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(54) Titre : COMPOSITIONS DE RINCAGE AUTOCHAUFFANTE  
(54) Title: SELF-WARMING RINSE CARE COMPOSITIONS

(57) Abrégé/Abstract:

An anhydrous or substantially anhydrous self-warming rinse-out composition which comprises: a) a glycol, b) a quaternary ammonium compound, c) an amidoamine, and d) a silicone.



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(54) Title: SELF-WARMING RINSE CARE COMPOSITIONS

(57) Abstract: An anhydrous or substantially anhydrous self-warming rinse-out composition which comprises: a) a glycol, b) a quaternary ammonium compound, c) an amidoamine, and d) a silicone.

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## SELF-WARMING RINSE CARE COMPOSITIONS

**Technical Field**

This invention relates to self-warming rinse-out hair care  
5 compositions with improved rheology and conditioning  
properties. More particularly, this invention relates to  
such compositions containing quaternary ammonium, amidoamine  
and silicone compounds.

10 **Background of the Invention**

It is desirable to provide self-warming hair care  
compositions. These rinse-out compositions, which are  
typically in anhydrous form, are first applied to the hair,  
15 and then contacted with water to generate heat and give a  
perception of warmth to the user. The perception of warmth  
is desirable because it serves as a signal or cue to the  
user that the composition works, and provides warmth and  
relaxation.

20

Alternatively, water could be applied to hair first and then  
the rinse-out compositions could be applied, or water and  
rinse-out compositions could be applied simultaneously to  
the hair. All of these methods would generate heat.

25

Known anhydrous self-warming rinse-out hair care  
compositions based on the use of glycol in anhydrous form,  
have deficiencies in rheology and conditioning capability.  
Hence there is a need for self-warming rinse-out hair care  
30 compositions with improved rheology and conditioning  
properties.

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Publications and products which relate to the field of the invention are as follows:

The Product: Lux Self-Warming Conditioner Treatment -  
5 1998.

Product Label from the Andrew Jergens Company, for the Biore Facial Musk - copyright 1998. The Biore Self-Heating Mask is a facial mask which contains sodium silicoaluminate. On  
10 contact with water, this mask heats up.

U.S. 5,328,685 describes a clear conditioning composition comprising an amidoamine salt, said amidoamine salt comprising an amidoamine compound of a specified formula  
15 that is neutralized with a suitable acid.

#### Summary of the Invention

The invention relates to an anhydrous or substantially  
20 anhydrous self-warming rinse-out hair care composition which comprises:

- a) at least one glycol;
- b) at least one quaternary ammonium compound;
- c) at least one amidoamine; and
- 25 d) at least one silicone.

Compositions of the invention can take the form of conditioners, shampoos, or 2 in 1 products.

30 The invention also relates to a method for treating the hair with the composition, which comprises contacting the hair with a composition of the invention and with water. The

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composition may be contacted with the hair before, after or simultaneously with water.

The invention also relates to a process for preparing a  
5 composition of the invention.

### Detailed Description of the Invention

As used herein wt% means % by weight of the total  
10 composition unless otherwise specified. Degrees are in degrees Celsius unless otherwise specified. "Substantially anhydrous" means less than about 2 wt%, or more preferably less than about 1 wt% of water. "Self-warming" means that  
15 when a composition of the invention is contacted with water, heat is evolved and the resulting composition may rise in temperature.

Compositions of the invention are anhydrous or substantially anhydrous rinse-off hair care compositions. Compositions of  
20 the invention comprise:

- a) at least one glycol;
- b) at least one quaternary ammonium compound;
- c) at least one amidoamine; and
- 25 d) at least one silicone.

More specifically, compositions of the invention can comprise:

- 30 a) from about 30% to about 95% glycol;
- b) from about 1% to about 10% quaternary ammonium compound;

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- c) from about 0.05% to about 5 % amidoamine; and
- d) from about 0.05% to about 5% silicone.

As noted above, the compositions of the invention are either  
5 anhydrous or substantially anhydrous. The compositions of  
the invention generate heat upon coming into contact with  
water. This heat is called the "heat of dissolution of  
glycol". Since this heat is to be generated when the  
composition is being used by the consumer, water must be  
10 kept from the compositions of the invention until used by  
the consumer. This is why the compositions of the invention  
are either anhydrous or substantially anhydrous.

What follows is a description of the ingredients used in the  
15 compositions of the invention.

### Glycols

The following list of glycols which may be used in  
20 compositions of the invention is meant to be illustrative  
and not limiting. These glycols can be hydrophilic glycols  
such as the following: propylene glycol, ethylene glycol,  
glycerin, butylene glycol and mixtures thereof.

25 Polyethylene glycols which can be used in compositions of  
the invention are as follows: PEG, -4, -6, -8, -9, -10, -  
12, -14, -16, -18, -20, -200, -900, and -600. Also included  
are beheneth -5 and -10, PEG-7 betanophthol and PEG-15  
butanediol. Also included are buteth-3 carboxylic acid,  
30 butoxynol -5 and -1; PEG-8, C12-C18 ester, C12-13 pareth -7  
carboxylic acid; C11-C15 pareth -7 carboxylic acid, C12-C15  
pareth -7 carboxylic acid, Cl 1 -1 5 pareth-7 carboxylic

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acid, C12-15 pareth-7 carboxylic acid, C14-15 pareth-8  
carboxylic acid, PEG-8 caprate, PEG-8 caprylate, PEG-8  
caprate/caprylate, PEG-6, and -8 caprylic/capric  
glycerides, capryleth-6 and -9 carboxylic acids, PEG-8  
5 caprylate. Also included are cetareth-2, -3, -4, -5, -5,  
-6, -7, -8, -10, -11, -12, -13, -15, -6, -17, -18, and -  
20; choleth-10 and -20; PEG-3 cocamide, PEG-5 cocamide,  
PEG-6 cocamide, PEG-7 cocamide, PEG-10 cocamide, PEG-20  
cocamide; PEG-2 cocamine, PEG-3 cocamine, PEG-5 cocamine,  
10 PEG-10 cocamine, PEG-15 cocamine, and PEG-20 cocamine; PEG-5  
cocoate, PEG-8 cocoate, PEG-15 cocoate; coceth-3, 5, and -  
8; PEG-2 dilaurate, PEG-4 dilaurate, PEG-6 dilaurate, PEG-8  
dilaurate, PEG-12 dilaurate, PEG-20 dilaurate, PEG-4  
dioleate, PEG-6 dioleate, PEG-8 dioleate, PEG-10 dioleate,  
15 PEG-12 dioleate, and isosteareth-2, isosteareth-3,  
isosteareth-10, isosteareth-12, and isosteareth-20;  
isoceteth-10, and -20; isodeceth-4, -5, and -6; isostereath  
-2, -3, 10, -12, and -20; PEG-3 lauramine oxide; PEG-2  
laurate, PEG-4 laurate, PEG-6 laurate, PEG-8 laurate, PEG-9  
20 laurate, PEG-10 laurate, PEG-12 laurate, PEG-14 laurate, and  
PEG-20 laurate; laureth-1, -2, -3, -4, -5, -6, -7, -8, -9,  
-10, -11, -12, -13, -14, -15, -16, and -20; oleyl-2, -3, -4,  
-5, -6, -7, -8, -9, -10, -12, -15, -16, and -20; stearth-2,  
-3, -4, -5, -6, -7, -10, -11, -13, -14, -15, -16, and -20;  
25 and trideceth-3, -5, -6, -9, -10, -11, -12, and -15.

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Quaternary Ammonium Compounds

The following list of quaternary ammonium compounds which may be included in the compositions of the invention is intended to be illustrative and not limiting.

These compounds have the general structural formula:  $N[R_1 R_2 R_3 R_4]^+ X^-$  where  $R_1$  is an alkyl group including from about 8 to about 18 carbon atoms,  $R_2$  is selected from the group consisting of an alkyl group including from about 8 to about 18 carbon atoms, a hydrogen atom, a methyl group, an ethyl group, a hydroxymethyl group and a hydroxyethyl group,  $R_3$  is selected from the group consisting of a benzyl group, a hydrogen atom, a methyl group, an ethyl group, a hydroxymethyl group and a hydroxyethyl group,  $R_4$  is selected from the group consisting of a hydrogen atom, a methyl group, an ethyl group, a hydroxymethyl group, and a hydroxyethyl group; and  $X$  is an anion. The quaternary nitrogen of the quaternary ammonium compound can also be a component of a heterocyclic moiety such as morpholine or pyridine. The anion can be an anion such as chloride, methosulfate, ethosulfate, nitrate, bromide, tosylate, acetate or phosphate.

The quaternary ammonium compounds have one or two long chain alkyl groups having from about 8 to about 18 carbon atoms. The long chain alkyl groups may be modified to include in addition to, or in replacement of carbon and hydrogen atoms thereof, ether linkages or similar water solubilizing linkages. The remaining two or three substituents of the quaternary nitrogen can be hydrogen or benzyl; or short chain alkyl or hydroxyalkyl groups such as methyl ethylhydroxymethyl or

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hydroxyethyl groups, or combinations thereof, either of the same or different identity.

Exemplary quaternary ammonium compounds include but are not limited to laurtrimonium chloride, quaternium -16, lauralkonium chloride, dicetyldimonium chloride, cetylpyridinium chloride, soytrimonium chloride, mytrimonium chloride, cetrimum chloride, PEG-2 cocomonium chloride, PEG 2 cocoyl quaternium -4, PEG 2 oleyl quaternium 4 polyquaternium -6, -7, -11, -5, -24, and mixtures thereof. these quaternary ammonium compounds are described in U.S Patent 5,656,280. Other water dispersible ammonium compounds include distearyl dimonium chloride, and behenyl trimonium chloride.

15

### Amidoamines

The following list of amidoamines which may be used in compositions of the invention is meant to be illustrative and not limiting. These amide amines included those described in U.S. Patent 5,328,685.

Amidoamines can include diethylaminoethylstearamine, isosteamidopropyl dimethylamine, cocamide propyldimethylamine, ricinoleamido propyldimethylamine, oleamidopropyldimethylamine, behenamidopropyl dimethylamine, palmitamidopropyl dimethylamine, stearamido ethyldiethylamine, stearamidopropyldimethylamine, soy amidopropyl dimethylamine, dimethylaminopropyl myristamide, and stearamidopropylamine.

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Without wishing to be bound by any theory, it is believed that the compositions of the invention, function as conditioners, for example, because the amidoamine acts as a deposition aid for the silicone. Again an important feature  
5 of the compositions of the invention is that they contain at least one amidoamine and at least one silicone.

### Silicones

- 10 The following list of silicones which may be used in compositions of the invention is meant to be illustrative and not limiting. These silicones are as follows: a polyalkyl siloxane, a polyaryl siloxane or a polyalkylaryl siloxane.
- 15 Mixtures of volatile silicones such as cyclotetrasiloxane, cyclopentasiloxane, or cyclohexasiloxane are useful. Mixtures of the non-volatile silicone compounds are also useful. The so-called "rigid silicones", as described in U.S. Patent 4,902,499, having a viscosity above 600,000 cs ( $\text{mm}^2 \text{s}^{-1}$ ) at 20C  
20 and a weight average molecular weight of at least about 500,000, also are useful in compositions of the present invention. A phenyltrimethicone also is useful as a non-volatile silicone compound. Also useful is a mixture of a low molecular weight silicone fluid and a higher molecular weight  
25 silicone gum. Silicones which are useful in compositions of the invention are described in US patent 5,656,280.
- Non-volatile silicones include siloxane or siloxane mixtures having a viscosity of greater than 10 centistokes ( $\text{mm}^2 \text{s}^{-1}$ ). Non-limiting examples include dimethicone, dimethiconol,  
30 amodimethicones, phenyl trimethicone and silicone copolyols.

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Any combination of silicones and amidoamines listed just above are preferred for use in compositions of the invention.

Another important feature of the present invention is that  
5 the compositions have a viscosity in the range of from about 1,000 or 2,000 centistokes ( $\text{mm}^2\text{s}^{-1}$ ) to about 30,000 centistokes ( $\text{mm}^2\text{s}^{-1}$ ), more preferably from about 5,000 centistokes ( $\text{mm}^2\text{s}^{-1}$ ) to about 18,000 centistokes ( $\text{mm}^2\text{s}^{-1}$ ). This viscosity is  
10 achieved by using one or more of the quaternary ammonium compounds described above. Because the composition has the above described viscosities, its use with water, which activates the glycol dissolution system generates heat, and causes the consumer to have the perception of warmth.

### 15 Optional Ingredients

Conditioner materials in general may be selected from the group consisting of quaternary ammonium compounds, amidoamines, silicones, cationic polymers, and hydrocarbons  
20 and fatty alcohol either alone or together with the proviso that there must be included in compositions of the invention at least one amidoamine, at least one quaternary ammonium and at least one silicone.

25 The following list of fatty alcohols which may be used in compositions of the invention is meant to be illustrative and not limiting. These fatty alcohols include a fatty alcohol, or derivative thereof, or a mixture of any of these having a chain length of from about 8 to about 36  
30 carbon atoms. More preferably from about 12 to

- 10 -

about 22 carbon atoms. These materials may be predominantly linear or may be branched. Preferred are stearyl alcohol, cetyl alcohol, behenyl alcohol, lauryl alcohol, myristyl alcohol, and coco alcohol.

5

The following list of fatty alcohols which may be used in compositions of the invention is meant to be illustrative and not limiting. These fatty alcohols include a fatty alcohol or fatty acid, or derivative thereof, or a mixture  
10 of any of these having a chain length of from about 8 to about 36 carbon atoms. More preferably from about 12 to about 22 carbon atoms. These materials may be predominantly linear or may be branched. Preferred are stearyl alcohol, cetyl alcohol, behenyl alcohol, lauryl alcohol, myristyl  
15 alcohol, and coco alcohol.

Nonionic surfactants suitable for use in compositions of the invention include condensation products of aliphatic C8-C18 primary or secondary linear or branched chain alcohols or  
20 phenols with alkylene oxides, usually ethylene oxide, and generally having from 6 to 30 ethylene oxide groups.

Other suitable nonionics include mono- or di-alkyl alkanolamides. Examples include coco mono- or  
25 diethanolamide and coco mono-isopropanolamide. Further suitable nonionic surfactants are the alkylpolyglycosides (APG's). Typically, the APG is one which comprises an alkyl group connected (optionally via a bridging group) to a block of one or more glycosyl groups.

30

Amphoteric and zwitterionic surfactants suitable for use in compositions of the invention may include alkyl amine

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oxides, alkyl betaines, alkyl amidopropyl betaines, alkyl sulphobetaines (sultaines), alkyl glycinate, alkyl carboxyglycinate, alkyl amphopropionates, alkylamphoglycinate, alkyl amidopropyl hydroxysultaine, acyl taurates and acyl glutamates, wherein the alkyl and acyl groups have from 8 to 19 carbon atoms.

Examples include lauryl amine oxide, cocodimethyl sulphopropyl betaine and preferably lauryl betaine, cocamidopropyl betaine and sodium cocamphopropionate.

Further surfactants which may be suitable for use in conditioning shampoos in accordance with the invention include one or more anionic surfactants instead of or in addition to any of those surfactants mentioned above. Those surfactants must be dispersed or mixed in glycols, PEGS, etc.

Suitable anionic surfactants are the alkyl sulphates, alkyl ether sulphates, alkaryl sulphonates, alkaroyl isethionates, alkyl succinate, alkyl sulphosuccinates, N-alkoyl sarcosinates, alkyl phosphates, alkyl ether phosphates, alkyl ether carboxylates, and alphi-olefin sulphonates, especially their sodium, magnesium, ammonium and mono-, di- and triethanolamine salts. The alkyl and acyl groups generally contain from 8 to 18 carbon atoms and may be unsaturated. The alkyl ether sulphates, alkyl ether phosphates and alkyl ether carboxylates may contain from 1 to 10 ethylene oxide or propylene oxide units per molecule, and preferably contain 2 to 3 ethylene oxide units per molecule.

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Examples of suitable anionic surfactants include sodium oleyl succinate, ammonium lauryl sulphosuccinate, ammonium lauryl sulphate, sodium dodecylbenzene sulphonate, triethanolamine dodecylbenzene sulphonate, sodium cocoyl isethionate, sodium lauroyl isethionate and sodium N-lauryl sarcosinate. The most preferred anionic surfactants are sodium lauryl sulphate, triethanolamine lauryl sulphate, triethanolamine monolauryl phosphate, sodium lauryl ether sulphate 1 EO, 2EO and 3EO, ammonium lauryl sulphate and ammonium lauryl ether sulphate 1 EO, 2EO and 3EO.

As further optional components for inclusion in the compositions of the invention, the following may be mentioned: pH adjusting agents, viscosity modifiers, cosmetic fillers such as talc, kaolin; pearlescers, opacifiers, suspending agents, preservatives, coloring agents, dyes, proteins, herb and plant extracts, polyols and other moisturizing agents.

Silica may be included in compositions of the invention as a thickener and/or a stabilizer at about 1.5 to about 2.5%.

Other surfactants include alkyl sulfates, alkyl ether sulfonates, alkyl sulfonates, fatty acids, and the like. Many additional anionic cleansing surfactants are described in McCutcheon's, DETERGENTS and EMULSIFIERS 1989 ANNUAL published by McCutcheon's Publishing Company.

Compositions of the invention can be made by using processes which are known in the art or by using processes which are analogous to those known in the art. Compositions of the invention can be made by using starting materials which are

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known in the art or by using starting materials which are obtainable from materials that are known in the art.

5 Compositions of the invention may be applied before or after the application of water. Compositions of the invention may be used simultaneously with water.

10 If the composition of the invention is a conditioner, it may be applied to the hair, usually with the fingers, and then rinsed out. If the composition of the invention is a shampoo or a 2 in 1 product, it may be applied to the hair with water, lathered, and then rinsed out.

15 Compositions of the invention which are conditioners are opaque conditioners, generally.

20 Compositions of the invention are made by mixing the glycol and heating to about 65°C to about 70°C for at least 30 minutes; cooling the batch to about 60°C, adding the silicone, cooling to about 45°C, adding more silicone, and fragrance, etc. and further cooling, to about room temperature.

25 The following examples are meant to be illustrative and not limiting.

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ExamplesComposition A(Composition of the Invention)

5

Item	Description	Wt%
1	PEG 200	69.6190
2	CETYL / STEARYL ALCOHOL, 100% ACTIVE	2.5000
3	BEHENTRIMONIUM CHLORIDE	2.0000
4	DICETYLDIMONIUM CHLORIDE/PG, 68%/27ACT	1.0000
5	STEARAMIDOPROPYL DIMETHYLAMINE, 100% ACT	0.5000
6	CITRIC ACID	0.1000
7	STEARETH-2, 99% ACTIVE	1.0000
8	STEARETH-21	1.0000
9	GLYCERIN, USP, 99.7% ACTIVE	18.6000
10	DIMETHICONE 60,000 CS	2.0000
11	CYCLOPENTASILOXANE, 99% ACTIVE	1.0000
12	Minors	up to 100

Manufacturing Steps:

- 10 1. Into a manufacturing tank, add item 1 and heat to 70°C;  
2. Add items 5 and 6; mix at 30°C;  
3. Add items 2, 3 and 4;  
4. Add items 7 and 8, mix until homogeneous;  
5. Add pre-mix of items 9 and 10 at 60°C;  
15 6. At 40°C add item 11;  
7. Add item 12.

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**Composition B**  
**(Composition of the Invention)**

<b>Item</b>	<b>Description</b>	<b>Wt%</b>
1	PEG 200	65.2496
2	STEARAMIDOPROPYL DIMETHYLAMINE	3.0000
3	CITRIC ACID	0.5000
4	DICETYLDIMONIUM CHLORIDE/PG	1.0000
5	BEHENYL ALCOHOL	2.5000
6	BEHENTRIMONIUM CHLORIDE	2.0000
7	SILICA	1.5000
8	GLYCERIN	18.6000
9	DIMETHICONE 60,000 CS	2.0000
10	STEARYL ALCOHOL AND CETEARETH-20	3.0000
11	SILK POWDER	0.0001
12	SODIUM PCA	0.0002
13	DL PANTHENOL	0.0001
14	FRAGRANCE	0.6500

5

Manufacturing Steps:

1. Into a manufacturing tank, add item 1 and beginning to heat to 70°C;
- 10 2. Add items 2 and 3. Mix for 20 minutes;
3. Add item 4;
4. Add item 5;
5. Add item 6;
6. Add item 7;
- 15 7. Add pre-mix of items 8 and 9. Mix the batch for 30 mins;

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8. Add item 10;
9. Mix the batch for 30 mins and beginning to cool to 30°C;
10. Add the remaining ingredients;
11. Pass through homogenizer;

5

The pH of the resulting composition is in the range 6.6 to 7.7. The viscosity is in the range from 7,000 to about 14,000 cps.

10

**Composition I**  
**(Control)**

<b>Item</b>	<b>Description</b>	<b>Wt%</b>
1	PEG 200	70.6290
2	DICETYLDIMONIUM CHLORIDE/PG, 68%/27% ACTIVE	2.5000
3	CETYL / STEARYL ALCOHOL, 100% ACTIVE	2.5000
4	STEARETH-2 99%	1.0000
5	STEARETH-21	1.0000
6	DIMETHICONE 60,000 CS	2.0000
7	CYCLOPENTASILOXANE, 99% ACTIVE	1.0000
8	GLYCERIN, USP, 99.7% ACTIVE	18.6000
9	Minors	up to 100

**Manufacturing Steps:**

- 15 1. In the Ross add item 1, heat to 68-72°C;
2. Add item 2;
3. Add item 3;
4. Add item 4;
5. Add item 5;
- 20 6. Mix the batch for 40 minutes or until homogeneous;

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7. Cool to 60°C;
8. Add a pre-mix of items 6 and 8. Use homomixer, anchor;
9. Cool to 45°C;
10. Add item 7;
- 5 11. Add item 9.

**Composition II**  
**(Control)**

Item	Description	Wt%
1	PEG 200	70.6500
2	CETYL / STEARYL ALCOHOL, 100% ACTIVE	2.5000
3	BEHENTRIMONIUM CHLORIDE	2.0000
4	DICETYLDIMONIUM CHLORIDE / PG, 68% / 27% ACTIVE	0.5000
5	STEARETH-2, 99% ACTIVE	1.0000
6	STEARETH-21	1.0000
7	GLYLCERIN, USP, 99.7% ACTIVE	18.6000
8	DL-PANTHENOL, 99% ACTIVE	0.1000
9	DIMETHICONE 60,000 CS	2.0000
10	CYCLOPENTASILOXANE, 99% ACTIVE	1.0000
11	FRAGRANCE	0.6500

10

Manufacturing Steps:

1. In the Ross, add item 1, heat to 65-70°C;
2. Add item 2;
- 15 3. Add item 3;
4. Add item 4
5. Add item 5;
6. Add item 6;

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7. Mix the batch for 40 minutes or until homogeneous;
8. Cool to 60°C;
9. Add pre-mix of items 7 and 9; cool to 45°C;
10. Add remaining ingredients.

5

**Composition III**  
**(Control)**

Item	Description	Wt%
1	PEG 200	68.1290
2	DICETYLDIMONIUM CHLORIDE / PG, 68% / 27% ACTIVE	2.5000
3	CETYL / STEARYL ALCOHOL, 100% ACTIVE	5.0000
4	STEARETH-2, 99% ACTIVE	1.0000
5	STEARETH-21	1.0000
6	DIMETHICONE 60,000 CS	2.0000
7	CYCLOPENTASILOXANE, 99% ACTIVE	1.0000
8	GLYCERIN, USP, 99.7% ACTIVE	18.6000
9	Minors	up to 100

10 Manufacturing Steps:

1. In the Ross, add item 1. Heat to 65-70°C;
2. Add item 2;
3. Add item 3;
- 15 4. Add item 4;
5. Add item 5;
6. Mix for 40 minutes or until batch becomes homogeneous;
7. Cool to 60°C;
8. Add pre-mix of items 6 and 8. Use homomixer, anchor;
- 20 9. Cool to 45°C.

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10. Add items 7 and 9.

**Lux Composition**  
**(Control)**

5

Item	Description	Wt%
1	GLYCERIN, USP, 99.7% ACTIVE	15.0000
2	DIMETHICONE 60,000 CS	2.0000
3	GLYCERIN, USP, 99.7% ACTIVE	3.6000
4	PEG 200	71.1500
5	CETYL/STEARYL ALCOHOL	2.5000
6	BEHENTRIMONIUM CHLORIDE	2.0000
7	STEARETH-2 99% ACTIVE	1.0000
8	STEARETH-21	1.0000
9	DL-PANTHENOL, 99% ACTIVE	0.1000
10	CYCLOPENTASILOXANE 99% ACTIVE	1.0000
11	FRAGRANCE	0.6500

Manufacturing Steps:

1. In the Ross, add items 4, 5, 7, 8 and 9;
- 10 2. Heat batch to 65-70°C (149-158°F) with anchor cowles and vacuum;
3. Once the batch reaches 65-70°C, mix for 30 minutes;
4. Cool to 60°F
5. Add Glycerin premix to the batch. Use homomixer,  
15 anchor.
6. Cool to 45°C
7. Add items 10 and 11.



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In Tables 1 and 2:

- "Lux" is a modification of the Lux self-warming conditioner composition;
  - 5 • "Cond. 1" is a bench-mark commercial "extra body" conditioner, and
  - "Cond. 2" is a bench-mark commercial "extra moisturising" conditioner.
- 10 The conditioning properties of the compositions were assessed by means of a wet combing test using an Instron device, which is a method well-known in the art. The self-warming properties of the compositions were assessed by measuring the temperature rise. The results are presented
- 15 in Table 2.

**Table 2**

<b>Composition</b>	<b>Combing Force (Instron): Maximum Load</b>	<b>Temp. Increase (°C)</b>
A	10.57	8
B	10.34	8
I	12.68	8
II	12.56	8
III	13.41	8
Lux	14.39	7
Cond. 1	12.77	0
Cond. 2	10.34	0

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Compositions A and B have similar wet combing properties to the commercial extra-moisturising conditioner, and superior wet combing properties to all of the other compositions in Table 2, including the commercial extra-body conditioner.

- 5 This improvement in conditioning is achieved without compromising the self-heating capabilities of the hair care composition.

**Claims**

1. An anhydrous or substantially anhydrous self-warming rinse-out hair care composition which comprises:

- a) from 30wt% to 95wt% glycol or glycerin,
- b) from 1wt% to 10wt% quaternary ammonium compound of formula



wherein  $R_1$  is an alkyl group having 8 to 18 carbon atoms,  $R_2$  is selected from the group consisting of an alkyl group having from 8 to 18 carbon atoms, hydrogen, hydroxymethyl and hydroxyethyl,  $R_3$  is selected from the group consisting of benzyl, hydrogen, methyl, ethyl, hydroxymethyl and hydroxyethyl,  $R_4$  is selected from the group consisting of hydrogen, methyl, ethyl, hydroxymethyl and hydroxyethyl, and X is an anion,

- c) from 0.05wt% to 5wt% amidoamine, and
- d) from 0.05wt% to 5wt% silicone,

wherein the composition comprises less than 2wt% water.

- 2. A composition according to claim 1 in the form of a rinse-out conditioner.
- 3. A composition according to claim 1 in the form of a rinse-out shampoo.
- 4. A composition according to claim 1 in the form of a 2 in 1 product.
- 5. A composition according to any one of claims 1 to 4 in which the glycol is PEG-200.

6. A composition according to any one of claims 1 to 5, in which the quaternary ammonium compound is behenyl trimonium.
7. A composition according to any one of claims 1 to 6, in which the amidoamine is stearamidopropyl dimethylamine.
8. A composition according to any one of claims 1 to 7, in which the silicone is dimethicone.
9. A composition according to claim 1, in which the amidoamine is stearamidopropylamine.
10. A composition as defined in claim 1 wherein at least some of the alkyl groups of the quaternary ammonium compound are modified to include water solubilizing linkages.
11. A composition according to claim 10 wherein the water solubilizing linkages are ether linkages.
12. A method for treating hair which comprises
  - (i) contacting the hair with water and then a composition according to claim 1;  
or
  - (ii) contacting the hair with a composition according to claim 1 and then water;  
or
  - (iii) contacting the hair simultaneously with a composition according to claim 1 and water.