*e.g.*, mono-esters, polyhydric alcohol esters, and di- and tri-carboxylic acid esters). The hydrocarbyl radicals of the esters hereof may include or have covalently bonded thereto other compatible functionalities, such as amides and alkoxy moieties
5 (*e.g.*, ethoxy or ether linkages, etc.). Exemplary esters include, but are not limited to, isopropyl isostearate, hexyl laurate, isohexyl laurate, isohexyl palmitate, isopropyl palmitate, decyl oleate, isodecyl oleate, hexadecyl stearate, decyl stearate, isopropyl isostearate, dihexyldecyl adipate, lauryl lactate, myristyl lactate, cetyl lactate, oleyl stearate, oleyl oleate, oleyl myristate, lauryl acetate, cetyl propionate, C12-15 alkyl benzoate, butyloctyl salicylate, phenylethyl benzoate,
10 dicaprylyl carbonate, dioctyl malate, dicaprylyl maleate, isononyl isononanoate, propylene glycol dicaprate, diisopropyl adipate, dibutyl adipate, and oleyl adipate. Other suitable esters are further described in the Personal Care Product Council's *International Cosmetic Ingredient Dictionary and Handbook*, Thirteenth Edition, 2010, under the functional category of "Esters." Other esters suitable for use in the personal care composition include those known as polyhydric
15 alcohol esters and glycerides.

Other suitable oils include amides. Amides include compounds having an amide functional group while being liquid at 25 °C and insoluble in water. Suitable amides include, but are not limited to, N-acetyl-N-butylaminopropionate, isopropyl N-lauroylsarcosinate, butylphthalimide, isopropylphthalimide, and N,N-diethyltoluamide. Other suitable amides are
20 disclosed in U.S. Patent No. 6,872,401.

Other suitable oils include ethers. Suitable ethers include saturated and unsaturated fatty ethers of a polyhydric alcohol, and alkoxyated derivatives thereof. Exemplary ethers include, but are not limited to, C₄₋₂₀ alkyl ethers of polypropylene glycols, and di-C₈₋₃₀ alkyl ethers. Suitable examples of these materials include PPG-14 butyl ether, PPG-15 stearyl ether, PPG-11
25 stearyl ether, dioctyl ether, dodecyl octyl ether, and mixtures thereof.

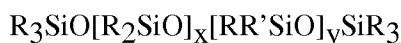
Suitable silicone oils include polysiloxanes. Polysiloxanes may have a viscosity of from about 0.5 to about 1,000,000 centistokes at 25°C. Such polysiloxanes can be represented by the general chemical formula:



30 wherein R is independently selected from hydrogen or C₁₋₃₀ straight or branched chain, saturated or unsaturated alkyl, phenyl or aryl, trialkylsiloxy; and x is an integer from 0 to about 10,000, chosen to achieve the desired molecular. In certain embodiments, R is hydrogen, methyl, or ethyl. Commercially available polysiloxanes include the polydimethylsiloxanes, which are also

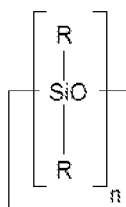
known as dimethicones, examples of which include the DM-Fluid series from Shin-Etsu, the Vicasil[®] series sold by Momentive Performance Materials Inc., and the Dow Corning[®] 200 series sold by Dow Corning Corporation. Specific examples of suitable polydimethylsiloxanes include Dow Corning[®] 200 fluids (also sold as Xiameter[®] PMX-200 Silicone Fluids) having viscosities
 5 of 0.65, 1.5, 50, 100, 350, 10,000, 12,500 100,000, and 300,000 centistokes.

Suitable dimethicones include those represented by the chemical formula:



wherein R and R' are each independently hydrogen or C₁₋₃₀ straight or branched chain, saturated or unsaturated alkyl, aryl, or trialkylsiloxy; and x and y are each integers of 1 to 1,000,000
 10 selected to achieve the desired molecular weight. Suitable silicones include phenyl dimethicone (Botansil[™] PD-151 from Botanigenics, Inc.), diphenyl dimethicone (KF-53 and KF-54 from Shin-Etsu), phenyl trimethicone (556 Cosmetic Grade Fluid from Dow Corning), or trimethylsiloxyphenyl dimethicone (PDM-20, PDM-200, or PDM-1000 from Wacker-Belsil). Other examples include alkyl dimethicones wherein at least R' is a fatty alkyl (*e.g.*, C₁₂₋₂₂). A
 15 suitable alkyl dimethicone is cetyl dimethicone, wherein R' is a straight C₁₆ chain and R is methyl. Cetyl dimethicone, is available as s 2502 Cosmetic Fluid from Dow Corning or as Abil Wax 9801 or 9814 from Evonik Goldschmidt GmbH.

Cyclic silicones are one type of silicone oil that may be used in the composition. Such silicones have the general formula:



wherein R is independently selected from hydrogen or C₁₋₃₀ straight or branched chain, saturated or unsaturated alkyl, phenyl or aryl, trialkylsiloxy; and where n=3-8 and mixtures thereof. Commonly, a mixture of cyclomethicones is used where n is 4, 5, and/or 6. Commercially
 20 available cyclomethicones include Dow Corning UP-1001 Ultra Pure Fluid (*i.e.* n=4), Dow Corning XIAMETER[®] PMX-0245 (*i.e.* n=5), Dow Corning XIAMETER[®] PMX-0245 (*i.e.* n=6),
 25 Dow Corning 245 fluid (*i.e.* n=4 and 5), and Dow Corning 345 fluid (*i.e.* n=4, 5, and 6).

Emulsifiers

The compositions of this invention may comprise an emulsifier. An emulsifier is particularly suitable when the phase is in the form of an emulsion or if immiscible materials are
 30 being combined. The phase may comprise from about 0.01%, 0.05%, or 0.1% to about 10%,

5%, or 2% emulsifier. Emulsifiers may be nonionic, anionic or cationic. Non-limiting examples of emulsifiers are disclosed in U.S. Patent 3,755,560, U.S. Patent 4,421,769, and McCutcheon's, *Emulsifiers and Detergents*, 2010 Annual Ed., published by M. C. Publishing Co.. Other suitable emulsifiers are further described in the Personal Care Product Council's
5 *International Cosmetic Ingredient Dictionary and Handbook*, Thirteenth Edition, 2006, under the functional category of "Surfactants - Emulsifying Agents."

Suitable emulsifiers include the following classes of ethers and esters: ethers of polyglycols and of fatty alcohols, esters of polyglycols and of fatty acids, ethers of polyglycols and of fatty alcohols which are glycosylated, esters of polyglycols and of fatty acids which are
10 glycosylated, ethers of C₁₂₋₃₀ alcohols and of glycerol or of polyglycerol, esters of C₁₂₋₃₀ fatty acids and of glycerol or of polyglycerol, ethers of oxyalkylene-modified C₁₂₋₃₀ alcohols and of glycerol or polyglycerol, ethers of C₁₂₋₃₀ fatty alcohols comprising and of sucrose or of glucose, esters of sucrose and of C₁₂₋₃₀ fatty acids, esters of pentaerythritol and of C₁₂₋₃₀ fatty acids, esters of sorbitol and/or of sorbitan and of C₁₂₋₃₀ fatty acids, ethers of sorbitol and/or of sorbitan and of
15 alkoxyated sorbitan, ethers of polyglycols and of cholesterol, esters of C₁₂₋₃₀ fatty acids and of alkoxyated ethers of sorbitol and/or sorbitan, and combinations thereof.

Silicone emulsifiers may be use in the phase. Linear or branched type silicone emulsifiers may also be used. Particularly useful silicone emulsifiers include polyether modified silicones such as KF-6011, KF-6012, KF-6013, KF-6015, KF-6015, KF-6017, KF-6043, KF-
20 6028, and KF-6038 and polyglycerolated linear or branched siloxane emulsifiers such as KF-6100, KF-6104, and KF-6105; all from Shin Etsu.

Solvents

Solvents may also be used. Suitable examples of water-miscible solvents include those selected from the group consisting of alcohols having from about 1 to about 6 carbon atoms,
25 polyols having from about 1 to about 10 carbon atoms, ketones having from about 3 to about 4 carbon atoms, C1-C6 esters of C1-C6 alcohols, sulfoxides, amides, carbonate esters, ethoxylated and propoxylated C1-C10 alcohols, lactones, pyrrollidones, and mixtures thereof. In one embodiment the water-miscible solvents are those selected from the group consisting of ethanol, 2-propanol, propylene glycol, butylene glycol, and mixtures thereof. The composition of the
30 present invention may comprise from about 0% to about 1%; or from about 0% to about 0.5% of a solvent.

Sugar Amines

The compositions of the present invention may also comprise a sugar amine, also known as amino sugars, and their salts, isomers, tautomers and derivatives. Sugar amines can be synthetic or natural in origin and can be used as pure compounds or as mixtures of compounds (e.g., extracts from natural sources or mixtures of synthetic materials). For example, glucosamine is generally found in many shellfish and can also be derived from fungal sources. Sugar amine compounds useful in the present invention include, for example, N-acetylglucosamine, and also those described in PCT Publication WO 02/076423 and U.S. Patent No. 6,159,485, issued to Yu, et al. In one embodiment, the composition comprises from about 0.01% to about 15%, from about 0.1% to about 10%, and from about 0.5% to about 5%, of the sugar amine.

Optional Ingredients

The compositions of the present invention further may comprise non-vitamin antioxidants and radical scavengers, hair growth regulators, flavonoids, minerals, preservatives, phytosterols and/or plant hormones, protease inhibitors, tyrosinase inhibitors, anti-inflammatory agents and N-acyl amino acid compounds. The composition of the present invention may comprise from about 0% to about 1%; or from about 0% to about 0.5% of an optional ingredient.

Suitable non-vitamin antioxidants and radical scavengers include, but are not limited to, BHT (butylated hydroxy toluene), L-ergothioneine (available as THIOTANE™); tetrahydrocurcumin, cetyl pyridinium chloride, carnosine, diethylhexyl syrinylidene malonate (available as OXYNEX™), hexadec-8-ene-1,16-dicarboxylic acid (octadecene dioic acid; ARLATONE™ Dioic DCA from Uniqema), ubiquinone (co-enzyme Q10), tea extracts including green tea extract, yeast extracts or yeast culture fluid (e.g., Pitera®), and combinations thereof.

Suitable hair growth regulators include, but are not limited to, hexamidine, butylated hydroxytoluene (BHT), hexanediol, panthenol and pantothenic acid derivates, their isomers, salts and derivatives, and mixtures thereof.

Suitable minerals include zinc, manganese, magnesium, copper, iron, selenium and other mineral supplements. "Mineral" is understood to include minerals in various oxidation states, mineral complexes, salts, derivatives, and combinations thereof.

Suitable examples of plant sterols (phytosterols) and/or plant hormones include, but are not limited to, sitosterol, stigmasterol, campesterol, brassicasterol, kinetin, zeatin, and mixtures thereof.

Suitable protease inhibitors include, but are not limited to, hexamidine, vanillin acetate, menthyl anthranilate, soybean trypsin inhibitor, Bowman-Birk inhibitor, and mixtures thereof.

Suitable tyrosinase inhibitors include, but are not limited to, sinablanca (mustard seed extract), tetrahydrocurcumin, cetyl pyridinium chloride, and mixtures thereof.

5 Suitable anti-inflammatory agents include, but are not limited to, glycyrrhizic acid (also known as glycyrrhizin, glycyrrhixinic acid, and glycyrrhetic acid glycoside), glycyrrhetic acid, other licorice extracts, and combinations thereof.

 Suitable N-acyl amino acid compounds include, but are not limited to, N-acyl phenylalanine, N-acyl tyrosine, their isomers, including their D and L isomers, salts, derivatives,
10 and mixtures thereof. An example of a suitable N-acyl amino acid is N-undecylenoyl-L-phenylalanine is commercially available under the tradename SEPIWHITE® from Seppic (France).

 Other useful hair care actives include moisturizing and/or conditioning agents, such as glycerol, petrolatum, caffeine, and urea; yeast extracts (for example, Pitera™);
15 dehydroepiandrosterone (DHEA), its analogs and derivatives; exfoliating agents, including alpha- and beta-hydroxyacids, alpha-keto acids, glycolic acid and octanoyl salicylate; antimicrobial agents; antidandruff agents such as piroctone olamine, 3,4,4'-trichlorocarbanilide (trichlosan), triclocarban and zinc pyrithione; dimethyl aminoethanol (DMAE); creatine; such as dihydroxy acetone (DHA); isomers, salts, and derivatives of any of the foregoing; and mixtures
20 thereof.

 The composition of the present invention may comprise from about 0.00001% to about 25%, and alternatively from about 0.01% to about 10%, of a colorant. Non-limiting classes of suitable colorants include, but are not limited to organic and/or inorganic pigments, natural
25 and/or synthetic dyes, lakes, including FD&C and/or D&C lakes and blends, and mixtures of any of the foregoing.

 Non-limiting examples of suitable colorants include iron oxides, ferric ammonium ferrocyanide, manganese violet, ultramarine blue, and chromium oxide, phthalocyanine blue and green pigment, encapsulated dyes, inorganic white pigments, for example TiO₂, ZnO, or ZrO₂,
30 FD&C dyes, D&C dyes, and mixtures thereof.

Oil control agents

Examples

Compositions:

	% Wt	% Wt
SFE839¹	42.7273	42.7273
Glycerine	0.30	0.30
Planterin 2000N UP²	0.29	0.29
Water	56.68	56.10
Makimousse-12³	0.00	0.58

5

Materials used:

¹ dimethicone crosspolymer from Momentive Performance Chemicals.

Glycerin from Sigma Aldrich was used.

² decyl glucoside from the Cognis Corp.

10 ³ Sodium polyacrylate starch, from Kobo Products Inc.

Hair switches used were mildly damaged hair ponytails that can be sourced from any hair sourcing agency.

Process of Making:

15 Option1 and 2 Treatment: First prepare the glycerin & surfactant premix by agitating equal parts with stirring. The SFE839 is added to this mixture & mixed via speed mixer @3100 rpm for 5-10 minutes or until the elastomer gel particles are homogeneously dispersed. Disperse the elastomer mixture in water and add 5-10g of the mixture to the water and speed mix for 5 minutes @3100 rpm. Repeat this step until all the SFE839 elastomer mixture has been dispersed in the water.

20 Speed mix the final dispersion for another 5-10 minutes @3100 rpm. No thickener or fragrance technologies are needed for this option. Once homogenous distribution of the elastomer is confirmed the mixture is used for application to the hair switches.

Option2 Treatment: First prepare the glycerin, surfactant and SFE839 premix similar to above.

25 Add Makimousse to water and stir with a spatula to break the Makimousse clusters as much as possible. Then speed mix the thickened water for 2 minutes @ 2300 rpm and add into the

SFE839 premix. Mix the final composition for 2 minutes @ 2300 rpm the mixture becomes a thick colorless opaque cream.

Measurement Methods:

5

Control Head = Shampoo/ no Conditioner/no treatment
Option 1 Shampoo/ no Conditioner/SFE839 treatment without Makimousse-12 applied on wet hair
Option 2 Shampoo/ no Conditioner/SFE839 treatment without Makimousse-12 applied on dry hair
Option 3 Shampoo/ no Conditioner/SFE839 treatment plus Makimousse-12 applied on wet hair
Option 4 Shampoo/ no Conditioner/SFE839 treatment without Makimousse-12 applied on dry hair

Preparation of treatments

Hair switches used in this experiment are General Population Brown 4g/8" supplied by IHL.

10 Target amounts of elastomer emulsion to add to a hair switch: 0.6g

Treatment procedure

1. Shampoo hair using standard protocols.
 2. Suspend the hair switch and place a tared plastic weighing boat underneath to catch the run off material. Measure appropriate mass of the treatment into gloved hand or syringe & gently massage the treatment into wet or dry hair (depending on the option being worked on) for 30 seconds. Ensure that treatment is worked into as much of the hair fiber surfaces as possible then gently comb through the hair once. Weigh and record mass of the contents in the weighing boat.
- 15

3. Suspend the hair & air dry at ambient temperature (record temperature & relative humidity if possible).

Methods of evaluation:

- 5
 1. Gravimetric analysis
 2. Elemental analysis to quantify Silicone on hair

SFE839 Elastomer without Makimousse applied on wet hair			
	Amount of treatment applied on wet hair switch (g)	Amount of treatment dripped off (g)	Amount of treatment that stayed on hair (g)
	0.60	0.01	0.59
	0.60	0.04	0.56
	0.60	0.01	0.59
Average	0.60	0.02	0.58
STDEV	0.00	0.02	0.02

SFE839 Elastomer with Makimousse applied on wet hair			
	Amount of treatment applied on wet hair switch (g)	Amount of treatment dripped off (g)	Amount of treatment that stayed on hair (g)
	0.60	0.00	0.60
	0.60	0.00	0.60
	0.60	0.00	0.60
Average	0.60	0.00	0.60
STDEV	0.00	0.00	0.00

SFE839 Elastomer without Makimousse applied on dry hair			
	Amount of treatment applied on wet hair switch (g)	Amount of treatment dripped off (g)	Amount of treatment that stayed on hair (g)
	0.60	0.02	0.58
	0.60	0.04	0.56
	0.60	0.10	0.50
Average	0.60	0.06	0.54
STDEV	0.00	0.04	0.04

SFE839 Elastomer with Makimousse applied on dry hair			
	Amount of treatment applied on wet hair switch (g)	Amount of treatment dripped off (g)	Amount of treatment that stayed on hair (g)
	0.60	0.00	0.60
	0.60	0.00	0.60
	0.60	0.00	0.60
Average	0.60	0.00	0.60
STDEV	0.00	0.00	0.00

Measuring Look Attributes

5 Treatment procedure

1. Shampoo hair using standard protocol.
2. Measure 10g of the treatment into gloved hand & gently massage the treatment into the hair for 30 seconds then gently comb through the hair once.
3. Suspend the hair & blow or air dry at ambient temperature (record temperature & relative humidity if possible).

10

Method of evaluation: Expert Panel Grading using an appearance grading scale

Appearance Grading Scale

5 **Example for Hair Shine**

0 = No Shine (non shiny-reflective/ very dull)

1 = Barely detectable shine (mostly non shiny-reflective strands)

10

2 = Slight shine (few shiny-reflective strands)

3 = Moderate shine (modest amount of shiny-reflective strands)

15

4 = Substantial shine (significant amount of shiny-reflective area)

5 = High shine (mostly shiny-reflective over all hair area)

6 = Extreme shine (entirely shiny-reflective hair)

20

Definitions

Shine = gloss/sheen reflected from the surface of the hair

Dull = lack of shine/gloss/sheen reflected from the surface of the hair

0 No Shine	1 Barely Detectable Shine	2 Slight Shine	3 Moderate Shine	4 Substantial Shine	5 High Shine	6 Extreme Shine
No Volume	Barely Detectable Volume	Slight Volume	Moderate Volume	Substantial Volume	High Volume	Extreme Volume
No Style/Look	Barely Detectable Style/Look	Slight Style/Look	Moderate Style/Look	Substantial Style/Look	High Style/Look	Extreme Style/Look

25

Data:

	Treatment amount 2.5g		Treatment amount 5g		Treatment amount 10g	
	SFE839		SFE839		SFE839	
	Scores	STDEV	Scores	STDEV	Scores	STDEV
Shine	3.29	1.05	2.79	0.92	3.36	1.42
Volume	2.43	0.92	2.21	1.40	1.86	1.11
Style / Look	2.18	1.09	1.61	1.29	2.11	1.52

The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as “40 mm” is intended to mean “about 40 mm.”

Every document cited herein, including any cross referenced or related patent or application, is hereby incorporated herein by reference in its entirety unless expressly excluded or otherwise limited. The citation of any document is not an admission that it is prior art with respect to any invention disclosed or claimed herein or that it alone, or in any combination with any other reference or references, teaches, suggests or discloses any such invention. Further, to the extent that any meaning or definition of a term in this document conflicts with any meaning or definition of the same term in a document incorporated by reference, the meaning or definition assigned to that term in this document shall govern.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

CLAIMS

What is claimed is:

1. A hair composition comprising:
 - a. from about 0.01% to about 10% of a superabsorbent polymer, by weight of the hair composition;
 - b. from about 0.1% to about 70%, of a silicone elastomer, by weight of the hair
5 composition;
 - c. from about 1% to about 30% of a humectant, by weight of the hair composition and
 - d. greater than about 20% water, by weight of the hair composition.
2. The hair composition of Claim 1 wherein the superabsorbent polymer is selected from the
10 group consisting of sodium polyacrylate, sodium polacrylate starch, sodium acrylates crosspolymer-2 and mixtures thereof.
3. The hair composition according to any preceding claims, comprising from about 0.05% to
15 about 6% of the superabsorbent polymer, preferably from about 0.1% to about 4% , more preferably from about 0.1% to about 3% of the superabsorbent polymer, more preferably from about 0.1% to about 2% of the superabsorbent polymer, by weight of the hair composition.
4. The hair composition according to any preceding claims, comprising from about 2% to
20 about 60% of the silicone elastomer, preferably from about 30% to about 50% of the silicone elastomer, by weight of the hair composition.
5. The hair composition of according to any preceding claims, comprising from about 2% to
25 about 20% of humectant, preferably from about 3% to about 15% of humectant, by weight of the hair composition, and wherein the humectant is glycerine.
6. The hair composition of according to any preceding claims, wherein the composition is mixed with an oil phase to form an oil- in-water or water-in-oil-in-water emulsion.
- 30 7. The hair composition according to any preceding claims, further comprising from about 0.01% to about 10% of an emulsifier, preferably from about 0.05% to about 5% of an

emulsifier, more preferably from about 0.1% to about 2% of an emulsifier, by weight of the hair composition.

8. The hair composition of according to any preceding claims, wherein the emulsifier is
5 selected from a group consisting of ethers of glycerol, polyglycerol, sucrose, glucose, or sorbitol; esters of glycerol, polyglycerol, sucrose, glucose, or sorbitol; and mixtures thereof.
9. The hair composition according to any preceding claims, further comprising a solvent
10 selected from the group consisting of alcohols having from about 1 to about 6 carbon atoms, polyols having from about 1 to about 10 carbon atoms, ketones having from about 3 to about 4 carbon atoms, C1-C6 esters of C1-C6 alcohols, sulfoxides, amides, carbonate esters, ethoxylated and propoxylated C1-C10 alcohols, lactones, pyrrolidones, ethanol, 2-propanol, propylene glycol, butylene glycol, and mixtures thereof.
- 15 10. The hair composition according to any preceding claims, further comprising an active or agent selected from a group consisting of sugar amines, vitamins, oil control agents, emollients, photosterols, hexamidine compounds, flavonoids, N-acyl amino acid compounds, peptides, particulate materials, anti-oxidants, radical scavengers, conditioning
20 agents, anti-inflammatory agents, botanical extracts, antimicrobial actives, antifungal actives, antibacterial actives, sensates, preservatives, anti-dandruff actives, substantivity polymers, detergent surfactants, and combinations thereof.
11. The hair composition of according to any preceding claims, wherein the oil phase is from
25 about 1% to about 60% of the emulsion, preferably from about 2% to about 30% of the emulsion, by weight of the hair composition.
12. The hair composition of according to any preceding claims, further comprising from about
30 0.01% to about 10% , preferably from about 0.05% to about 5%, more preferably from about 0.1% to about 2% of a material selected from the group consisting of gum, clay, cellulose, modified cellulosic composition, and mixtures thereof, by weight of the hair composition.
13. The hair composition according to any preceding claims, wherein the silicone elastomer is
35 a non-emulsifying elastomer selected from the group consisting of dimethicone crosspolymers, dimethicone/vinyl dimethicone crosspolymers, copolymers, and their derivatives, C30-45 alkyl cetearyl dimethicone crosspolymer, cetearyl dimethicone

crosspolymer, copolymers, and their derivatives, dimethicone/phenyl vinyl dimethicone crosspolymer, vinyl dimethicone/lauryl dimethicone crosspolymer, copolymers, and their derivatives and mixtures thereof.

- 5 14. The hair composition of according to any preceding claims, wherein the silicone elastomer
is an emulsifying elastomer selected from the group consisting of polyoxyethylene silicone
elastomer, polyglycerin-modified silicone elastomers, alkyl-containing polyoxyethylene
silicone elastomers, alkyl-containing polyglycerin-modified silicone elastomers,
polyoxypropylene silicone elastomer, and mixtures thereof.
- 10 15. A method of generating hair shine by applying to the surfaces of the hair the composition of
any of the preceding claims.