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(54) Title: RESHAPABLE HAIR STYLING COMPOSITION COMPRISING ACRYLIC EMULSIONS

(57) Abstract: A reshapable hair styling composition comprising, in a cosmetic vehicle appropriate for hair, at least one emulsion comprising at least one acrylic polymer comprising: (a) units derived from n-butyl acrylate monomers and (b) units derived from at least one monomer chosen from 2-hydroxy ethyl acrylate, 2-hydrocy ethyl methacrylate, and hydroxy propyl acrylate monomers.

RESHAPABLE HAIR STYLING COMPOSITION COMPRISING ACRYLIC EMULSIONS

The present invention relates to a reshapable hair styling composition.

Fixing the hairstyle is an important element in hair styling, and involves maintaining a shaping that has already been carried out, or in simultaneously shaping and fixing the hair.

In accordance with the invention, the term "hair styling composition" relates to any kind of hair composition that can be used to effect hair styling, for example fixing compositions, shampoos, conditioners, permanent waving compositions, hair care products, and hair treatment products.

The most prevalent hair styling compositions on the cosmetic market for shaping and/or maintaining the hairstyle are spray compositions comprising a solution, usually alcohol- or water-based, and one or more materials, generally polymer resins. One of the functions of polymer resins is to form links between the hairs, these materials also being called fixatives, in a mixture with various cosmetic adjuvants. This solution is generally packaged either in an appropriate aerosol container, which is pressurized with the aid of a propellant, or in a pump flask.

Other known hair styling compositions include styling gels and mousses, which are generally applied to the wetted hair before brushing or setting it. In contrast to the conventional aerosol lacquers, these compositions have the disadvantage that they do not allow the hair to be fixed in a shape created before their application. In

fact, these compositions are essentially aqueous and their application wets the hair and is therefore unable to maintain the initial shape of the hairstyle. In order to shape and fix the hairstyle, therefore, it is necessary to carry out subsequent brushing and/or drying. Such hair styling compositions all have the same disadvantage that they do not allow the hairstyle to be later modified to a desired shape, which is other than that formed initially, without starting the styling and fixing operations again. Moreover, under various kinds of stress, the hairstyle has a tendency to take on an undesirable permanent set, which cannot easily be modified. Also in the styling process, one desires hair conditioning benefits, such as ease of combing and soft hair feel appearance.

A subject of the invention is a reshapable hair styling composition comprising, in a cosmetic vehicle appropriate for hair, at least acrylic polymer comprising: (a) units derived from n-butyl acrylate monomers and (b) units derived from at least one monomer chosen from 2-hydroxy ethyl acrylate, 2-hydroxy ethyl methacrylate, and hydroxy propyl acrylate monomers.

Another subject of the invention is a reshapable hair styling composition comprising, in a cosmetic vehicle appropriate for hair, at least one emulsion comprising at least one acrylic polymer comprising: (a) units derived from n-butyl acrylate monomers and (b) units derived from at least one monomer chosen from 2-hydroxy ethyl acrylate, 2-hydroxy ethyl methacrylate, and hydroxy propyl acrylate monomers.

The term "reshapable" hair styling composition means a hair styling composition providing hair styling that can be restored or modified without new material or heat being applied. For example, in order to restore or modify the hairstyle in case of drooping or loss of setting (dishevelment), no new materials, such as water or any form of fixing agent, or heat are required. Thus, to provide a "reshapable" effect means to provide a hair styling that can be restored or modified without new material or heat being applied. The efficacy of the composition can be long lasting, such as 10-24 hours, giving rise to a durable styling effect. Other terms, which may be synonymous with reshapable, include repositionable, remoldable, restyleable, and remodellable.

As used herein, the term "emulsion" means a stable mixture of two or more immiscible liquids held in suspension. All emulsions comprise a continuous phase and a disperse phase.

As used herein, the term polyfunctional crosslinking agent@ means a crosslinking agent having an average functionality greater than 1, such as greater than 1.8, and further such as about 2.0 or greater. But the average functionality is less than about 6, such as less than about 4, and further such as about 3 or less.

In one embodiment of the invention, the at least one emulsion comprises at least one acrylic polymer comprising: (a) about 50 to about 90% by weight, such as about 70 to about 90% by weight units derived from n-butyl acrylate monomers and (b) about 10 to about 50%, such as about 10 to about 30% by weight of units derived

from at least one monomer chosen from 2-hydroxy ethyl acrylate, 2-hydroxy ethyl methacrylate, and hydroxy propyl acrylate monomers.

In one embodiment the at least one emulsion comprises at least one acrylic polymer further comprising up to about 50% by weight units derived from at least one co-polymerizable monomer. The at least one co-polymerizable monomer may be chosen from (i) alkylacrylate monomers, (ii) polar monomers and (iii) ethylenically unsaturated free radically polymerizable monomers. Alkylacrylate monomers may include methyl methacrylate, isobornyl acrylate, ethyl acrylate, methyl acrylate, isooctylacrylate, 2-ethyl hexyl acrylate and mixtures thereof. In another embodiment, units derived from the co-polymerizable alkylacrylate monomers are present in the range of up to about 30% by weight. Useful polar monomers include acrylic acid; methacrylic acid; itaconic acid; N-vinyl pyrrolidone; N-vinyl caprolactam; substituted (meth)acrylamides, such as N,N,-dimethyl acrylamides and N-octylacrylamide; dimethylaminoethyl methacrylate; acrylonitrile; 2-carboxyethyl acrylate; maleic anhydride; and mixtures thereof. Another example of useful polar monomers is methoxypolyethylene glycol 550 monoacrylate available from Sartomer Co. under the tradename CD553. Useful ethylenically unsaturated free radically polymerizable monomers include styrene and C1 -C4 vinyl esters such as vinyl acetate, vinyl propionate, and mixtures thereof. In yet another embodiment, the units derived from the co-polymerizable ethylenically unsaturated free radically polymerizable monomers are present in the range up to about 30% by weight.

Polyfunctional crosslinking agents, if included, may be copolymerizable with the monomeric components of the acrylic polymer or may by added to the polymerized latex product. Examples of copolymerizable crosslinking agents include but are not limited to those chosen from divinylbenzene; alkyl diacrylates such as those chosen from 1,2-ethylene glycol diacrylate, 1,4-butanediol diacrylate, 1,6-hexanediol diacrylate, 1,8-octanediol diacrylate, and 1,12-dodecanediol diacrylate; alkyl triacrylates and tetracrylates such as trimethylol propane triacrylate and pentaerythritol tetraacrylate; monoethylenically unsaturated aromatic ketones such as 4-acryloxybenzophenone; and mixtures thereof. In one embodiment, the copolymerizable crosslinking agent is 1,6-hexanediol diacrylate.

Post-additive crosslinking agents may also be used. Examples of post-additive crosslinking agents include but are not limited to multifunctional aziridine amides such as 1,1'-(1,3-phenylenedicarbonyl)bis[2-methyl aziridine], 2,2,4-trimethyladipoyl bis [2-ethyl aziridine], 1, 1'-azelaoyl bis [2-methyl aziridine], and 2,4,6-tris(2-ethyl-1-aziridinyl)-1,3,5 triazine; and metal ion crosslinkers such as copper, zinc, zirconium, and chromium. In one embodiment, the metal ion crosslinkers are chosen from chelated esters of ortho-titanic acid sold under the tradename TYZOR and commercially available from the E.I. du Pont de Numours Co. In another embodiment, the TYZOR is TYZOR AA, which is titanium acetyl acetonate.

Crosslinking agents, when used, comprise up to about 10 parts by weight, typically about 0.1 to about 2 parts by weight of the copolymerizable emulsion mixture based on 100 parts by weight of the (a) and (b) monomers and the co-polymerizable monomer, when present.

Water-soluble and oil-soluble initiators useful in preparing the acrylic emulsions of the present invention are initiators that, on exposure to heat, generate free-radicals which initiate (co)polymerization of the n-butyl acrylate monomers, hydroxyalkyl (meth)acrylate monomers, and optional comonomer and crosslinking agent components. In one embodiment, water soluble initiators are preferred. Suitable water-soluble initiators include but are not limited to those chosen from potassium persulfate, ammonium persulfate, sodium persulfate, and mixtures thereof; oxidation-reduction initiators such as the reaction product of the above-mentioned persulfates and reducing agents such as those chosen from sodium metabisulfite and sodium bisulfite; and 4,4'-azobis(4-cyanopentanoic acid) and its soluble salts (e.g., sodium, potassium). In another embodiment, the water-soluble initiator is potassium persulfate.

Suitable oil-soluble initiators include but are not limited to those chosen from azo compounds such as VAZO 64 (2,2'-azobis(isobutyronitrile) and VAZO 52 (2,2'-azobis(2,4-dimethylpentanenitrile)), both available from E.I. du Pont de Numours Co.; and peroxides such as benzoyl peroxide, lauroyl peroxide, and mixtures thereof. In one embodiment, the oil-soluble thermal initiator is (2,2'-azobis(isobutyronitrile)).

When used, initiators may comprise from about 0.05 to about 1 part by weight, also about 0.1 to about 0.5 part by weight based on 100 parts by weight of the total copolymerizable mixture

The copolymerizable mixture may optionally further comprise a chain transfer agent. Examples of useful chain transfer agents include but are not limited to those chosen from carbon tetrabromide, alcohols, mercaptans, and mixtures thereof. In one embodiment, the chain transfer agent is chosen from isooctylthioglycolate and carbon tetrabromide. The emulsion mixture may further comprise up to about 0.5 parts by weight of a chain transfer agent, typically about 0.01 weight percent to about 0.5 parts by weight, if used, also about 0.05 parts by weight to about 0.2 parts by weight, based upon 100 parts by weight of the total copolymerizable mixture.

Polymerization via emulsion techniques may require the presence of an emulsifier (which may also be called an emulsifying agent or a surfactant). Useful emulsifiers for the present invention include those chosen from anionic surfactants, nonionic surfactants, and mixtures thereof.

Useful anionic surfactants include but are not limited to those whose molecular structure includes at least one hydrophobic moiety chosen from about C6 - to about C12 -alkyl, alkylaryl, and/or alkenyl groups and at least one anionic group chosen from sulfates, sulfonates, phosphates, polyoxyethylene sulfates, polyoxyethylene sulfonates, polyoxyethylene phosphates, and the like, and the salts of such groups. Said salts are chosen from alkali metal salts, ammonium salts, tertiary amino salts,

and the like. Representative commercial examples of useful anionic surfactants include sodium lauryl sulfates, available from Stepan Chemical Co. as POLYSTEP B-3; sodium lauryl ether sulfates, available from Stepan Chemical Co. as POLYSTEP B-12; sodium dodecyl benzene sulfonates, available from Rhone-Poulenc as SIPONATE DS-10; and alkylene polyalkoxy ammonium sulfates, available from PPG Industries as MAZON SAM-211.

Useful nonionic surfactants include but are not limited to those whose molecular structure comprises a condensation product of an organic aliphatic or alkyl aromatic hydrophobic moiety with a hydrophilic alkylene oxide such as ethylene oxide. The HLB (Hydrophilic-Lipophilic Balance) of useful nonionic surfactants is about 10 or greater, also from about 10 to about 20. The HLB of a surfactant is an expression of the balance of the size and strength of the hydrophilic (water-loving or polar) groups and the lipophilic (oil-loving or non-polar) groups of the surfactant. Commercial examples of nonionic surfactants useful in the present invention include but are not limited to nonylphenoxy or octylphenoxy poly(ethyleneoxy) ethanols available from Rhone-Poulenc as the IGEPAL CA or CO series, respectively; C11-C15 secondary-alcohol ethoxylates available from Union Carbide as the TERGITOL 15-S series; and polyoxyethylene sorbitan fatty acid esters available from ICI Chemicals as the TWEEN series of surfactants.

In one embodiment, the emulsion polymerization of this invention is carried out in the presence of anionic surfactant(s). A useful range of emulsifier concentration is

from about 0.5 to about 8 weight percent, preferably from about 1 to about 5 weight percent, based on the total weight of all monomers.

The acrylic emulsions of the invention may also contain one or more conventional additives. Preferred additives include plasticizers, dyes, fillers, antioxidants, and UV stabilizers. Such additives can be used if they do not adversely affect the reshapable properties of the composition.

In one embodiment, the acrylic emulsions of the present invention are prepared by a semi-continuous emulsion polymerization process. In the process, a flask is charged with a seed monomer mixture comprising deionized (DI) water, surfactant, n-butyl acrylate monomers, hydroxyalkyl (meth)acrylate (b) monomers, and the optional components such as co-polymerizable monomers, polyfunctional crosslinking agents, chain transfer agents, pH modifiers, and other additives. The mixture is stirred and heated under an inert atmosphere such as a nitrogen blanket. When the mixture has reached induction temperature, typically about 50 °C to about 70 °C, the first initiator is added to initiate the polymerization and the reaction is allowed to exotherm. After the seed reaction is completed, the batch temperature is then raised to the feed reaction temperature, about 70 °C to about 85 °C. At the feed reaction temperature, the monomer pre-emulsion comprising DI water, surfactant, n-butyl acrylate monomers, hydroxyalkyl (meth)acrylate (b) monomers, and the optional components such as co-polymerizable monomers, polyfunctional crosslinking agents, chain transfer agents, and other additives is added to the stirred

flask over a period of time, typically 2 to 4 hours, while the temperature is maintained. At end of the feed reaction, the second initiator charge, if used, is added to the reaction to further reduce residual monomers in the latex. After an additional hour of heating, the mixture is cooled to room temperature (about 23 °C.) and the latex is collected for evaluation.

The pH of the latex prepared using this method is typically about 2 to about 3. The acidity of the latex can be modified following latex formation using a pH modifier such as a basic solution (e.g., solutions of sodium hydroxide, ammonium hydroxide and the like) or buffer solutions (e.g., sodium bicarbonate and the like), to less acidic levels. In one embodiment, the pH is 7 or less. In another embodiment, the pH is in the range of 2 to 6.

In one embodiment of the invention, the acrylic polymers may be neutralized in the emulsion and/or the composition. Suitable neutralizing agents may be chosen from organic, inorganic, and organomineral bases, such as amino methyl propanols, sodium and potassium hydoxides, primary, secondary and tertiary amines, ammoniacs, derivatives thereof, and combinations thereof.

An embodiment of the invention provides a reshapable hair styling composition comprising, in a cosmetic vehicle suitable for hair, at least one emulsion comprising at least one acrylic polymer, leading to a styling material following application to the fibers and drying.

It is a further subject of the invention to provide a method for treating hair, characterized in that the composition according to the invention is applied to the hair before, during, or after the shaping of the hairstyle.

In another embodiment of the invention, the acrylic has a glass transition temperature (Tg) ranging from about -100 to about 15°C. According to the present invention, the Tg of the acrylic is obtained following the application of the acrylic emulsion to a substrate and drying. The glass transition temperature is determined by the Differential Scanning Calorimetric method (DSC).

The composition according to the invention may comprise at least one other constituent, which is conventional in cosmetics, chosen from preservatives; perfumes; UV filters; active haircare agents; plasticizers; anionic, cationic, amphoteric, nonionic, and zwitterionic surfactants; hair conditioning agents such as silicone fluids, fatty esters, fatty alcohol, long chain hydrocarbons, emollients, lubricants, and penetrants such as lanolin compounds, protein hydrolysates, and other protein derivatives; anionic, cationic, amphoteric, nonionic, and zwitterionic polymers; dyes; tints; bleaches; reducing agents; pH adjusting agents; sunscreens; preservatives; thickening agents; and perfumes.

The appropriate cosmetically acceptable vehicle is adapted to the method of application selected. The vehicle preferably comprises an appropriate solvent to which may be added additives such as gelling agents, foaming agents, and silicones.

It is understood that the person skilled in the art will know how to choose the additional constituents and their amount in the composition according to the invention, such as the constituents of the vehicle, so as not to adversely affect or substantially affect its reshapable hair styling properties.

The compositions according to the invention can be provided in any form known from the prior art, which is appropriate for their application to the hair, including in the form of a vaporizable composition, mousse, gel, or lotion.

The composition may be in any of the conventional form including, but not limited to, shampoos, hair rinses, permanent waving compositions, waving compositions, hair dye compositions, hair straightening compositions, hair fixing products, hair styling gel products, products to use before or after a hair dye treatment, products to use before or after a permanent waving treatment, hair straightening compositions, products to use before or after a hair straightening treatment, and fixing foams.

The composition according to the invention may be vaporizable, for example by a pump, or may be a pressurized aerosol composition. It may be vaporizable by a dispensing valve controlled by a dispensing head, which in turn comprises a nozzle, which vaporizes the aerosol composition. A vaporizable composition according to the invention comprises an appropriate solvent. Advantageously, the appropriate solvent comprises at least one solvent chosen from water and lower alcohols. In accordance

with the invention, the term lower alcohol means a C1-C4 aliphatic alcohol, preferably ethanol.

When the vaporizable composition according to the invention is an aerosol composition, it additionally comprises an appropriate amount of propellant. The propellant comprises compressed or liquefied gases, which are normally employed for the preparation of aerosol compositions. Suitable gasses include compressed air, carbon dioxide, nitrogen, and gases, which are soluble or otherwise in the composition, such as dimethyl ether, fluorinated or non-fluorinated hydrocarbons, and mixtures thereof.

The present invention additionally provides an aerosol device comprising a vessel comprising an aerosol composition, which comprises on the one hand a liquid phase (or juice) comprising at least one hair styling material as described above in an appropriate medium and on the other hand a propellant, and a dispenser for dispensing said aerosol composition.

The present invention additionally provides a method of treating keratinous fibers, especially hair, in which the composition according to the invention as defined above is applied to the hair before, during, or after the shaping of the hairstyle.

The compositions according to the invention can be rinsed off or not rinsed off the hair.

The present invention additionally provides the use of a composition as defined above in, or for the preparation of, a cosmetic reshapable hair styling formulation.

The composition according to the invention can be provided in any form known from the prior art, which is appropriate for their application to the hair, including in the form of a vaporizable composition, a mousse, a gel, or a lotion.

The determination of whether an acrylic emulsion can provide a reshapable hair styling composition can be determined by an *in vivo* test. Specifically, a composition is prepared comprising the acrylic emulsion and a cosmetically acceptable medium. The medium may be chosen, for example, from water, lower alcohols such as ethanol, and mixtures thereof. The composition typically comprises from about 1% to about 12% by weight active material. The compositions may be in any form noted above, including lotions.

Where the composition is in the form of a lotion, for example, the *in vivo* test proceeds as follows. The hair of the model is washed and then divided into two symmetrical portions, the right and the left sides. The composition is applied to one side of the head of the model, while a reference composition is applied to the other side of the head. The reference composition may, for example, be chosen from water, an existing commercial product, or another composition under study. The hairdresser dries and styles both sides of the head. The two sides of the head are separately evaluated for the styling effect, the cometic properties, and the reshapable

effect. For example, once dried, the hair is brushed in different directions to remove the original styling. The hair is then brushed to restore the original styling. The process of removing the styling, restoring the styling, and evaluating the success of restoring the styling is repeated at least one more time to determine whether the composition is a reshapable hair styling composition. A reshapable hair styling composition permits (1) the original hair styling to be restored after brushing and (2) the creation of a new hair styling after brushing, which may also be restored after brushing. If the composition to be evaluated is in another form, such as a shampoo or conditioner, the *in vivo* test can be appropriately modified by one skilled in the art.

It is understood that the person skilled in the art would recognize that not all formulations would provide reshapable effect for all hair types during *in vivo* testing and will know how to formulate and evaluate reshapable hair styling composition in view of the various hair parameters, such as length (short versus long), diameter (thin versus thick), structure (curly versus straight), condition (oily, dry, or normal); and whether the hair is colored, bleached, permed, or straightened. Thus, *in vivo* testing may require testing on 10-20 different individuals.

The invention may be understood more clearly with the aid of the non limiting examples which follow, and which constitute an advantageous embodiment of the compositions in accordance with the invention.

EXAMPLES

Hair compositions according to the invention were produced with different acrylic emulsions.

1) Preparation of the acrylic emulsions:

Example 1:

38.40 grams of n-butyl acrylate (BA), 7.68 grams of 2-hydroxyethyl acrylate (HEA), 5.12 grams of methyl methacrylate (MMA), 374 grams of DI water and 0.5 gram of RHODACAL DS- 10 (sodium dodecyl benzene sulfonate surfactant commercially available from Rhone- Poulenc) were added to a 2000 ml reactor. This mixture was stirred under nitrogen and degassed 4 times. The temperature was raised to 60 °C and 1.29 grams of potassium persulfate initiator was added. The reaction mixture was then heated to 70 °C and maintained at this temperature for 20 min. to complete the seed reaction. The reaction temperature was further increased to 80 °C. At 80 °C, a pre-emulsified monomer mixture was fed into the reactor for 2 hours. This pre-emulsified mixture contained 345.6 grams of BA, 69.12 grams of HEA, 46.08 grams of MMA, 208 grams of DI water and 5.29 grams of RHODACAL DS-10. After the feeding of the monomer mixture, the reaction was continued at 80 °C for another 60 min.

Example 2:

To a 2000ml reactor was added 37.0 grams of n-butyl acrylate (BA), 7.68 grams of 2-hydroxyethyl acrylate (HEA), 10.24 grams of methyl methacrylate (MMA), 374 grams of DI water and 0.5 gram of RHODACAL DS- 10 (sodium dodecyl benzene sulfonate surfactant commercially available from Rhone- Poulenc). This mixture was stirred under nitrogen and degassed 4 times. The temperature was raised to 60 °C and 1.29 grams of potassium persulfate initiator was added. The reaction mixture was then heated to 70 °C and maintained at this temperature for 20 min. to complete the seed reaction. The reaction temperature was further increased to 80 °C. At 80 °C, a pre-emulsified monomer mixture was fed into the reactor for 2 hours. This pre-emulsified mixture contained 295.8 grams of BA, 69.12 grams of HEA, 92.16 grams of MMA, 208 grams of DI water and 5.29 grams of RHODACAL DS-10. After the feeding of the monomer mixture, the reaction was continued at 80 °C for another 60 min.

2) Preparation of the hair styling compositions

Four hair styling compositions in accordance with the invention in the form of a mousse or lotion were prepared using the components and amounts in weight percent listed hereafter. The testing was conducted on several models with one part of the head receiving one of the two reference compositions and the other side of the head receiving the tested composition. The compositions were applied to wet hair

after shampooing. In some instances, the composition was rinsed off after application. The hair was then dried, brushed, and evaluated.

Reference 1:

AQ 1350	4 % active material
Ethanol	20 %
Water	qsp 100 %

Reference 2:

Water	100%

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Formulation A:

Example 1	4 % active material
Water	qsp 100 %

Formulation A and Reference 1 were not rinsed off after application. Formulation A imparted very good hairstyling and reshapable effect much better than the reference with good cosmetic properties (soft hair with good touch).

Formulation B:

Example 2	8 % active material
Water	qsp 100 %

Formulation B and Reference 2 were rinsed off after application. Formulation B imparted good hairstyling and reshapable effect better than the reference with very good cosmetic properties (soft hair with good touch).

Formulation C:

Example 1	8 % active material
Water	qsp 100 %

Formulation C and Reference 1 were rinsed off after application. Formulation C imparted very good hairstyling and reshapable effect much better than the reference with very good cosmetic properties (soft hair with good touch).

Formulation D:

Example 1	1 % active material
Water	qsp 100 %

Formulation D and Reference 1 were not rinsed off after application. Formulation D imparted very good reshapable effect much better than the reference with very good cosmetic properties (soft hair with good touch).

What is claimed is:

1. A reshapable hair styling composition comprising, in a cosmetic vehicle appropriate for hair, at least one acrylic polymer comprising: (a) units derived from n-butyl acrylate monomers and (b) units derived from at least one monomer chosen from 2-hydroxy ethyl acrylate, 2-hydroxy ethyl methacrylate, and hydroxy propyl acrylate monomers, wherein said composition provides a reshapable effect.

2. A reshapable hair styling composition according to claim 1 comprising, in a cosmetic vehicle appropriate for hair, at least one emulsion comprising at least one acrylic polymer comprising: (a) units derived from n-butyl acrylate monomers and (b) units derived from at least one monomer chosen from 2-hydroxy ethyl acrylate, 2-hydroxy ethyl methacrylate, and hydroxy propyl acrylate monomers, wherein said composition provides a reshapable effect.

3. The composition according to claim 1 or 2, further comprising at least one additional polymer.

4. The composition according to claim 3, wherein said at least one additional polymer is chosen from anionic, cationic, amphoteric, nonionic, and zwitterionic polymers.

5. The composition according to claim 1 or 2, wherein the (a) units are present in an amount about 50 to about 90% by weight of the polymer and the (b) units are present in an amount about 10 to about 50% by weight of the polymer.

6. The composition according to claim 1 or 2, wherein said at least one acrylic polymer further comprises units derived from at least one co-polymerizable monomer.

7. The composition according to claim 6, wherein said at least one co-polymerizable monomer is chosen from (i) alkylacrylate monomers, (ii) polar monomers, and (iii) ethylenically unsaturated free radically polymerizable monomers.

8. The composition according to claim 6, wherein units derived from at least one co-polymerizable monomer are present in an amount up to about 50% by weight of the polymer.

9. The composition according to claim 2, wherein said at least one emulsion further comprises at least one polyfunctional cross-linking agent.

10. The composition according to claim 2, wherein said at least one acrylic emulsion has a pH less than or equal to 7.

11. The composition according to claim 2, wherein said at least one acrylic emulsion has a Tg ranging from about -100 to about 15°C.

12. The composition according to claim 1 or 2, further comprising at least one other constituent, which is conventional in cosmetics, chosen from preservatives, perfumes, UV filters, active haircare agents, plasticizers, anionic, cationic, amphoteric, nonionic, and zwitterionic surfactants, hair conditioning agents such as silicone fluids, fatty esters, fatty alcohol, long chain hydrocarbons, emollients, lubricants, and penetrants such as lanolin compounds, protein hydrolysates, and

other protein derivatives, dyes, tints, bleaches, reducing agents, pH adjusting agents, sunscreens, preservatives, thickening agents, and perfumes.

13. An aerosol device comprising a vessel, which comprises (i) an aerosol composition, which comprises a liquid phase comprising at least one composition according to anyone of the preceding claims, wherein said composition provides a reshapable effect;

and at least one propellant, and (ii) a dispensor.

14. A method of cosmetically treating hair, comprising the application of a composition according to anyone of the preceding claims 1 to 12, wherein said composition provides a reshapable effect;

to the hair before, during, or after the shaping of the hairstyle.