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(71) Applicant (for AE, AG, AU, BB, BH, BW, BZ, CA, CY, EG, GB, GD, GH, GM, IE, IL, KE, KN, LC, LK, LS, MT, MW, MY, NA, NG, NZ, OM, PG, SC, SD, SG, SL, SZ, TT, TZ, UG, VC, ZA, ZM, ZW only): **UNILEVER PLC** [GB/GB]; a company registered in England and Wales under company no. 41424, Unilever House, 100 Victoria Embankment, London Greater London EC4Y 0DY (GB).

(71) Applicant (for all designated States except AE, AG, AU, BB, BH, BW, BZ, CA, CY, EG, GB, GD, GH, GM, IE, IL, IN, KE, KN, LC, LK, LS, MT, MW, MY, NA, NG, NZ, OM, PG, SC, SD, SG, SL, SZ, TT, TZ, UG, US, VC, ZA, ZM, ZW): **UNILEVER N.V.** [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL).

(71) Applicant (for IN only): **HINDUSTAN UNILEVER LIMITED** [IN/IN]; Hindustan Lever House, 165/166 Backbay Reclamation, Maharashtra, Mumbai 400 020 (IN).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **IVANOVA, Katya** [BG/GB]; Unilever R&D Port Sunlight, Quarry Road

East, Bebington, Wirral Merseyside CH63 3JW (GB). **O'NEILL, Niamh** [IE/GB]; Unilever R&D Port Sunlight, Quarry Road East, Bebington, Wirral Merseyside CH63 3JW (GB). **SHAW, Neil, Scott** [GB/GB]; Unilever R&D Port Sunlight, Quarry Road East, Bebington, Wirral Merseyside CH63 3JW (GB).

(74) Agent: **TANSLEY, Sally, Elizabeth**; Unilever PLC, Unilever Patent Group, Colworth House, Sharnbrook, Bedford Bedfordshire MK44 1LQ (GB).

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(54) Title: HAIR COLOURING COMPOSITION

(57) Abstract: A multi-phase personal care composition comprising at least two visually distinct phases in physical contact with one another characterised in that: i) at least one phase comprises polyacrylate-1 crosspolymer, and iii) at least one phase comprises a non-oxidative colorant.



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Hair Colouring Composition

The present invention relates to multi-phase personal care compositions, more particularly hair colouring compositions.

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Hair care compositions that have more than one phase are seen as attractive by the consumer, especially dual phase products having one transparent/translucent phase. Hair coloring formulations are, in general, non transparent and often packed into a non transparent packaging. Such compositions and packaging do not appear attractive to the consumer.

10

There are difficulties in formulating dual phase hair colouring products, in that many ingredients that are used in hair dyes/conditioners are incompatible with the rheology modifiers which can be used to prepare such a product. Even if incompatible ingredients are kept in separate phases problems occur at the junction of the phases.

15

The present invention relates to a stable dual phase coloring/conditioning product. Furthermore the dual phase product can be co-extruded during its manufacture into the pack, and when dispensed from the pack.

20

Accordingly the present invention relates to a multi-phase personal care composition comprising at least two visually distinct phases in physical contact with one another characterised in that:

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- i) at least one phase comprises polyacrylate-1 crosspolymer, and
- ii) at least one phase comprises a non-oxidative colorant.

Further described is a pack comprising a multi-phase composition as described above.

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In the context of the present invention the term "visually distinct," means that the regions occupied by each phase can be separately seen by the human eye as distinctly separate regions in contact with one another (i.e. they are not emulsions or dispersions of particles of less than about 100 microns).

5

The term "multi-phased" or "multi-phase" as used herein, is meant that at least two phases occupy separate and distinct physical spaces inside the package in which they are stored, but are in direct contact with one another (i.e., they are not separated by a barrier).

10

In one preferred embodiment of the present invention, the "multi-phased" personal care compositions comprising at least two phases are present within the container as a visually distinct pattern. The pattern results from the mixing or homogenization of the "multi-phased" composition. The phases may be various different colours, or include particles, glitter or pearlescence.

15

In the context of present invention the term "visibly clear" means that the transmission of the composition is greater than 60%, preferably greater than 80%. The transparency of the composition is measured using Ultra-Violet/Visible (UV/VIS) Spectrophotometry, which determines the absorption or transmission of UV/VIS light by a sample. A light wavelength of 600 nm is known to be adequate for characterizing the degree of clarity of cosmetic compositions. Typically, it is best to follow the specific instructions relating the specific spectrophotometer being used. In general, the procedure for measuring percent transmittance starts by setting the spectrophotometer to the 600 nm. Then a calibration "blank" is run to calibrate the readout to 100 percent transmittance. The test sample is then placed in a cuvette designed to fit the specific spectrophotometer and the percent transmittance is measured by the spectrophotometer at 600 nm.

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It is preferred if the multi-phase product has one phase that is visually clear. More preferred is a product having one visually clear phase and one opaque phase. Additionally or alternatively different phases may have different colours.

- 5 It is preferable if the differing phases of the composition are co-extruded.

- Personal care compositions according to the invention comprise a polyacrylate-1 Crosspolymer. Poly-acrylate-1 Crosspolymer is a copolymer of one or more simple esters of acrylic or methacrylic acid, C1-4 dialkylamino C1-6 alkyl methacrylate, PEG/PPG-30/5 allyl ether, PEG 20-25 C10-30 alkyl ether methacrylate, hydroxyl C2-6 alkyl methacrylate crosslinked with ethylene glycol dimethacrylate. An especially preferred polyacrylate-1 Crosspolymer is Carbopol qua CC (ex Lubrizol/Noveon).
- 10
- 15 Compositions of the invention are usually aqueous. It is preferred if each phase comprising polyacrylate-1 crosspolymer further comprises water. The weight ratio of water to polyacrylate-1 crosspolymer is preferably from 7:1 to 4:1, more preferably from 6:1 to 5:1.
- 20 Other phases may include alternative thickeners. However where there is a danger of detrimental interaction it is preferable if an alternative thickener is not used. If used alternative polymeric thickeners for use in the personal care composition include Acrylates/Vinyl Isodecanoate Crosspolymer (Stabylen 30 from 3V), Acrylates/C10-30 Alkyl Acrylate Crosspolymer (Pemulen TR1 and TR2),
- 25 Carbomers (Aqua SF-1), Ammonium Acryloyldimethyltaurate/VP Copolymer (Aristoflex AVC from Clariant), Ammonium Acryloyldimethyltaurate/Beheneth-25 Methacrylate Crosspolymer (Aristoflex HMB from Clariant), Acrylates/Ceteth-20 Itaconate Copolymer (Structure 3001 from National Starch), Polyacrylamide (Sepigel 305 from SEPPIC), acrylates/aminoacrylates/CD-30 alkyl PEG-20

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itaconate copolymer (Structure Plus from National Starch), non-ionic thickener, (Aculyn 46 from Rohm and Haas), or mixtures thereof.

A further group of polymeric thickeners include cellulosic gel, hydroxypropyl starch phosphate (Structure XL from National Starch), polyvinyl alcohol, synthetic and natural gums and thickeners such as xanthan gum (Ketrol CG-T from CP Kelco), succinoglycan (Rheozan from Rhodia), gellum gum, pectin, alginates, starches including pregelatinized starches, modified starches, or mixtures thereof.

- 10 It is particularly preferred if the product is a multiphase product comprising of at least one phase structured with polyacrylate-1 cross polymer and a second phase structured via lamella thickening system.

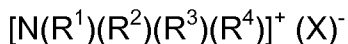
- Non-limiting examples of additives that promote thickening via lamellar structuring of surfactants for use in the personal care composition include fatty amides, fatty alcohols, fatty acid or ester derivatives thereof, electrolytes, and mixtures thereof. Examples of fatty acids which may be used are C10-C22 acids such as the following: lauric acid, oleic acid, isostearic acid, linoleic acid, linolenic acid, ricinoleic acid, elaidic acid, arichidonic acid, myristoleic acid, palmitoleic acid, and the like. Ester derivatives include propylene glycol, isostearate, propylene glycol oleate, glyceryl isostearate, glyceryl oleate, polyglyceryl diisostearate, and the like.

- Particularly suitable lamellar based thickening systems are those comprising a fatty alcohol more preferably comprising a fatty alcohol and a cationic surfactant.

Suitable cationic surfactants for use in compositions of the invention contain amino or quaternary ammonium hydrophilic moieties which are positively charged when dissolved in the composition.

- 5 -

Suitable quaternary ammonium cationic surfactants correspond to the following general formula:



5

in which R^1 , R^2 , R^3 , and R^4 are each independently selected from (a) an aliphatic group of from 1 to 22 carbon atoms, or (b) an aromatic, alkoxy, polyoxyalkylene, alkylamido, hydroxyalkyl, aryl or alkylaryl group having up to 22 carbon atoms; and X is a salt-forming anion such as those selected from halogen, (e.g. chloride, bromide), acetate, citrate, lactate, glycolate, phosphate nitrate, sulphate, and alkylsulphate radicals.

10

The aliphatic groups can contain, in addition to carbon and hydrogen atoms, ether linkages, and other groups such as amino groups. The longer chain aliphatic groups, e.g., those of about 12 carbons, or higher, can be saturated or unsaturated.

15

In a suitable class of cationic surfactant of general formula (I), R^1 and R^2 are each independently selected from C_{16} to C_{22} hydrocarbyl chains comprising at least one ester linkage in both R^1 and R^2 , and R^3 and R^4 are each independently selected from CH_3 and CH_2CH_2OH .

20

In another suitable class of cationic surfactant of general formula (I), R^1 and R^2 are each independently selected from C_{16} to C_{22} saturated or unsaturated, preferably saturated, chains, and R^3 and R^4 are each independently selected from CH_3 and CH_2CH_2OH , preferably CH_3 .

25

In a preferred class of cationic surfactant of general formula (I), R^1 is a C_{16} to C_{22} alkyl chain and R^2 , R^3 and R^4 are each independently selected from CH_3 and CH_2CH_2OH , preferably CH_3 .

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Specific examples of suitable quaternary ammonium cationic surfactants of general formula (I) are cetyltrimethylammonium chloride,

behenyltrimethylammonium chloride (BTAC), cetylpyridinium chloride, tetramethylammonium chloride, tetraethylammonium chloride,

- 5 octyltrimethylammonium chloride, dodecyltrimethylammonium chloride, hexadecyltrimethylammonium chloride, octyldimethylbenzylammonium chloride, decyldimethylbenzylammonium chloride, stearyldimethylbenzylammonium chloride, didodecyldimethylammonium chloride, dioctadecyldimethylammonium chloride, tallowtrimethylammonium chloride, cocotrimethylammonium chloride,
10 dipalmitoylethyldimethylammonium chloride, PEG-2 oleylammonium chloride and salts of these, where the chloride is replaced by halogen, (e.g., bromide), acetate, citrate, lactate, glycolate, phosphate nitrate, sulphate, or alkylsulphate.

Particularly preferred quaternary ammonium cationic surfactants for use in the

- 15 invention are cetyltrimethylammonium chloride, available commercially, for example as GENAMIN CTAC, ex Hoechst Celanese and Arquad 16/29 supplied by Akzo Nobel, and behenyltrimethylammonium chloride (BTAC) such as Genamin KDM-P supplied by Clariant.

- 20 Mixtures of any of the foregoing materials may also be suitable.

Salts of primary, secondary, and tertiary fatty amines are also suitable cationic surfactants for use in the invention. The alkyl groups of such amines preferably have from about 12 to about 22 carbon atoms, and can be substituted or
25 unsubstituted. These amines are typically used in combination with an acid to provide the cationic species.

A preferred class of amine corresponds to the following general formula:

- 30 $R^1 - C(O) - N(H) - R^2 - N(R^3)(R^4)$

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in which R¹ is a fatty acid chain containing from 12 to 22 carbon atoms, R² is an alkylene group containing from one to four carbon atoms, and R³ and R⁴ are, independently, an alkyl group having from one to four carbon atoms.

5 Specific examples of suitable materials of general formula (II) are stearamidopropyldimethylamine, stearamidopropyldiethylamine, stearamidoethyldiethylamine, stearamidoethyldimethylamine, palmitamidopropyldimethylamine, palmitamidopropyldiethylamine, palmitamidoethyldiethylamine, palmitamidoethyldimethylamine,
10 behenamidopropyldimethylamine, behenamidopropyldiethylamine, behenamidoethyldiethylamine, behenamidoethyldimethylamine, arachidamidopropyldimethylamine, arachidamidopropyldiethylamine, arachidamidoethyldiethylamine, arachidamidoethyldimethylamine, and diethylaminoethylstearamide.

15 Also useful are dimethylstearamine, dimethylsoyamine, soyamine, myristylamine, tridecylamine, ethylstearylamine, N-tallowpropane diamine, ethoxylated (with 5 moles of ethylene oxide) stearylamine, dihydroxyethylstearylamine, and arachidyl behenylamine.

20 Particularly preferred is stearamidopropyldimethylamine.

Mixtures of any of the foregoing materials may also be suitable.

The acid used to provide the cationic species can be any organic acid or mineral
25 acid of sufficient acid strength to neutralise a free amine nitrogen. Such acids include hydrochloric acid, sulphuric acid, nitric acid, phosphoric acid, lactic acid, citric acid, tartaric acid, acetic acid, gluconic acid, glycolic acid and propionic acid, or combinations thereof. In general, a sufficient amount of acid is added to neutralise the amidoamine compound and to adjust the final pH of the composition
30 to within a range of from about 2.5 to about 6, preferably in a pH range of from

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about 3 to about 5. The molar ratio of protonatable amine groups to H^+ from the acid is preferably from about 1:0.3 to 1:1.2, and more preferably from about 1:0.5 to about 1:1.1.

5 Mixtures of any of the above-described cationic surfactants may also be suitable.

In compositions of the invention, the level of cationic surfactant preferably ranges from 0.1 to 10%, more preferably 0.2 to 5%, most preferably 0.25 to 4% by total weight of cationic surfactant based on the total weight of the composition.

10

Non-limiting examples of organic crystalline thickeners for use in the personal care composition include ethylene glycol esters of fatty acids preferably having from about 16 to about 22 carbon atoms. Other long chain acyl derivatives include long chain esters of long chain fatty acids (e.g., stearyl stearate, cetyl palmitate, etc.); long chain esters of long chain alkanol amides (e.g., stearamide diethanolamide distearate, stearamide monoethanolamide stearate); and glyceryl esters (e.g., glyceryl distearate, trihydroxystearin, tribehenin) a commercial example of which is Thixin R available from Rheox, Inc. Other suitable thickeners are alkyl (C16 to C22) dimethyl amide oxides such as stearyl dimethyl amine oxide. Also useful herein are long chain acyl derivatives, ethylene glycol esters of long chain carboxylic acids, long chain amine oxides, and alkanol amides of long chain carboxylic acids. Inorganic water thickeners for use in the personal care composition include silicas, clays such as a synthetic silicates (Laponite XLG and Laponite XLS from Southern Clay), or mixtures thereof.

25

It is preferable if the composition does not include an anionic surfactant.

Compositions of the invention preferably contain electrolytes. The electrolytes are preferably in the phase comprising the polyacrylate-1 cross polymer. Preferred

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electrolytes are metal and ammonium salts of carbonate and sulphate.
Particularly preferred is ammonium carbonate.

Preferably the level of electrolyte in the total composition is from 0.01 to 5 wt%,
5 more preferably from 0.05 to 1 wt%.

Compositions of the invention may comprise an organic acid. Suitable organic acids include C1 to C5 organic acids. Preferred organic acids are hydroxyl acids such as lactic acid and glycolic acid. Glycolic acid is particularly preferred.

10

It is preferred if the weight ratio of polyacrylate crosspolymer to glycolic acid is from 4:1 to 1:1, more preferably from 3:1 to 1:1.

Compositions of the invention comprise a non-oxidative dye, such as direct dyes
15 or pigments. It is also possible for a plurality of different dyeing substances to be used together.

It is preferable if a direct dye is used. Suitable direct dyes are preferably chosen from the group consisting of nitroanilines, nitrophenylenediamines,
20 nitroaminophenols, anthraquinones, indophenols, phenazines, phenothiazines, methines or the compounds known as Arianors. It is preferable if these dyes are used in their cationic form.

Suitable dyes known by the international names or trade names are: HC Yellow 2,
25 HC Yellow 4, HC Yellow 6, Basic Yellow 57, Basic Yellow 9, Disperse Orange 3, HC Red 3, HC Red BN, Basic Red 76, Basic Red 2, Basic Violet 14, Basic Blue 3, Basic Blue 6, Basic Blue 7, Basic Blue 9, Basic Blue 12, Basic Blue 26, HC Blue 2, HC Blue 7, HC Blue 12, Disperse Blue 3, Basic Blue 99, HC Violet 1, Disperse Violet 1, Disperse Violet 4, Disperse Black 9, Basic Brown 16 und Basic Brown
30 17, and also picramic acid, 2-amino-6-chloro-4-nitrophenol, 4-amino-2-

- 10 -

nitrodiphenylamine-2'-carboxylic acid, 6-nitro-1,2,3,4-tetrahydroquinoxaline, 4-N-ethyl-1,4-bis(2'-hydroxyethylamino)-2-nitrobenzene hydrochloride and 1-methyl-3-nitro-4-(2'-hydroxyethyl)-aminobenzene.

- 5 Of particular interest are Basic Brown #17, Basic Yellow #57, Basic Red #76, HC Blue #2, HC Red BN.

The non-oxidative hair dye can also be a pigment. Suitable inorganic pigments include zinc oxide, titanium black, iron oxide red, chromium oxide, black iron
10 oxide, cobalt blue, alumina white, yellow iron oxide, viridian, zinc sulfide, lithopone, cadmium yellow, vermilion, cadmium red, chrome yellow, molybdate orange, zinc chromate, strontium chromate, white carbon, ultramarine blue, lead white, Prussian blue, manganese violet, aluminum powder and brass powder, organic pigments and lake pigments of acid dyes, such as C.I. 16185, C.I. 45430,
15 C.I. 16255, C.I. 45410, C.I. 45440, C.I. 45100, C.I. 19140, C.I. 15985, C.I. 42053, C.I. 42090, C.I. 73015, C.I. 15850, C.I. 15585, C.I. 15630, C.I. 45170, C.I. 15800, C.I. 15880, C.I. 12120, C.I. 45380, C.I. 26100, C.I. 73360, C.I. 17200, C.I. 12085, C.I. 45370, C.I. 12075, C.I. 21110, C.I. 15510, C.I. 45425, C.I. 45350, C.I. 47005, C.I. 47000, C.I. 21090, C.I. 61570, C.I. 61565, C.I. 59040, C.I. 42095, C.I. 73000,
20 C.I. 42052, C.I. 69825, C.I. 42090, C.I. 20170, C.I. 60725, C.I. 45190, C.I. 15865, C.I. 26105, C.I. 16155, C.I. 16150, C.I. 14700, C.I. 12140, C.I. 15620, C.I. 11725, C.I. 14600, C.I. 12100, C.I. 11680, C.I. 18950, C.I. 10316, C.I. 11380, C.I. 11390, C.I. 13065, C.I. 18820, C.I. 10020, C.I. 42085, C.I. 61520, C.I. 74160, C.I. 60730 and C.I. 20470, and pearl pigments such as scale foil, various mica titans, sericite,
25 muscovite, pearl oyster shell powder, abalone shell powder, and button shell powder.

Particularly preferred are Pigment Black #7 and Pigment Violet #23.

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Further particularly preferred colourants include *Emblica officinalis* (amla);
Indigofera tinctoria CI 73015 and its derivatives, e.g. indigo carmine; *Matricaria*
retutica and its derivatives e.g. Natural Yellow 2; *Curcumin longa* (turmeric);
Haematoxylon campechianum CI 75290; Brazilwood (Natural Red 24) CI 75280;
5 *Beta vulgaris* (beetroot); *Juglans regia* CI 75500; Carminic acid CI 45470; B-
carotene CI 75130; Copper chlorophyllin CI 75810.

The compositions of the invention may also comprise naturally occurring dyes,
such as, for example, henna red, henna neutral, henna black, camomile blossom,
10 sandalwood, black tea, *Rhamnus frangula* bark, sage, campeche wood, madder
root, catechu, sedre and alkanet root.

The level of dye is preferably from 0.001 to 3 % by weight of the total composition,
more preferably from 0.1 to 1 wt%, most preferably the level of dye is 0.5 wt% or
15 below of the total composition.

Colorants are preferably present in the comprising the polyacrylate-1
crosspolymer. This phase frequently appears transparent/translucent in character
and may be referred to as a gel. Colorants may be present in the second phase,
20 this phase is preferably a structured lamellar phase. It is particularly preferred if
the same colorant is present in each phase. This prevents bleeding from one
phase to the other. However due to the different nature of each phase, using
identical colorants leads to different visual effects from phase to phase.

25 Compositions of the invention may comprise further conditioning agents to
optimise wet and dry conditioning benefits.

Particularly preferred further conditioning agents are silicone emulsions.

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Suitable silicone emulsions include those formed from silicones such as polydiorganosiloxanes, in particular polydimethylsiloxanes which have the CTFA designation dimethicone, polydimethyl siloxanes having hydroxyl end groups which have the CTFA designation dimethiconol, and amino-functional
5 polydimethyl siloxanes which have the CTFA designation amodimethicone.

The emulsion droplets may typically have a Sauter mean droplet diameter ($D_{3,2}$) in the composition of the invention ranging from 0.01 to 20 micrometer, more preferably from 0.2 to 10 micrometer.

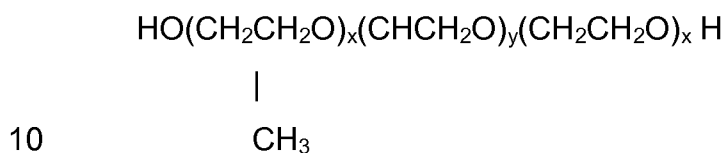
10 A suitable method for measuring the Sauter mean droplet diameter ($D_{3,2}$) is by laser light scattering using an instrument such as a Malvern Mastersizer.

Suitable silicone emulsions for use in compositions of the invention are available
15 from suppliers of silicones such as Dow Corning and GE Silicones. The use of such pre-formed silicone emulsions is preferred for ease of processing and control of silicone particle size. Such pre-formed silicone emulsions will typically additionally comprise a suitable emulsifier such as an anionic or nonionic emulsifier, or mixture thereof, and may be prepared by a chemical emulsification
20 process such as emulsion polymerisation, or by mechanical emulsification using a high shear mixer. Pre-formed silicone emulsions having a Sauter mean droplet diameter ($D_{3,2}$) of less than 0.15 micrometers are generally termed microemulsions.

25 Examples of suitable pre-formed silicone emulsions include emulsions DC2-1766, DC2-1784, DC-1785, DC-1786, DC-1788 and microemulsions DC2-1865 and DC2-1870, all available from Dow Corning. These are all emulsions/microemulsions of dimethiconol. Also suitable are amodimethicone emulsions such as DC939 (from Dow Corning) and SME253 (from GE Silicones).

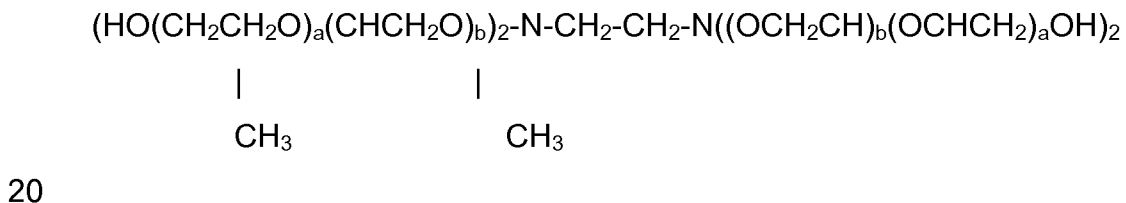
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Also suitable are silicone emulsions in which certain types of surface active block copolymers of a high molecular weight have been blended with the silicone emulsion droplets, as described for example in WO03/094874. In such materials, the silicone emulsion droplets are preferably formed from polydiorganosiloxanes
 5 such as those described above. One preferred form of the surface active block copolymer is according to the following formula:



wherein the mean value of x is 4 or more and the mean value of y is 25 or more.

Another preferred form of the surface active block copolymer is according to the
 15 following formula:



wherein the mean value of a is 2 or more and the mean value of b is 6 or more.

Mixtures of any of the above described silicone emulsions may also be used.

25 Silicone will generally be present in a composition of the invention at levels of from 0.05 to 10%, preferably 0.05 to 5%, more preferably from 0.5 to 2% by total weight of silicone based on the total weight of the composition.

If the product is a styling product it is preferred if a styling polymer is present.

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The hair styling polymer if present is preferably present in the compositions of the invention in an amount of from 0.001% to 10% by weight, more preferably from 0.1% to 10% by weight, such as from 1% to 8% by weight.

5 Hair styling polymers are well known. Suitable hair styling polymers include commercially available polymers that contain moieties that render the polymers cationic, anionic, amphoteric or nonionic in nature. Suitable hair styling polymers include, for example, block and graft copolymers. The polymers may be synthetic or naturally derived.

10

A composition of the invention may contain other ingredients for enhancing performance and/or consumer acceptability. Such ingredients include fragrance, dyes and pigments, pH adjusting agents, pearlescers or opacifiers, viscosity modifiers, preservatives, and natural hair nutrients such as botanicals, fruit
15 extracts, sugar derivatives and amino acids.

15

The final product form of hair treatment compositions according to the invention may suitably be, for example, conditioners, mousses, gels or waxes. Particularly preferred product forms are conditioners (leave-in and rinse-off) and hair leave in
20 hair treatment products.

20

Examples

The invention will now be further illustrated by the following, non-limiting
25 Examples.

25

A number illustrates examples of the invention; a letter illustrates Comparative Examples.

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All percentages quoted are by weight based on total weight unless otherwise stated.

Example 1 – Blond toner

	Raw Material	Supplier	Activity w/w %	Conc. w/w %
Phase 1				
Aqua	Water	-	100	55.93
Lactic Acid	Purac HS 88	Purac	88	0.63
Searamidopropyl Dimethylamine	Lexamine S13	Inolex	100	1.4
Behentrimonium Chloride	Genamin BTLF	Clariant	70	1.4
Petrolatum	Petrolatum G 2212	Sonneborn	100	0.14
Liquidum Paraffinum	White Mineral Oil	Sonneborn	100	0.21
Cetyl/Stearyl Alcohol	Lanette S3	Cognis	100	5.6
PEG-180M	Polyox TM WSR 308	Amercol	100	0.014
Glycerin	Glycerin USP	Fluka	100	0.7
Potassium Chloride	Potassium Chloride, USP/Fcc	Sigma	99	0.07
Disodium EDTA	Disodium EDTA	Surfachem	100	0.07
Dimethyl Methyl (aminoethylaminoisobutyl) Siloxane	DC 1785	Dow Corning	60	3.003
Parfum	Hyperion 85J	Givaudan	100	0.7
Methylchloroisothiazolinone and Methylisothiazolinone	Kathon CG	Rohm and Haas	1.5	0.028
DMDM Hydantoin	Glydant	Lonza	55	0.07
Basic Brown 17	CI BASIC BROWN 17	CLARIANT	100	0.021
Basic Yellow 57	CI BASIC YELLOW 57	CLARIANT	100	0.014

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Phase 2

Aqua	Water	-	100	23.013
Polyacrylate-1	Carbopol Aqua CC	Lubrizol	20	4.5
Crosspolymer				
Glycolic Acid	Glycolic Acid	Sigma	20	1.35
Trehalose	Trehalose	Sigma	100	0.6
Ammonium Carbonate	Ammonium Carbonate	Sigma	100	0.15
Adipic Acid	Adipic Acid	Sigma	100	0.15
DMDM Hydantoin	Glydant	Lonza	55	0.03
Methylchloroisothiazolinone and Methylisothiazolinone	Kathon CG	Rohm and Haas	1.5	0.012
	Ronstar Golden Sparks	Merck	100	0.18
Basic Brown 17	CI BASIC BROWN 17	CLARIANT	100	0.006
Basic Yellow 57	CI BASIC YELLOW 57	CLARIANT	100	0.009

Phase 1 is suspended in phase 2 to give a 3 dimensional shape.

Example 2 – Brown toner

5

	Raw Material	Supplier	Activity w/w %	Conc. w/w %
Phase 1				
Aqua	Water	-	100	55.615
Lactic Acid	Purac HS 88	Purac	88	0.63
Searamidopropyl Dimethylamine	Lexamine S13	Inolex	100	1.4
Behentrimonium Chloride	Genamin BTLF	Clariant	70	1.4
Petrolatum	Petrolatum G 2212	Sonneborn	100	0.14

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Liquidum Paraffinum	White Mineral Oil	Sonneborn	100	0.21
Cetyl/Stearyl Alcohol	Lanette S3	Cognis	100	5.6
PEG-180M	Polyox TM WSR 308	Amercol	100	0.014
Glycerin	Glycerin USP	Fluka	100	0.7
Potassium Chloride	Potassium Chloride, USP/Fcc	Sigma	99	0.07
Disodium EDTA	Disodium EDTA	Surfachem	100	0.07
Dimethyl Methyl (aminoethylaminoisobutyl) Siloxane	DC 1785	Dow Corning	60	3.003
Parfum	Hyperion 85J	Givaudan	100	0.7
Methylchloroisothiazolinone and Methylisothiazolinone	Kathon CG	Rohm and Haas	1.5	0.028
DMDM Hydantoin	Glydant	Lonza	55	0.07
BASIC BROWN 17	CI BASIC BROWN 17	CLARIANT	100	0.175
HC Blue No. 2	Jarocol Blue 2	James Robinson	100	0.175
Phase 2				
Aqua	Water	-	100	22.878
Polyacrylate-1 Crosspolymer	Carbopol Aqua CC	Lubrizol	20	4.5
Glycolic Acid	Glycolic Acid	Sigma	20	1.35
Trehalose	Trehalose	Sigma	100	0.6
Ammonium Carbonate	Ammonium Carbonate	Sigma	100	0.15
Adipic Acid	Adipic Acid	Sigma	100	0.15
DMDM Hydantoin	Glydant	Lonza	55	0.03
Methylchloroisothiazolinone and Methylisothiazolinone	Kathon CG	Rohm and Haas	1.5	0.012
BASIC BROWN 17	CI BASIC BROWN 17	CLARIANT	100	0.075

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HC Blue No. 2	Jarocol Blue 2	James Robinson	100	0.075
Mica and Iron Oxide	Colorona Blackstar Gold	Merck	100	0.12
Mica and Titanium Dioxide and Iron Oxide	Timiron MP-24 Karat gold	Merck	100	0.06

Comparative Example A – Brown toner with polyquaternium 37

	Raw Material	Supplier	Activity w/w %	Conc. w/w %
Phase 1				
Aqua	Water	-	100	55.615
Lactic Acid	Purac HS 88	Purac	88	0.63
Searamidopropyl Dimethylamine	Lexamine S13	Inolex	100	1.4
Behentrimonium Chloride	Genamin BTLF	Clariant	70	1.4
Petrolatum	Petrolatum G 2212	Sonneborn	100	0.14
Liquidum Paraffinum	White Mineral Oil	Sonneborn	100	0.21
Cetyl/Stearyl Alcohol	Lanette S3	Cognis	100	5.6
PEG-180M	Polyox TM WSR 308	Amercol	100	0.014
Glycerin	Glycerin USP	Fluka	100	0.7
Potassium Chloride	Potassium Chloride, USP/Fcc	Sigma	99	0.07
Disodium EDTA	Disodium EDTA	Surfachem	100	0.07
Dimethyl Methyl (aminoethylaminoisobutyl) Siloxane	DC 1785	Dow Corning	60	3.003
Parfum	Hyperion 85J	Givaudan	100	0.7
Methylchloroisothiazolinone and Methylisothiazolinone	Kathon CG	Rohm and Haas	1.5	0.028

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DMDM Hydantoin	Glydant	Lonza	55	0.07
BASIC BROWN 17	CI BASIC BROWN 17	CLARIANT	100	0.175
HC Blue No. 2	Jarocol Blue 2	James Robinson	100	0.175
Phase 2				
Aqua	Water	-	100	29.628
DMDM Hydantoin	Glydant	Lonza	55	0.03
Methylchloroisothiazolinone and Methylisothiazolinone	Kathon CG	Rohm and Haas	1.5	0.012
BASIC BROWN 17	CI BASIC BROWN 17	CLARIANT	100	0.075
HC Blue No. 2	Jarocol Blue 2	James Robinson	100	0.075
Mica and Iron Oxide	Colorona Blackstar Gold	Merck	100	0.12
Mica and Titanium Dioxide and Iron Oxide	Timiron MP-24 Karat gold	Merck	100	0.06
Polyquaternium 37	Ultrage 300	Cognis	100	0.3

In Example A an attempt was made to use Ultrage 300 to make Phase 2 compatible with Phase 1, so Phase 1 could be suspended in Phase 2 to give a three dimensional shape. The viscosity of the mixture was too low to allow

5 suspension of any design made from Phase 1.

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CLAIMS

1. A multi-phase personal care composition comprising at least two visually distinct phases in physical contact with one another characterised in that:
5 i) at least one phase comprises polyacrylate-1 crosspolymer, and
ii) at least one phase comprises a non-oxidative colorant.
2. A multi-phase personal care composition according to claim 1 in which at least one phase comprises polyacrylate-1 crosspolymer and a separate
10 phase comprises a lamellar based thickening system.
3. A multi-phase personal care composition according to claim 1 or claim 2 in which the same non-oxidative colorant is present in each phase.
- 15 4. A multi-phase personal care composition according to any preceding claim in which at least one phase is visually clear.
5. A multi-phase personal care composition according to any preceding claim in which at least one phase is opaque.
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6. A multi-phase care personal care composition according to any preceding claim in which at least one phase comprises electrolyte.
7. A multi-phase composition according to claim 6 in which the electrolyte and polyacrylate-1 crosspolymer are in the same phase.
25
8. A multi-phase personal care composition according to any preceding claim in which each phase comprising polyacrylate crosspolymer further comprises glycolic acid.
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9. A multi-phase personal care composition according to claim 8 in which the ratio of polyacrylate crosspolymer to glycolic acid is from 3:1 to 1:1.
10. A multi-phase personal care composition according to any preceding claim in which each phase comprising polyacrylate-1 crosspolymer further comprises water and in which the weight ratio of water to polyacrylate-1 crosspolymer is from 6:1 to 5:1.
11. A multi-phase personal care composition according to any preceding claim further comprising a cationic conditioning ingredient.
12. A multi-phase personal care composition according to any preceding claim for use on hair.
13. A personal care composition according to any preceding claim in which the differing phases of the composition are co-extruded.
14. A pack comprising a multi-phase composition as claimed in any one of claims 1 to 13.