1. Detergent composition, characterized in that it comprises, in a cosmetically acceptable medium, (A) a washing base comprising at least one anionic surfactant of alkyl ether sulphate type and at least one amphoteric surfactant of C₈₋C₂₀ alkylbetaine type and (B) a conditioning system comprising at least one aminosilicone and at least one cationic polymer chosen from homopolymers containing, as main constituents of the chain, units corresponding to formulae (I) and/or (I'):

![Chemical structures](image)
in which formulae $k$ and $t$ are equal to 0 or 1, the sum $k + t$ being equal to 1; $R_3$ denotes a hydrogen atom or a methyl radical; $R_1$ and $R_2$, independently of each other, denote an alkyl group having from 1 to 22 carbon atoms, a hydroxyalkyl group in which the alkyl group preferably has 1 to 5 carbon atoms, a lower (1 to 5 carbon atoms) amido alkyl group, or $R_1$ and $R_2$ can denote, together with the nitrogen atom to which they are attached, heterocyclic groups such as piperidyl or morpholinyl; $Y^-$ is an anion such as bromide, chloride, acetate, borate, citrate, tartrate, bisulphate, bisulphite, sulphate or phosphate.
We, being the person(s) identified below as the Applicant(s), request the grant of a Standard Patent to the person(s) identified below as the Nominated Person(s), for an invention described in the accompanying complete specification.

Applicant(s) and Nominated Person(s): L’ORÉAL

Address: 14, RUE ROYALE
          PARIS 75008
          FRANCE

Invention Title: DETERGENT COSMETIC COMPOSITIONS AND USE THEREOF

Name(s) of Actual Inventor(s): Sandrine DECOUSTER; Bernard BEAUQUEY

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BASIC CONVENTION APPLICATION DETAILS

Application No: 9704219
Country: FR
Application Date: 07 April 1997

DATED: 18 March 1998

L’ORÉAL

GRIFFITH HACK
MELBOURNE OFFICE

C. M. BENTLEY

Patent Attorney for and on behalf of the Applicant
NOTICE OF ENTITLEMENT

I/We L’ORÉAL

of 14, RUE ROYALE
PARIS 75008
FRANCE

being the applicant(s) in respect of an application for a patent for an invention entitled
DETERGENT COSMETIC COMPOSITIONS AND USE THEREOF state the following:

1. The nominated person(s) has/have, for the following reasons, gained entitlement from the actual inventor(s):

   THE NOMINATED PERSON WOULD BE ENTITLED TO HAVE
   ASSIGNED TO IT A PATENT GRANTED TO ANY OF THE
   ACTUAL INVENTORS IN RESPECT OF THE SAID
   INVENTION.

2. The nominated person(s) has/have, for the following reasons, gained entitlement from the basic applicant(s) listed on the patent request:

   THE APPLICANT AND NOMINATED PERSON IS THE BASIC
   APPLICANT.

3. The basic application(s) listed on the request form is/are the first application(s) made in a Convention country in respect of the invention.

DATE: 18 March 1998

L’ORÉAL

GRIFFITH HACK
MELBOURNE OFFICE

C. M. BENTLEY

Patent Attorney for and on behalf of the applicant(s)
Applicant(s):
L'ORÉAL

Invention Title:
DETERGENT COSMETIC COMPOSITIONS AND USE THEREOF

The following statement is a full description of this invention, including the best method of performing it known to me/us:
DETERGENT COSMETIC COMPOSITIONS
AND USE THEREOF

The present invention relates to novel cosmetic compositions with improved properties, intended both for cleaning and conditioning keratin substances, and comprising, in a cosmetically acceptable vehicle, a washing base consisting of surfactants with detergent power, in which cationic polymers in combination with aminosilicones are also present as conditioners. The invention also relates to the use of the said compositions in the abovementioned cosmetic application.

It is common to use detergent compositions based essentially on standard surfactants of anionic, nonionic and/or amphoteric type in particular, but more particularly of anionic type, to clean and/or wash the skin or the hair. These compositions are applied to wet hair or skin and the lather generated by massaging or rubbing with the hands removes, after rinsing with water, the various types of soiling which are initially present on the skin or hair.

Admittedly these base compositions are of good washing power, but the intrinsic cosmetic properties associated with them nevertheless remain fairly poor, owing in particular to the fact that the relatively aggressive nature of such a cleaning treatment can, in the long run, lead to more or less
pronounced damage to the hair fibre, this damage being associated in particular with the gradual removal of the lipids or proteins contained in or on the surface of this fibre.

Thus, in order to improve the cosmetic properties of the above detergent compositions, and more particularly those which are to be applied to sensitized hair (i.e. hair which has been damaged or made brittle, in particular under the chemical action of atmospheric agents and/or hair treatments such as permanent-waving, dyeing or bleaching), it is now common to introduce additional cosmetic agents known as conditioners into these compositions, these conditioners being intended mainly to repair or limit the harmful or undesirable effects induced by the various treatments or aggressions to which the hair fibres are subjected more or less repeatedly. These conditioners may, of course, also improve the cosmetic behaviour of natural hair.

The conditioners most commonly used to date in shampoos are cationic polymers, silicones and/or silicone derivatives, which give washed, dry or wet hair an ease of disentangling, softness and smoothness which are markedly better than that which can be obtained with corresponding cleaning compositions from which they are absent.

On sensitized hair, in order to obtain the cosmetic effects of silicones over the entire length of
the hair fibre, combinations of silicones and cationic polymers are preferably used.

However, despite the progress made recently in the field of shampoos based on silicones and cationic polymers, these shampoos are not really completely satisfactory, and as such a strong need still exists currently as regards being able to provide novel products which give better performance with respect to one or more of the cosmetic properties mentioned above.

The present invention is directed towards satisfying such a need.

Thus, after considerable research conducted in this matter, the Applicant has now found, entirely surprisingly and unexpectedly, that by using (A) a specific washing base and (B) a conditioning system comprising at least one specific cationic polymer and at least one aminosilicone, as defined below, it is possible to obtain detergent compositions which have excellent cosmetic properties, in particular with respect to the disentangling, the softness, the suppleness and the volume of treated hair, while at the same time retaining their good intrinsic washing power.

Thus, according to the present invention, novel detergent compositions are now proposed, comprising, in a cosmetically acceptable medium, (A) a washing base comprising at least one anionic surfactant of alkyl ether sulphate type and at least one
amphoteric surfactant of C₈-C₂₀ alkylbetaine type and
(B) a conditioning system comprising at least one
aminosilicone and at least one cationic polymer chosen
from homopolymers containing, as main constituents of
the chain, units corresponding to formulae (I) and/or
(I’):

\[
\begin{align*}
&(\text{I}) \\
&\text{CH}_2 \text{CH}_2 \text{CH}_2 \\
&\text{R}_1 \quad \text{R}_2 \\
&\text{N}^+ \quad \text{Y} \\
&(\text{CH}_2)_t \text{CHR}_3 \text{CH}_2 - \\
&\text{CH}_2 \\
&(\text{CH}_2)_k \text{CHR}_3 - \\
&\text{CH}_2 \\
&(\text{I’}) \\
&\text{CH}_2 \text{CH}_2 \\
&\text{R}_1 \\
&\text{N} \\
&(\text{CH}_2)_t \text{CHR}_3 \text{CH}_2 - \\
&\text{CH}_2 \\
&(\text{CH}_2)_k \text{CHR}_3 - \\
&\text{CH}_2 \\
&\text{Y} \\
&\text{Y} \\
&\text{k} \quad \text{t}
\end{align*}
\]

in which formulae k and t are equal to 0 or 1, the sum
k + t being equal to 1; R₃ denotes a hydrogen atom or a
methyl radical; R₁ and R₂, independently of each other,
denote an alkyl group having from 1 to 22 carbon atoms,
a hydroxyalkyl group in which the alkyl group
preferably has 1 to 5 carbon atoms, a lower (1 to 5
carbon atoms) amido alkyl group, or R₁ and R₂ can
denote, together with the nitrogen atom to which they
are attached, heterocyclic groups such as piperidyl or
morpholinyl; Y⁻ is an anion such as bromide, chloride,
acetate, borate, citrate, tartrate, bisulphate,
bisulphite, sulphate or phosphate.

The subject of the invention is also the
cosmetic use of the above compositions for cleaning and
conditioning keratin substances such as the hair and
the skin.

The compositions can be used, for example,
for removing make-up from keratin substances such as the skin (for example the face, the neck or the lips),
the eyelashes or the eyebrows.

However, other characteristics, aspects and advantages of the invention will emerge even more clearly on reading the description which follows, as well as the concrete, but in no way limiting, examples intended to illustrate it.

As indicated above, the essential constituents forming part of the composition of the hair products of the invention are (A) a washing base, (B) a conditioning system comprising (i) at least one aminosilicone and (ii) at least one specific cationic polymer.

**A-WASHING BASE:**

The compositions in accordance with the invention necessarily comprise a washing base, which is generally aqueous, comprising one or more anionic surfactants of alkyl ether sulphate type and one or more C₈-C₂₀ alkylbetaine amphoteric surfactants.

The minimum amount of washing base is that which is just sufficient to give the final composition a satisfactory foaming power and/or detergent power, and excessive amounts of washing base do not really afford additional advantages.

Thus, according to the invention, the washing base can represent from 2% to 50% by weight, preferably from 10% to 35% by weight and even more preferably from
12% to 25% by weight, of the total weight of the final composition.

(i) Anionic surfactant(s) of alkyl ether sulphate type:

The anionic surfactants of alkyl ether sulphate type which can be used, alone or as mixtures, in the context of the present invention are salts (in particular alkaline salts, especially sodium salts, ammonium salts, amine salts, amino alcohol salts or magnesium salts) of alkyl ether sulphates, alkylamido ether sulphates, alkylaryl ether sulphates; alkyl ether sulphosuccinates, the alkyl or acyl radical of all these various compounds preferably containing from 8 to 24 carbon atoms, and the aryl radical preferably denoting a phenyl or benzyl group.

The average number of ethylene oxide or propylene oxide groups can range in particular from 2 to 50 and more particularly from 2 to 10.

Among these anionic surfactants, C_{8}-C_{14} and more particularly C_{12}-C_{14} alkyl ether sulphate salts are preferably used. These salts comprise in particular from 2 to 5 ethylene oxide groups.

The anionic surfactants are generally present in a proportion of from 1 to 50% by weight, preferably from 5 to 20% by weight, relative to the total weight of the composition.

(ii) Amphoteric surfactant(s):

According to the invention, the amphoteric
surfactants must be chosen from \((C_8-C_{20})\)alkylbetaines of formula:

\[
\begin{align*}
\text{CH}_3 & \\
R & \rightarrow \text{N} - \text{CH}_2 - \text{COO}^- \\
\text{CH}_3 & 
\end{align*}
\]

in which \(R\) denotes a linear or branched \(C_8-C_{20}\), preferably \(C_{10}-C_{14}\) and more particularly \(C_{12}-C_{14}\), alkyl radical.

In particular, the cocobetaine sold by the company Henkel under the name Dehyton AB 30 is preferably used.

The amphoteric surfactants are generally present in a proportion of from 1 to 50% by weight, preferably from 5 to 20% by weight, relative to the total weight of the composition.

**B-CONDITIONING SYSTEM**

(i) - Aminosilicones

According to an essential characteristic of the detergent compositions in accordance with the invention, these compositions also contain at least one aminosilicone.

Hereinabove and hereinbelow, in accordance with the definition generally accepted, the term silicone or polysiloxane is understood to denote any organosilicon polymer or oligomer with a linear or cyclic, branched or crosslinked structure, of variable molecular weight, obtained by polymerization and/or polycondensation of suitably functionalized silanes,
and consisting essentially of a repetition of main units in which the silicon atoms are connected together by oxygen atoms (siloxane bond =Si-O-Si=), optionally substituted hydrocarbon radicals being linked directly via a carbon atom to the said silicon atoms. The most common hydrocarbon radicals are alkyl radicals, especially C₁₋₁₀ alkyl radicals and in particular methyl, fluoroalkyl radicals, aryl radicals and in particular phenyl, and alkenyl radicals and in particular vinyl; other types of radicals which can be linked, either directly or via a hydrocarbon radical, to the siloxane chain are, in particular, hydrogen, halogen and in particular chlorine, bromine or fluorine, thiols, alkoxy radicals, polyoxyalkylene (or polyether) radicals and in particular polyoxyethylene and/or polyoxypropylene, hydroxyl or hydroxyalkyl radicals, amide groups, acyloxy or acyloxyalkyl radicals, amphoteric or betaine groups, anionic groups such as carboxylates, thioglycolates, sulphosuccinates, thiosulphates, phosphates and sulphates, this list obviously being in no way limiting (so-called "organomodified" silicones).

According to the invention, the term aminosilicone denotes any silicone containing at least one primary, secondary or tertiary amine or a quaternary ammonium group. Mention may thus be made of:

(a) the polysiloxanes referred to in the CTFA dictionary as "amodimethicone" and corresponding to the
in which \( x' \) and \( y' \) are integers dependent on the molecular weight, generally such that the said weight-average molecular weight is between 5000 and 500,000 approximately;

(b) aminosilicones corresponding to the formula:

\[ \text{R'}_aG_3-a-\text{Si(OSiG}_2)_n-(\text{OSiG}_b\text{R'}_2-b)_m-O-\text{SiG}_3-a-\text{R'}_a \quad \text{(III)} \]

in which:

- \( G \) is a hydrogen atom or a phenyl, OH or \( C_1-C_8 \) alkyl group, for example methyl,
- \( a \) denotes the number 0 or an integer from 1 to 3, in particular 0,
- \( b \) denotes 0 or 1, and in particular 1,
- \( m \) and \( n \) are numbers such that the sum \( (n + m) \) can range especially from 1 to 2000 and in particular from 50 to 150, it being possible for \( n \) to denote a number from 0 to 1999 and especially from 49 to 149 and it being possible for \( m \) to denote a number from 1 to 2000 and especially from 1 to 10;
- \( \text{R'} \) is a monovalent radical of formula \(-C_qH_{2q}L\) in which \( q \)
is a number from 2 to 8 and \( L \) is an optionally quaternized amine group chosen from the groups:

\[
\begin{align*}
&-\text{NR}^\text{II}-\text{CH}_2-\text{CH}_2-\text{N'}(\text{R''})_2 \\
&-\text{N}(\text{R''})_2 \\
&-\text{N}(\text{R''})_2\text{A}^- \\
&-\text{NH}(\text{R''})_2\text{A}^- \\
&-\text{NH}_2(\text{R''})\text{A}^- \\
&-\text{N}(\text{R''})-\text{CH}_2-\text{CH}_2-\text{N}\text{R''H}_2\text{A}^-,
\end{align*}
\]

in which \( \text{R''} \) can denote hydrogen, phenyl, benzyl, or a saturated monovalent hydrocarbon radical, for example an alkyl radical having from 1 to 20 carbon atoms, and \( \text{A}^- \) represents a halide ion such as, for example, fluoride, chloride, bromide or iodide.

A product corresponding to this definition is the silicone known as "trimethylsilylamodimethicone", corresponding to the formula:

\[
\left(\text{CH}_3\right)_3\text{Si}-\underset{n}{\text{O}}-\underset{m}{\text{Si}(\text{CH}_3)_{3\text{O}}-\text{Si}(\text{CH}_3)_{3\text{O}}-\text{Si}(\text{CH}_3)_{3\text{O}}-\text{Si}(\text{CH}_3)_{3\text{O}}}\right)
\]

in which \( n \) and \( m \) have the meanings given above (cf. Formula XIII).

Such polymers are described, for example in patent application EP-A-95238.
(c) aminosilicones corresponding to the formula:

\[
\begin{align*}
R_5 &- CH_2 - CH(OH) - CH_2 - N(R_4) \Theta \\
\text{Si} &- O \\
\text{Si} &- O \\
\text{Si} &\quad (R_5)
\end{align*}
\]

in which:

- \( R_5 \) represents a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, and in particular a \( \text{C}_1-\text{C}_{18} \) alkyl or \( \text{C}_2-\text{C}_{18} \) alkenyl radical, for example methyl;
- \( R_6 \) represents a divalent hydrocarbon radical, in particular a \( \text{C}_1-\text{C}_{18} \) alkylenyl radical or a divalent \( \text{C}_1-\text{C}_{18} \), alkylenoxy radical connected to the Si by an SiC bond;
- \( Q^- \) is an anion such as a halide ion, in particular chloride, or an organic acid salt (acetate, etc.);
- \( r \) represents an average statistical value from 2 to 20 and in particular from 2 to 8;
- \( s \) represents an average statistical value from 20 to 200 and in particular from 20 to 50.

Such aminosilicones are described more particularly in patent US 4,185,087.

A silicone which falls within this class is the silicone sold by the company Union Carbide under the name "Ucar Silicone ALE 56".

d) quaternary ammonium silicones of formula:
in which:

$R_7$ which may be identical or different, represent a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, and in particular a $C_1-C_{18}$ alkyl radical, a $C_2-C_{18}$ alkenyl radical or a ring comprising 5 or 6 carbon atoms, for example methyl;

$R_5$ represents a divalent hydrocarbon radical, in particular a $C_1-C_{18}$ alkylene radical or a divalent $C_1-C_{18}$, for example $C_1-C_8$, alkylidencycloalkoxy radical connected to the Si by an SiC bond;

$R_8$ which may be identical or different, represent a hydrogen atom, a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, and in particular a $C_1-C_{18}$ alkyl radical, a $C_2-C_{18}$ alkenyl radical or a radical $-R_6-NHCOR_7$;

$x^-$ is an anion such as a halide ion, in particular chloride, or an organic acid salt (acetate, etc.);

$r$ represents an average statistical value from 2 to 200 and in particular from 5 to 100.

These silicones are described, for example, in application EP-A-0,530,974.

Silicones falling within this class are the silicones sold by the company Goldschmidt under the
names Abil Quat 3270, Abil Quat 3272 and Abil Quat 3474.

e) aminosilicons of formula (VII):

\[
\begin{align*}
\text{Si}- & \quad \text{O} \quad \text{Si} \quad \text{O} \quad \text{Si} \\
(\text{C}_m\text{H}_{2m}) & \quad \text{R}_1 \quad \text{R}_2 \quad \text{R}_3 \quad \text{R}_4 \\
\text{NH} & \quad \text{R}_5 \\
(\text{C}_n\text{H}_{2n}) & \quad \text{NH}_2
\end{align*}
\]

(VII)

in which:

- \( R_1, R_2, R_3 \) and \( R_4 \), which may be identical or different, denote a \( C_1-C_4 \) alkyl radical or a phenyl group,
- \( R_5 \) denotes a \( C_1-C_4 \) alkyl radical or a hydroxyl group,
- \( n \) is an integer ranging from 1 to 5,
- \( m \) is an integer ranging from 1 to 5,

and in which \( x \) is chosen such that the amine number is between 0.01 and 1 meq/g.

According to the invention, the aminosilicones can be in the form of an oil, of aqueous, alcoholic or aqueous-alcoholic solutions, in the form of a dispersion or an emulsion.

One particularly advantageous embodiment is their use in the form of emulsions, in particular in the form of microemulsions or nanoemulsions.

The product sold under the name "Cationic
Emulsion DC 929" by the company Dow Corning, which comprises, besides amodimethicone, a cationic surfactant derived from tallow fatty acids, referred to as tallotrimonium (CTFA), in combination with a nonionic surfactant, known under the name "Nonoxynol 10", can be used for example.

The product sold under the name "Catonic Emulsion DC 939" by the company Dow Corning, which comprises, besides amodimethicone, a cationic surfactant, trimethylcetylammmonium chloride, in combination with a nonionic surfactant, trideceth-12, can also be used for example.

Another commercial product which can be used according to the invention is the product sold under the name "Dow Corning Q2 7224" by the company Dow Corning, containing, in combination, the trimethylsilylamodimethicone of formula (IV), a nonionic surfactant of formula: \( C_{9}H_{17}-C_{6}H_{4}-(OCH_{2}CH_{2})_{n}-OH \) in which \( n = 40 \), also known as octoxynol-40,

another nonionic surfactant of formula: \( C_{12}H_{25}-(OCH_{2}-CH_{2})_{n}-OH \) in which \( n = 6 \), also known as isolaureth-6, and glycol.

(i) Cationic polymer(s):

For the purposes of the present invention, the expression "cationic polymer" denotes any polymer containing cationic groups and/or groups that are ionizable into cationic groups.

The compositions in accordance with the
invention also necessarily comprise a cationic polymer chosen from homopolymers containing, as main constituent of the chain, units corresponding to formula (I) or (I'):

![Chemical formula image]

in which formulae k and t are equal to 0 or 1, the sum k + t being equal to 1; R₃ denotes a hydrogen atom or a methyl radical; R₁ and R₂, independently of each other, denote an alkyl group having from 1 to 22 carbon atoms, a hydroxyalkyl group in which the alkyl group preferably has 1 to 5 carbon atoms, a lower (1 to 5 carbon atoms) amido alkyl group, or R₁ and R₂ can denote, together with the nitrogen atom to which they are attached, heterocyclic groups such as piperidyl or morpholinyl; Y⁻ is an anion such as bromide, chloride, acetate, borate, citrate, tartrate, bisulphate, bisulphite, sulphate or phosphate.

These polymers are described in particular in French patent 2,080,759, in its Certificate of Addition 2,190,406 or in US patents 3,996,146 and 3,288,770.

Preferably, R₁₀ and R₁₁ denote, independently of each other, methyl or ethyl and R₁₂ denotes a hydrogen atom.

The cationic polymers used generally have a
weight-average molecular weight of between 5000 and 5×10^6 approximately, and preferably between 10^4 and 5×10^5 approximately.

Among the polymers defined above, mention may be made more particularly of dimethyldiallylammonium chloride homopolymers such as the one sold under the name "Merquat® 100" by the company Calgon.

The compositions in accordance with the invention contain the aminosilicones defined above in weight contents which can be between 0.05% and 10%, preferably between 0.1% and 5% and even more preferably between 0.2% and 3%, relative to the total weight of the composition.

According to the invention, the cationic polymer(s) can represent from 0.001% to 10% by weight, preferably from 0.005% to 5% by weight and even more preferably from 0.01% to 3% by weight, of the total weight of the final composition.

The vehicle, or support, for the detergent compositions according to the invention is preferably water or an aqueous-alcoholic solution of a C_1-C_6 lower alcohol such as ethanol, isopropanol or butanol, or a mixture of water and an alkylene glycol such as propylene glycol and glycol ethers.

The detergent compositions according to the invention have a final pH generally of between 3 and 10. Preferably, this pH is between 5.5 and 8. The pH can be adjusted to the desired value conventionally by
adding a base (organic or inorganic) into the composition, for example aqueous ammonia or a primary, secondary or tertiary (poly)amine such as monoethanolamine, diethanolamine, triethanolamine, isopropanolamine or 1,3-propanediamine, or alternatively by adding an acid, preferably a carboxylic acid such as, for example, citric acid.

The compositions in accordance with the invention can contain, in addition to the combination defined above, viscosity modifiers such as electrolytes, or thickeners. Mention may be made in particular of sodium chloride, sodium xylenesulphonate, scleroglucans, xanthan gums, fatty acid alkanolamides, alkanolamides of carboxylic acid alkyl ether optionally oxyethylenated with up to 5 mol of ethylene oxide, such as the product sold under the name "Aminol A15" by the company Chem Y, crosslinked polyacrylic acids and crosslinked acrylic acid/C_{10-13} alkyl acrylate copolymers. These viscosity modifiers are used in the compositions according to the invention in proportions which may range up to 10\% by weight relative to the total weight of the composition.

The compositions in accordance with the invention can also contain up to 5\% of pearlescent agents or opacifiers that are well known in the state of the art, such as, for example, sodium or magnesium palmitate, sodium or magnesium stearate or hydroxystearate, acyl derivatives containing a fatty
conditioning keratin substances such as the hair and the skin.

The compositions can be used, for example, chain, such as monostearates or distearates of ethylene glycol or of polyethylene glycol, fatty-chain ethers such as distearyl ether or 1-hexadecylxyoctadecanol.

The compositions in accordance with the invention can optionally also contain other adjuvants whose effect is to improve the cosmetic properties of the hair or the skin. Mention may be made, in this respect, of cationic surfactants, anionic, nonionic, cationic or amphoteric polymers, proteins, proteinhydrolysates, ceramides, pseudoceramides, hydroxy acids, vitamins, panthenol, plant, animal, mineral or synthetic oils, and water-soluble or liposoluble sunscreens.

These compositions can also contain various adjuvants commonly used in cosmetics, such as fragrances, preserving agents, sequestering agents, foam stabilizers and acidifying or basifying agents that are well known in cosmetics.

 Needless to say, a person skilled in the art will take care to select this or these optional complementary compounds and/or the amounts thereof such that the advantageous properties intrinsically associated with the combination (washing base + specific cationic polymer + aminosilicone) in accordance with the invention are not, or are not substantially, adversely affected by the addition(s) envisaged.

These compositions can be in the form of
relatively thickened liquids, creams or gels and they are mainly suitable for washing and caring for keratin substances such as the skin or the hair.

The compositions according to the invention are preferably used as shampoos for washing and conditioning the hair, and they are applied, in this respect, to wet hair in amounts that are effective to wash them, this application being followed by rinsing with water.

The compositions in accordance with the invention can also be used as shower gels for washing and conditioning the hair and the skin, in which case they are applied to wet hair or skin and are rinsed after application.

The compositions in accordance with the invention can also be used as agents for removing make-up from keratin substances such as the skin, the eyelashes or the eyebrows.

The subject of the invention is also a process for washing and conditioning keratin substances such as the hair, which consists in applying an effective amount of a composition as defined above to the said wet substances, followed by rinsing with water after optionally leaving the composition on the keratin substances for a while.

Concrete, but in no way limiting, examples illustrating the invention will now be given.
EXAMPLE 1

Two shampoo compositions, one in accordance with the invention (composition A) and the other a comparative composition (composition B), were prepared:

<table>
<thead>
<tr>
<th></th>
<th>A Invention</th>
<th>B Comparative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium lauryl ether sulphate (70/30 C₁₂/C₁₄) containing 2.2 mol of ethylene oxide, as an aqueous solution containing 70% A.M. (A.M. = active material)</td>
<td>15.5 g A.M.</td>
<td>15.5 g A.M.</td>
</tr>
<tr>
<td>Cocobetaine containing 32% A.M. (Miranol C2M Conc. from RP)</td>
<td>3.2 g A.M.</td>
<td>-</td>
</tr>
<tr>
<td>Cationic polymer (**)</td>
<td>0.6 g</td>
<td>0.6 g</td>
</tr>
<tr>
<td>Aminosilicone (***</td>
<td>2.45 g A.M.</td>
<td>2.45</td>
</tr>
<tr>
<td>Sodium cetostearyl sulphate</td>
<td>0.75 g</td>
<td>0.75 g</td>
</tr>
<tr>
<td>Mixture of 1-hexadecyl-oxyoctadecanol and cetyl alcohol</td>
<td>2.5 g</td>
<td>2.5 g</td>
</tr>
<tr>
<td></td>
<td>A Invention</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>---</td>
</tr>
<tr>
<td>- Oxyethylenated decyl</td>
<td>0.5 g</td>
<td></td>
</tr>
<tr>
<td>alcohol ((C_{10}/C_{12}/C_{14}))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Citric acid qs pH</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>- Fragrance, preserving</td>
<td>qs</td>
<td></td>
</tr>
<tr>
<td>agents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Demineralized water qs</td>
<td>100 g</td>
<td></td>
</tr>
</tbody>
</table>

(*) Dehyton® AB 30 from Henkel  
(**): Dimethyldiallylammonium chloride homopolymer sold under the name Merquat® 100 (MW 400,000) by the company Calgon  
(***): Amodimethicone sold as a cationic emulsion containing 35% active material, under the name Fluid DC 939 by the company Dow Corning  

Shampooing is carried out by applying about 12 g of composition A to premoistened hair. The shampoo is worked into a lather and is then rinsed thoroughly with water.  

The same procedure as above is carried out with the comparative composition B.  

A panel of experts evaluates the disentangling of the wet hair, the disentangling of the dried damp hair and the softness and smoothness of the dried hair.
All the experts indicate a marked improvement in these properties for hair treated with composition A according to the invention.

EXAMPLE 2

A shampoo of the following composition was prepared:

- Sodium lauryl ether sulphate (70/30 by weight C_{12}/C_{14}) containing 2.2 mol of ethylene oxide, as an aqueous solution containing 28% A.M. 14 g A.M.

- Cocobetaine containing 32% A.M. (*) 3.2 g A.M.

- Cationic polymer (**) 0.1 g

- Aminosilicone (***) 1.05 g A.M.

- Mixture of 1-hexadecyloxyoctadecanol and cetyl alcohol 2.5 g

- Coconut acid monoisopropanolamide 0.6 g

- 2-Amino-2-methyl-1-propanol 0.125 g

- Citric acid qs pH 5.2

- Demineralized water qs 100 g

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Detergent composition, characterized in that it comprises, in a cosmetically acceptable medium, (A) a washing base comprising at least one anionic surfactant of alkyl ether sulphate type and at least one amphoteric surfactant of C₆-C₂₀ alkylbetaine type and (B) a conditioning system comprising at least one aminosilicone and at least one cationic polymer chosen from homopolymers containing, as main constituents of the chain, units corresponding to formulae (I) and/or (I'):

\[
\begin{align*}
\text{(I):} & \quad \text{N}^+ \quad \text{R}_1 \quad \text{R}_2 \quad \text{Y}^- \\
\text{(I'):} & \quad \text{N} \quad \text{R}_1 \quad \text{R}_3 \quad \text{R}_2 \quad \text{Y}^- 
\end{align*}
\]

in which formulae \( k \) and \( t \) are equal to 0 or 1, the sum \( k + t \) being equal to 1; \( R_3 \) denotes a hydrogen atom or a methyl radical; \( R_1 \) and \( R_2 \), independently of each other, denote an alkyl group having from 1 to 22 carbon atoms, a hydroxyalkyl group in which the alkyl group preferably has 1 to 5 carbon atoms, a lower (1 to 5 carbon atoms) amido alkyl group, or \( R_1 \) and \( R_2 \) can denote, together with the nitrogen atom to which they are attached, heterocyclic groups such as piperidyl or morpholinyl; \( Y^- \) is an anion such as bromide, chloride, acetate, borate, citrate, tartrate, bisulphate,
bisulphite, sulphate or phosphate.

2. Composition according to the preceding claim, characterized in that \( R_{10} \) and \( R_{11} \), independently of each other, denote methyl or ethyl and \( R_{12} \) denotes a hydrogen atom.

3. Composition according to either of the preceding claims, characterized in that the said cationic polymer is chosen from dimethyldiallylammonium chloride homopolymers.

4. Composition according to any one of the preceding claims, characterized in that the anionic surfactants of alkyl ether sulphate type are salts of alkyl ether sulphates, alkylamido ether sulphates, alkylaryl ether sulphates; alkyl ether sulphasuccinates, the alkyl or acyl radical of all these various compounds preferably containing from 8 to 24 carbon atoms, and the aryl radical preferably denoting a phenyl or benzyl group.

5. Composition according to any one of the preceding claims, characterized in that the anionic surfactant of alkyl ether sulphate type is chosen from \( C_{10}-C_{14} \), and more particularly \( C_{12}-C_{14} \), alkyl ether sulphate salts.

6. Composition according to any one of the preceding claims, characterized in that the amphoteric surfactant is of \( C_{10}-C_{14} \) alkylbetaine type.

7. Composition according to any one of the preceding claims, characterized in that the
aminosilicone is chosen from:

(a) the polysiloxanes referred to in the CTFA
dictionary as "amodimethicone" and corresponding to the
formula:

\[
\begin{align*}
&\text{CH}_3 \\
&\text{Si} \\
&\text{O} \\
&\text{CH}_3 \\
&\text{x'}
\end{align*}
\begin{align*}
&\text{OH} \\
&\text{Si} \\
&\text{O} \\
&\text{CH}_2 \cdot \text{NH}_2 \\
&\text{NH}_2 \\
&\text{y'}
\end{align*}
\]

in which \(x'\) and \(y'\) are integers dependent on the
molecular weight, generally such that the said weight-
average molecular weight is between 5000 and 500,000
approximately;

(b) aminosilicones corresponding to the formula:

\[
R'_{a}G_{3-a}\text{Si}(OSiG_2)_n-(OSiGR'_{2-b})_m-O-SiG_{3-a}-R'_{a}
\]

(III)
in which:

\(G\) is a hydrogen atom or a phenyl, OH or C\(_1\)\(-C_8\)alkyl
group, for example methyl,

\(a\) denotes the number 0 or an integer from 1 to 3, in

particular 0,

\(b\) denotes 0 or 1, and in particular 1,

\(m\) and \(n\) are numbers such that the sum \((n + m)\) can range
especially from 1 to 2000 and in particular from 50 to
150, it being possible for \(n\) to denote a number from 0
to 1999 and especially from 49 to 149 and it being
possible for \( m \) to denote a number from 1 to 2000 and especially from 1 to 10;

\( R' \) is a monovalent radical of formula \(-C_qH_{2q}L\) in which \( q \) is a number from 2 to 8 and \( L \) is an optionally quaternized amine group chosen from the groups:

\[-NR''-CH_2-CH_2-N'(R'')_2\]
\[-N(R'')_2\]
\[-N\Theta(R'')_3A^-\]
\[-NH\Theta(R'')_2A^-\]
\[-NH_2\Theta(R'')A^-\]
\[-N(R'')-CH_2-CH_2-N\Theta R''H_2A^-\]

in which \( R'' \) can denote hydrogen, phenyl, benzyl, or a saturated monovalent hydrocarbon radical, for example an alkyl radical having from 1 to 20 carbon atoms, and \( A^- \) represents a halide ion such as, for example, fluoride, chloride, bromide or iodide.

(c) aminosilicones corresponding to the formula:

\[
\begin{align*}
(R_5)_3 & \text{Si} - \text{O} \bigg\{ R_3 \bigg\} \text{CHOH-CH}_2 \bigg\} \text{N}(R_3)Q^\theta \bigg\} \text{Si-O-} \bigg\} \text{Si-O-} \bigg\} \text{Si-} (R_5)_3 \\
\end{align*}
\]

in which:

\( R_5 \) represents a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, and in particular a \( C_1-C_{18} \) alkyl or \( C_2-C_{18} \) alkenyl radical, for example methyl;

\( R_6 \) represents a divalent hydrocarbon radical, in
particular a \( \text{C}_1-\text{C}_{18} \) alkylene radical or a divalent \( \text{C}_1-\text{C}_{18} \), for example \( \text{C}_1-\text{C}_8 \), alkyleneoxy radical connected to the Si by an SiC bond;

\( Q^- \) is an anion such as a halide ion, in particular chloride, or an organic acid salt (acetate, etc.);

\( r \) represents an average statistical value from 2 to 20 and in particular from 2 to 8;

\( s \) represents an average statistical value from 20 to 260 and in particular from 20 to 50.

d) quaternary ammonium silicones of formula:

\[
\begin{align*}
\text{R}_7 & \quad \text{N}-\text{CH}_2\text{CH}_2\text{CH}_2\text{R}_6 \quad \text{Si}-\text{O} \quad \text{Si}-\text{R}_5-\text{CH}_2-\text{CHOH}-\text{CH}_2-\text{N}-\text{R}_5 \\
\text{R}_7 & \quad \text{R}_7 \\
\text{R}_7 & \quad \text{R}_7 \\
\text{R}_7 & \quad \text{R}_7 \\
\end{align*}
\]

\((\text{VII})\)

in which:

\( \text{R}_7 \) which may be identical or different, represent a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, and in particular a \( \text{C}_1-\text{C}_{18} \) alkyl radical, a \( \text{C}_2-\text{C}_{18} \) alkenyl radical or a ring comprising 5 or 6 carbon atoms, for example methyl;

\( \text{R}_6 \) represents a divalent hydrocarbon radical, in particular a \( \text{C}_1-\text{C}_{18} \) alkylene radical or a divalent \( \text{C}_1-\text{C}_{18} \), for example \( \text{C}_1-\text{C}_8 \), alkyleneoxy radical connected to the Si by an SiC bond;

\( \text{R}_8 \) which may be identical or different, represent a hydrogen atom, a monovalent hydrocarbon radical
having from 1 to 18 carbon atoms, and in particular a
C₁⁻C₁₈ alkyl radical, a C₂⁻C₁₈ alkenyl radical or a
radical -R₆⁻NHCOR₇;

X⁻ is an anion such as a halide ion, in particular
chloride, or an organic acid salt (acetate, etc.);
r represents an average statistical value from 2 to 200
and in particular from 5 to 100.

e) aminosilicones of formula (VII):

\[
\begin{align*}
\text{Si} & \quad \text{O} \quad \text{Si} \quad \text{O} \\
(C_nH_{2n}) & \quad \text{R}_1 \quad \text{R}_2 \quad \text{R}_3 \\
& \quad \text{R}_4 \quad \text{Si} \quad \text{R}_5
\end{align*}
\]

(VII)

in which:
- \( \text{R}_1, \text{R}_2, \text{R}_3 \) and \( \text{R}_4 \), which may be identical or
different, denote a C₁⁻C₄ alkyl radical or a phenyl
group,
- \( \text{R}_5 \) denotes a C₁⁻C₄ alkyl radical or a hydroxyl group,
- \( n \) is an integer ranging from 1 to 5,
- \( m \) is an integer ranging from 1 to 5,

and in which \( x \) is chosen such that the amine number is
between 0.01 and 1 meq/g.

8. Composition according to any one of the
preceding claims, characterized in that the said
anionic surfactant(s) is(are) present in a proportion
of from 1 to 50% by weight, preferably from 5 to 20% by weight, relative to the total weight of the composition.

9. Composition according to any one of the preceding claims, characterized in that the said amphoteric surfactant(s) is(are) present in a proportion of from 1 to 50% by weight, preferably from 1 to 20% by weight, relative to the total weight of the composition.

10. Composition according to any one of the preceding claims, characterized in that the said cationic polymer is present in a weight proportion of between 0.001% and 10% relative to the total weight of the composition, preferably between 0.005% and 5% by weight and in particular between 0.01% and 3%.

11. Composition according to any one of the preceding claims, characterized in that the said aminosilicone is present in a weight content of between 0.05 and 10% relative to the total weight of the composition, preferably between 0.1 and 5% by weight.

12. Use of a composition as defined in any one of the preceding claims, for cleaning and/or conditioning and/or removing make-up from keratin substances.

13. Process for washing and conditioning keratin substances such as the hair, which consists in applying an effective amount of composition as defined in any one of Claims 1 to 11 to the said wet
substances, followed by rinsing with water after optionally leaving the composition on the keratin substances for a while.

DATED THIS 18TH DAY OF MARCH 1998

L'OREAL
By its Patent Attorneys:
GRIFFITH HACK
Fellows Institute of Patent Attorneys of Australia
ABSTRACT

DETERGENT COSMETIC COMPOSITIONS AND USE THEREOF

The invention relates to novel detergent compositions comprising, in a cosmetically acceptable medium, (A) a washing base comprising at least one ether sulphate anionic surfactant and at least one surfactant of alkylbetaine type, and (B) a conditioning system comprising at least one dimethyldiallylammonium cationic polymer and at least one aminosilicone.

Application to the cleaning and care of keratin substances such as the skin and the hair.