Abstract: The present invention relates to a transparent cleansing liquid composition containing, in a physiologically acceptable aqueous medium: - at least a soap, - at least one foaming surfactant, - at least an organic neutralizing agent present in a molar ratio to soap and said organic neutralizing agent of at least 1 : 1.75, and - at least a viscosity enhancing polymer comprising at least a hydroxy(Ci-Ci)alkyl(Ci-Ci)alkyl cellulose, wherein the organic neutralizing agent imparts a pH ranging from 8 to 9, preferably from 8 to 8.5, to the composition. The invention further relates to the process for cleansing keratin materials, which consists in applying to the said keratin materials a composition according to the invention.
"Transparent liquid soap"

The present invention relates to a transparent liquid soap based personal care and/or cleansing foaming composition which provides skin freshness throughout the day, moisturization, skin smoothness at the moment of deposit and all day, and skin softness. The product also gives quick abundant foam.

We know from document WO 2007/112852 a clear cleansing composition that provides moisturization and comprises an anionic surfactant and another surfactant chosen among amphoteric surfactant, nonionic surfactant or a mixture thereof and additionally comprising humectants.

Documents WO2004/058212 and WG2004/100862 disclose oil-in-water formulations both comprising silicone components in the oily phase and polyols or hydroxy acids in the aqueous phase.

Document EP 1100459 B1 discloses a single-phase foaming oil formulation comprising at least one nonionic surfactant, an anionic or zwitterionic surfactant, an oil component and at least one alkyl phosphate component.

Document US 5,030,374 discloses a clear transparent gel facial cleanser formulation having a neutral pH, which is non-foaming and characterized by rapid rinseability consisting essentially of mild nonionic detergent and wound cleanser, moisturizer/humectant, gelling agent, viscosity stabilizer, pH adjuster, substantive emollient, preservative/bacterial inhibitor, solubilizer, masking agent, and deionized water.

Moreover JP 2008-137904 describes a liquid skin detergent composition comprising (A) 2-30 mass% of a fatty acid salt, (B) 0.1-3 mass% of a nonionic water-soluble polymer compound or anionic water-soluble polymer compound and (C) 0.3-5 mass% of a water-soluble silicone compound.

None of the disclosed transparent compositions achieves completely satisfying quality foaming properties while giving mildness and moisturizing to the skin simultaneously.

In addition, the visual appearance of product has impact on consumer's perception. For example, a clear and transparent facial cleanser is mostly related to freshness, mildness, purity, cooling, cleanliness etc. by consumers. Transparent products are therefore used for a variety of personal care applications. Also, a transparent product
when packed in a transparent packaging gives an opportunity for consumers to see the entire product.

Consequently, there is a need for a transparent and stable liquid cleansing composition. Advantageously, this transparent and stable liquid cleansing composition presents good lathering, oil control properties suitable for the use of face and/or body wash comprising a minimal amount of surfactant. Advantageously, the needed composition is also mild, moisturizing, respects skin and is environment friendly and biodegradable.

In the present invention, a stable composition means stable at 4°C during 1 month, preferably during 2 months.

The inventors have demonstrated that a combination of:
- at least a soap,
- at least one foaming surfactant,
- at least an organic neutralizing agent present in a molar ratio between soap and said organic neutralizing agent of at least 1:1.75, preferably of at least 1:1.8, and
- at least a viscosity enhancing polymer comprising at least a hydroxy(Ci-C6)alkyl(Ci-C6)alkyl cellulose,

makes it possible to provide a transparent and stable cleansing composition that advantageously gives creamy lathering, moisturizing skin feel and is mild.

One object of the present invention is thus a transparent cleansing liquid composition containing, in a physiologically acceptable aqueous medium:
- at least a soap,
- at least one foaming surfactant,
- at least an organic neutralizing agent present in a molar ratio between soap and said organic neutralizing agent of at least 1:1.75, preferably of at least 1:1.8, and
- at least a viscosity enhancing polymer comprising at least a hydroxy(Ci-C6)alkyl(Ci-C6)alkyl cellulose,

wherein said composition has a pH ranging from 8 to 9, preferably from 8 to 8.5.
The cleansing composition according to the invention may be used as facial cleanser, for example as makeup removal as well as hand and body cleanser.

According to another aspect, a subject of the present invention is also a process for cleansing keratin materials, which consists in applying to said keratin materials a composition according to the present invention, eventually with water, followed by rinsing with water to eliminate foam and dirt. The composition may be applied directly on wet keratin materials, or alternatively mixed with water and then applied on keratin materials.

For the purposes of the present invention, the expression "physiologically acceptable medium" means a medium that is suitable for application of a composition according to the invention on keratinous material, such as skin.

A physiologically acceptable medium is preferably a cosmetically or dermatologically acceptable medium, that is to say a medium which is devoid of unpleasant odor or appearance and which is entirely compatible with the topical administration route.

Such a medium is in particular considered as physiologically acceptable when it does not cause the user any unacceptable stinging, tautness or redness.

For the purpose of the present invention, the term "liquid" means in liquid form, for example the composition flows under its own weight at ambient temperature (25 °C) and atmospheric pressure in less than 5 seconds.

**Viscosity measurement**

In the framework of the present invention, the viscosity measurements are performed at 25 °C and atmospheric pressure using a Rheomat RM180® apparatus.

The sample is brought at the temperature of 25 °C ± 0.5 °C. The viscosity is measured using mobile 3 attachment to Rheomat RM180® at a rotation speed of 200 (fixed) after rotation of the measuring instrument for 10 minutes. The corresponding value in UD (unit deflection) is converted to Pa.s.

**Transparency**

The composition according to the invention is transparent. The transparency of the composition is evaluated by the transmittance measurement between 620 and 750 nm
at 25 °C and atmospheric pressure, using a Shimadzu UV-1800 spectrometer through a quartz cuvette of 3.5 mL and pathlength of 10 mm. According to the invention, the composition is transparent when the transmittance value is superior to 90% in this wavelength range.

The composition according to the invention contains surfactant(s) and soap(s) that gives the composition its foaming nature.

The foaming cleansing composition according to the invention contains at least a soap and at least one foaming surfactant.

According to another particular embodiment, the foaming surfactant is present in the composition in an amount ranging from 0.5 to 10% by weight, in particular from 2 to 8% by weight, more particularly from 3 to 6% by weight relative to the total weight of the composition.

Foaming surfactants are detergents and differ from emulsifiers in the value of their HLB (Hydrophilic-Lipophilic Balance), the HLB being the ratio of the hydrophilic part to the lipophilic part in the molecule. The term "HLB" is well known to a person skilled in the art and is described, for example, in "The HLB system. A time-saving guide to Emulsifier Selection" (published by ICI Americas Inc., 1984). For emulsifiers, the HLB generally ranges from 3 to 8 for the preparation of W/O emulsions and from 8 to 18 for the preparation of O/W emulsions, whereas foaming surfactants generally have an HLB of greater than 20.

According to still another particular embodiment, the foaming surfactant at least contains an anionic surfactant.

According to a further particular embodiment, the foaming surfactant further contains a cationic surfactant. Said cationic surfactant may be present in the composition in an amount of less than 2% by weight relative to the total weight of the composition. More particularly, such a cationic surfactant may be present in an amount ranging from 0.001 to 0.5% and more preferably from 0.01 to 0.1% by weight relative to the total weight of the composition.

As far as soap is concerned the amount to be taken in consideration for the calculation of the soap amount is the total fatty acid content without the neutralizing agent.
SOAP

The soap used in the framework of the present invention is an organic soap of fatty acid from 10 to 22 carbon atoms, more preferably from 12 to 18 carbon atoms and most preferably from 12 to 14 carbon atoms.

The fatty acid can in particular be selected among the the caproic acid, the capric acid, the caprylic acid, the oleic acid, the linoleic acid, lauric acid, the myristic acid, the stearic acid, the palmitic acid and mixtures thereof.

The neutralizing agent may be selected from aminoalcohols such as ethanolamine, amino sugars, amino acids, and their alkali salts. Most preferred neutralizing agent is triethanolamine.

The neutralization of soap may be achieved by having a molar ratio between fatty acid to neutralizing agent of at least 1:1.75, preferably of at least 1:1.8.

According to another embodiment, the molar ratio between fatty acid to neutralizing agent ranges from 1:1.75 to 1:3, in particular from 1:1.8 to 1:2.5.

Soap content in the composition may for example range from 2 to 7% by weight, more preferably from 3 to 6% by weight and most preferably from 4 to 5% by weight, relative to the total weight of the composition.

FOAMING SURFACTANT

The foaming cleansing composition according to the invention comprises one or more surfactants.

The surfactants may be selected from anionic, amphoteric (or zwitterionic), nonionic and/or cationic foaming surfactants, and mixtures thereof.

Anionic surfactants

The composition according to the invention may also comprise one or more anionic surfactants.

The term anionic surfactant means a surfactant having only anionic groups as ionic or ionizable groups.

In the present description, an entity is qualified as "anionic" when it has at least one permanent negative charge or when it can be ionized by a negatively charged entity,
under the conditions of use of the composition of the invention (medium, pH, for example) and containing no cationic charge.

The anionic surfactants may be sulfate(s) or sulfonate(s) which have at least one sulfate group (-OSO3H or -OSCV), and/or a sulfonate group (-SO3H or -SO3), or else carboxylic or carboxylate surfactants having at least one carboxylic acid group (-COOH or -COO⁻).

It is understood that the anionic carboxylate surfactants may include one or more sulfate or sulfonate groups; sulfonate anionic surfactants may optionally further comprise one or more sulfate or carboxylate groups; and sulfate anionic surfactants may optionally further comprise one or more carboxylate or sulfonate groups.

Anionic surfactants which may be used include alkyl sulfates, alkyl ether sulfates, alkylamido ether sulfates, alkylaryl polyether sulfates, monoglyceride sulfates, alkyl sulfonates or alpha olefin sulfonates, alkylamide sulfonates, alkylarylsulfonates, paraffin sulfonates, alkyl sulfosuccinates, alkyl ether sulfosuccinates, alkylamide sulfosuccinates, alkyl sulfoacetates, acylsarcosinates, acylglutamates, alkyl sulphonosuccinamates, acylisethionates and N-acyl taurates, salts of alkyl monoesters and polyglycosidepolycarboxylic acids, acyl lactylates, N-acyl glycinates, salts of D-galactoside-uronic acids, salts of alkyl ether carboxylic acids, alkyl aryl ether carboxylic acid salts, salts of alkyl amidoether carboxylic acids, sulfocacetates, sulfolaurates, and the corresponding non-salt forms all of these compounds, the alkyl and acyl groups of all these compounds containing from 6 to 40 carbon atoms, especially 14 to 30 carbon atoms, more preferably from 16 to 22 carbon atoms; and aryl means phenyl group. These compounds may be ethoxylated and then preferably comprise from 1 to 50 ethylene oxide units.

Ethylene polyoxyalkylated (C₆-C₂₄) (amido) ether carboxylic acids and salts thereof may also be cited, in particular those comprising from 2 to 50 alkylene oxide groups, in particular, such as sold by the company KAO under the names AKYPO.

The more preferred alkyl (C₆-C₂₄) (amido) ether carboxylic acids correspond to the following formula:

\[
R_i^- (\text{OC}_2\text{H}_4)_m\text{OCH}_2\text{COO}^\cdot \text{A}
\]

wherein;

- R₁ represents a radical or a mixture of linear or branched alkyl or alkenyl in C₈-C₂₂, a alkyl (C₈-C₉) phenyl radical, a R₂CONH-CH₂-CH₂- group with R₂ denoting an alkyl
radical linear or branched alkenyl in C9-C21; preferably R1 being an alkyl radical having 8 to 20 carbon atoms, preferably from 8 to 18 carbon atoms and aryl preferably denoting phenyl,
- n is an integer or decimal number (average value) which may vary from 2 to 24 and preferably 2 to 10,
- A denotes H, ammonium, Na, K, Li, Mg or monoethanolamine or triethanolamine.
It is also possible to use mixtures of compounds of formula (1), in particular mixtures in which the R1 groups differ.

Polyoxyalkylenated (C₆-C₂₄) (amido) ether carboxylic acids preferably used in the present invention are selected from those of formula (1) wherein:
- R1 denotes a radical or a mixture of (C₁₂-C₄)alkyl radicals, cocooyl, oleyl, a nonyl or octylphenyl radical,
- A denotes hydrogen or sodium, and
- n is from 2 to 20 and preferably 2 to 10.

Polyoxy(C₆-C₂₄)alkylenated ether carboxylic acids and their salts are preferably used, and also polyoxyalkylenated (C₆-C₂₄)alkylamido ether carboxylic acids and salts thereof; in particular those having from 2 to 15 alkylene oxide groups.

Even more preferably, one can use the compounds of formula (1) wherein R is a C₁₂ alkyl radical, A denotes hydrogen or sodium and n is from 2 to 10.

Salts are especially selected from alkali metal salts, especially sodium, ammonium salts, amine salts, amino alcohol such as triethanolamine or monoethanolamine, and magnesium salts.

Preferably, the anionic surfactants are chosen from, alone or as a mixture:
- (C₆-C₂₄)alkylsulfates, especially in C₁₂-C₂₀,
- (C₆-C₂₄)alkyl ether sulfates, especially in C₁₂-C₂₀, preferably containing from 2 to 20 ethylene oxide units,
- (C₆-C₂₄)alkylsulfosuccinates, especially in C₁₂-C₂₀, including laurylsulfosuccinates,
- (C₆-C₂₄)alkyl ether sulfosuccinates, especially in C₁₂-C₂₀,
- (C₆-C₂₄)acyl sarcosinates, especially in C₁₂-C₂₀, including palmitoylsarcosinates,
- (C_6-C_{24}) alkyl ether carboxylates, preferably (C_{12}-C_{20}) alkyl ether carboxylates,
- (C_{6}-C_{24}) acyl isethionates, preferably (C_{12}-C_{18}) acyl isethionates,
- polyoxyalkylated (C_{6}-C_{24}) alkyl (amido) ether carboxylic acids and salts thereof, in particular those comprising from 2 to 50 alkylene oxide groups, especially ethylene,
- (C_{6}-C_{24}) acylglutamates, especially in C_{12}-C_{20},
- (C_{6}-C_{24}) acylglycinates, especially in C_{12}-C_{20},

particularly in the form of alkali or alkaline earth metal, ammonium, amine or aminoalcohol.

More Preferably, the anionic surfactant is chosen from (C_{6}-C_{24}) alkyl sulfates, (C_{6}-C_{24}) alkyl ether sulfates such as sodium lauryl ether sulfate, isethionates, amino acids, in particular glycinate, such as sodium N-cocoyl glycinate, their alkali salts, and mixtures thereof.

Amphoteric and zwitterionic foaming surfactants

The composition according to the invention may also comprise one or more amphoteric surfactants.

The amphoteric surfactants that may be used in the invention may be optionally quaternized secondary or tertiary aliphatic amine derivatives, in which the aliphatic group is a linear or branched chain comprising from 8 to 22 carbon atoms, said amine derivatives containing at least one anionic group, for instance a carboxylate, sulfonate, sulfate, phosphate or phosphonate group.

Mention may be made in particular of (C_{6}-C_{20}) alkylbetaines, sulfobetaines, (C_{8}-C_{20}) alkylsulfobetaines, (C_{8}-C_{20}) alkylamido(C_{1}-C_{6}) alkylbetaines, such as cocamidopropylbetaine, and (C_{8}-C_{20}) alkylamido(C_{1}-C_{6}) alkylsulfobetaines, and mixtures thereof.

Among the optionally quaternized secondary or tertiary aliphatic amine derivatives that may be used, mention may also be made of the products of respective structures (Al) and (A2) below:

(Al)  \text{Ra-CON(Z)CH}_{2}\text{-(CH}_{2}\text{)}_{m}\text{-N}^{+}(\text{Rb})(\text{Rc})(\text{CH}_2\text{COO}^-)\

in which:
Ra represents a (C\textsubscript{10}-C\textsubscript{30})alkyl or alkenyl group derived from an acid Ra-COOH preferably present in hydrolyzed coconut oil, a heptyl group, a nonyl group or an undecyl group,

Rb represents a β-hydroxyethyl group,

Rc represents a carboxymethyl group,

m is equal to 0, 1 or 2,

Z represents a hydrogen atom or a hydroxyethyl or carboxymethyl group;

\( \text{(A2)} \quad \text{Ra'}-\text{CON}(Z)\text{CH}_2-(\text{CH}_2\text{V-N(B)(B')} \)

in which:

B represents -CH\textsubscript{2}CH\textsubscript{2}OX', with X' representing -CH\textsubscript{2}COOH, C\textsubscript{4}-COOZ', -CH\textsubscript{2}CH\textsubscript{2}-COOR, -C\textsubscript{4}CH\textsubscript{2}-COOZ', or a hydrogen atom,

B' represents -(CH\textsubscript{2})\textsubscript{2}Y', with z = 1 or 2, and Y' representing -COOH, -COOZ', -CH\textsubscript{2}CHOH-SO\textsubscript{3}H or -CH\textsubscript{2}CHOH-SO\textsubscript{3}Z',

m' is equal to 0, 1 or 2,

Z represents a hydrogen atom or a hydroxyethyl or carboxymethyl group,

Z' represents an ion resulting from an alkali or alkaline-earth metal, such as sodium, potassium or magnesium; an ammonium ion; or an ion resulting from an organic amine and in particular from an amino alcohol, such as monoeihanolamine, diethanolamine and triethanolamine, monoisopropanolamine, diisopropanolamine or triisopropanolamine, 2-ammo-2-methyl-1-propanol, 2-amino-2-methyl-1,3-propanediol and tris(hydroxymemyl)aminomethane,

Ra' represents a (C\textsubscript{10}-C\textsubscript{30})alkyl or alkenyl group of an acid Ra'COOH preferably present in hydrolyzed linseed oil or coconut oil, an alkyl group, in particular a C\textsubscript{17} alkyl group, and its iso form, or an unsaturated C\textsubscript{17} group.

The compounds corresponding to formula (A2) are preferred.

Among the compounds corresponding to formula (A2) in which X' represents an hydrogen atom, mention may be made of compounds classified in the CTFA dictionary, under the names sodium cocoamphoacetate, sodium lauroamphoacetate, sodium caproamphoacetate and sodium capryloamphoacetate.
Compounds corresponding to formula (A2) may be (C8-C20)alkylamphoacetates and (C8 -C20)alkylamphodiacetates and mixtures thereof.

Other compounds corresponding to formula (A2) are disodium cocoamphodiacetate, disodium lauroamphodiacetate, disodium caproamphodiacetate, disodium capryloamphodiacetate, disodium cocoamphodipropionate, disodium lauroamphodipropionate, disodium caproamphodipropionate, lauroamphodipropionic acid and cocoamphodipropionic acid.

Examples that may be mentioned include the cocoamphodiacetate sold by the company Rhodia under the trade name Miranol® C2M Concentrate, the sodium cocoamphoacetate sold under the trade name Miranol Ultra C 32 and the product sold by the company Chimex under the trade name Chimexane HA.

Use may also be made of the compounds of formula (A3):

$$\text{(A3)} \quad \text{R}_a'-'NH-\text{CH}(Y'')-(\text{CH}_2)n-C(0)-\text{NH}-(\text{CH}_2)n'-\text{N}(\text{R}_d)(\text{R}_e)$$

in which:

- $\text{R}_a''$ represents a (Cio-C30)alkyl or alkenyl group of an acid R_a"-C(0)OH preferably present in hydrolysed linseed oil or coconut oil;
- $Y''$ represents the group $\text{-C}(0)\text{GH} \quad \text{-C}(0)\text{OZ}^\prime \quad \text{-CH}_2\text{CH(OH)-S}0^3\text{H}$ or the group $\text{-CH}_2\text{CH(OH)-S}0^3\text{-Z}$, with $Z''$ representing a cationic counterion resulting from an alkali metal or alkaline-earth metal, such as sodium, an ammonium ion or an ion resulting from an organic amine;
- $\text{R}_d$ and $\text{R}_e$ represent, independently of each other, a (C1-G1)alkyl or hydroxyalkyl radical; and
- $n$ and $n'$ denote, independently of each other, an integer ranging from 1 to 3.

Among the compounds corresponding to formula (A3), mention may in particular be made of the compound classified in the CTFA dictionary under the name sodium diethylaminopropyl cocoaaspartamide, such as the one sold by the company Chimex under the name Chimexane HB.

Preferably, the amphoteric surfactants are chosen from (C8-C20)alkylbetaines, (C8-C20)alkylamido(C1-C6)alkylbetaines, (Cg-C20)alkylamphoacetates and (Cs-C20)alkylamphodiacetates, and mixtures thereof.
Nonionic foaming surfactant
The composition may comprise one or more nonionic alkylpolyglycoside surfactants, especially represented by formula (I):

\[ R_1\text{O-} (R_2\text{O})_t \text{-}(G)_v \]

wherein:
- \( R_1 \) represents a linear or branched alkyl or alkenyl radical having 6 to 24 carbon atoms, especially 8 to 18 carbon atoms, or an alkylphenyl radical whose linear or branched alkyl radical comprises from 6 to 24 carbon atoms, especially 8 to 18 carbon atoms,
- \( R_2 \) represents an alkylene radical having 2 to 4 carbon atoms,
- \( G \) is a sugar unit containing 5 to 6 carbon atoms,
- \( t \) is a value ranging from 0 to 3, preferably equal to 0,
- \( v \) is a value ranging from 1 to 15, preferably from 1 to 4.

Preferably, the alkylpolyglycoside surfactants are compounds of formula (I) described above wherein:
- \( R_1 \) denotes a linear or branched saturated or unsaturated alkyl radical having 8 to 18 carbon atoms,
- \( R_2 \) represents an alkylene radical having 2 to 4 carbon atoms,
- \( t \) is a value ranging from 0 to 3, preferably equal to 0,
- \( G \) denotes glucose, fructose or galactose, preferably glucose,
- the degree of polymerization, i.e., the value of \( v \) can range from 1 to 15, preferably from 1 to 4; the average degree of polymerization is more particularly between 1 and 2.

Glycosidic linkages between the sugar units are generally 1-6 or 1-4, preferably 1-4.

Preferably, the alkylpolyglycoside surfactant is an alkylpolyglucoside surfactant, even more preferably an C8-C16 alkylpolyglucosides, and particularly preferably chosen among decylglucosides, caprylyl/capryl glucosides, laurylglucoside, cocoyleglucoside, caprylylglucoside, and mixtures thereof.
Among the commercial products, the following product may be cited: products sold by COGN1S under the names PLANTAREN® (600 CS/U, 1200 and 2000) or PLANTACARE® (818, 1200 and 2000); products sold by SEPPIC under the names ORAMIX® CG 11.0 and ORAMIX® NS 10; products sold by BASF under the name LUTENSOL GD 70 or products sold by the company CHEM Y under the name AG1OLK.

Preferably, C8-C16 alkylpolyglucosides is used, in particular chosen from decylglucoside, caprylyl/capryl glucoside, laurylglucoside, cocoylglucoside, caprylylglicoside, and mixtures thereof.

Cationic surfactant

The cosmetic composition according to the invention may also comprise one or more cationic surfactants. They are advantageously chosen from optionally polyoxyalkylenated primary, secondary or tertiary fatty amine salts, quaternary ammonium salts, and mixtures thereof.

Mention may be made in particular of:
- quaternary ammonium salts having formula (la):

\[
\left[ \begin{array}{c}
R_8 \\
R_9 \\
R_{10}
\end{array} \right]^+ \quad X^- \quad (\text{ta})
\]

in which:

- the groups R_8 to R_{11}, which may be identical or different, represent a linear or branched aliphatic group containing from 1 to 30 carbon atoms, or an aromatic group such as aryl or alkylaryl, at least one of the groups R_8 to R_{11} containing from 8 to 30 carbon atoms and preferably from 12 to 24 carbon atoms; it being possible for the aliphatic groups to comprise heteroatoms such as, in particular, oxygen, nitrogen, sulfur or halogens; and

- X^- is an anion that could be chosen from the group consisting of halides, phosphates, acetates, lactates, (C1-C4)alkyl sulfates, (C1-C4)alkylsulfonates and (C1-C4)alkylarylsulfonates.
The aliphatic groups are chosen, for example, from (Ci-C3o)alkyl,
(Ci-C3o)alkoxy, (C2-C6 )polyoxyalkylene, (Ci-C3o)alkylamide,
(Ci2-C22 )alkyl(C2-C6)alkylamido, (Ci2 -C2)alkyl acetate and hydroxy(Cs-C3o)alkyl groups.

Mention may be made of tetraalkylammonium halides, preferably chlorides,
such as dialkyldimethylammonium or alkyltrimethylammonium chlorides in which the alkyl group comprises from 12 to 22 carbon atoms, particularly behenyltrimethylammonium, distearyldimethylammonium, cetyltrimethylammonium, and benzyltrimethylstearylammonium chlorides.

Mention may also be made of palmitylamidopropyltrimethylammonium halides, preferably chlorides, or stearamidopropyl(trimethyl(myristyl acetate)-ammonium halides, preferably chlorides, such as the product sold under the name Ceraphyl® 70 by the company VAN DYK.

-imidazoline quaternary ammonium salts having formula (IIa):

\[
\begin{array}{c}
\text{N} \\
\text{CH}_2\text{CH}_2
\end{array}
\begin{array}{c}
\text{N(R_13)} \\
\text{CO-R_12}
\end{array}
\]

in which:

- \(R_{12}\) represents an alkenyl or alkyl group comprising from 8 to 30 carbon atoms, for example fatty acid derivatives of tallow;

- \(R_{13}\) represents a hydrogen atom, a (Ci-C4)alkyl group or an alkenyl or alkyl group comprising from 8 to 30 carbon atoms;

- \(R_{14}\) represents a (C1-C4)alkyl group;

- \(R_{15}\) represents a hydrogen atom or a (C1-C4)alkyl group;

- \(X^-\) is an anion, preferably chosen from the group consisting of halides, phosphates, acetates, lactates, (Ci-C4)alkyl sulfates, (Ci-C4)alkylsulfonates and (C1,C4)alkylarylsulfonates;

- \(R_{12}\) and \(R_{13}\) preferably denote a mixture of alkenyl or alkyl groups containing from 12 to 21 carbon atoms, for example fatty acid derivatives of tallow, \(R_{14}\) denotes a
methyl group, and R15 denotes a hydrogen atom. A product of this kind is sold for example under the name Rewoquat® W 75 by the company Rewo.

- quaternary di- or triammonium salts having formula (IIia):

\[
\begin{array}{c}
\text{R}_{16} - \text{N} - (\text{CH}_{2})_{3} - \text{N} - \text{R}_{21} \\
\text{R}_{17} \hspace{1cm} \text{R}_{19} \\
\text{R}_{18} \hspace{1cm} \text{R}_{20} \\
\end{array}
\]

\[2^{+} \]

\[2X^{-} \]

(Illa)

in which:

\( \text{R}_{16} \) denotes an alkyl group containing from 16 to 30 carbon atoms, which is optionally hydroxylated and/or interrupted with one or more oxygen atoms.

\( \text{R}_{17} \) represents a hydrogen atom or an alkyl group containing from 1 to 4 carbon atoms or a group \( -(\text{CH}_{2})_{3} - \text{N}^{+} \) \( (\text{R}_{16a})(\text{R}_{17a})(\text{R}_{18a}) \); wherein \( \text{R}_{16a} \), \( \text{R}_{17a} \), \( \text{R}_{18a} \), which may be identical or different, are chosen from hydrogen and an alkyl group comprising from 1 to 4 carbon atoms.

\( \text{R}_{19} \), \( \text{R}_{20} \) and \( \text{R}_{21} \), which may be identical or different, are chosen from hydrogen and an alkyl group comprising from 1 to 4 carbon atoms; and

\( X^{-} \) is an anion preferably chosen from the group consisting of halides, acetates, phosphates, nitrates, \( (\text{C}_{1}-\text{C}_{4}) \) alkyl sulfates, \( (\text{C}_{1}-\text{Chalky}) \) sulfonates and \( (\text{Ci-4}) \) alkylaryl sulfonates, in particular methyl sulfate and ethyl sulfate.

Such compounds are, for example, Finquat CT-P, sold by the company Finetex (Quatemium 89), and Finquat CT, sold by the company Finetex (Quatemium 75).

- quaternary ammonium salts containing one or more ester functions having the following formula (IVA):

\[
\begin{array}{c}
\text{R}_{24} \hspace{1cm} \text{C} \hspace{1cm} (\text{O})_{x} \hspace{1cm} \text{C}_{t} \hspace{1cm} (\text{OH})_{y} \hspace{1cm} \text{N}^{+} \hspace{1cm} (\text{C}_{t} \hspace{1cm} (\text{OH})_{z} \hspace{1cm} \text{O} \hspace{1cm} \text{R}_{23} \hspace{1cm} X
\end{array}
\]

(IVA)
in which:

R22 is chosen from \((\text{C}_1-\text{C}_6)\)alkyl groups and hydroxy\((\text{C}_1-\text{C}_6)\)alkyl or dihydroxy\((\text{C}_1-\text{C}_6)\)alkyl groups;

R23 is chosen from the group \(\text{R}_{26}=\text{C}(=\text{O})-\); hydrocarbon-based linear or branched, saturated or unsaturated \(\text{C}_1-\text{C}_2\) groups \(\text{R}_{27}\); and a hydrogen atom;

R25 is chosen from the group \(\text{R}_{24}=\text{C}(=\text{O})-\); hydrocarbon-based linear or branched, saturated or unsaturated \(\text{Ci}-\text{Ce}\) groups \(\text{R}_{29}\); and a hydrogen atom;

R24, \(\text{R}_{26}\) and \(\text{R}_{28}\), which may be identical or different, are chosen from linear or branched, saturated or unsaturated \(\text{C}_7-\text{C}_{21}\) hydrocarbon-based groups;

\(r, s\) and \(t\), which may be identical or different, are integers ranging from 2 to 6;

\(r1\) and \(t1\), which may be identical or different, are equal to 0 or 1;

\(r2+r1=2\) and \(t1+t2=2\);

\(y\) is an integer ranging from 1 to 10;

\(x\) and \(z\), which may be identical or different, are integers ranging from 0 to 10;

the sum \(x+y+z\) is from 1 to 15;

\(X^-\) is an anion;

with the proviso that, when \(x\) is 0 then \(\text{R}_{23}\) denotes \(\text{R}_{27}\), and that when \(z\) is 0 then \(\text{R}_{25}\) denotes \(\text{R}_{29}\).

The alkyl groups \(\text{R}_{22}\) may be linear or branched, and more particularly linear. Preferably, \(\text{R}_{22}\) denotes a methyl, ethyl, hydroxyethyl or dihydroxypropyl group, and more particularly a methyl or ethyl group.

When \(\text{R}_{23}\) is an \(\text{R}_{27}\) hydrocarbon group, it may have from 12 to 22 carbon atoms, or may have from 1 to 3 carbon atoms.

When \(\text{R}_{25}\) is an \(\text{R}_{29}\) hydrocarbon group, it preferably has 1 to 3 carbon atoms. Advantageously, \(\text{R}_{24}, \text{R}_{26}\) and \(\text{R}_{28}\), which are identical or different, are chosen from linear or branched, saturated or unsaturated \(\text{C}_{11}-\text{C}_{21}\) hydrocarbon groups, and more particularly from linear or branched \(\text{C}_{11}-\text{C}_{21}\) alkyl and alkenyl groups.

Preferably, \(x\) and \(z\), which may be identical or different, are equal to 0 or 1.

Advantageously, \(y\) is equal to 1.

Advantageously, the sum \(x+y+z\) is from 1 to 10.
Preferably, r, s and t, which may be identical or different, are equal to 2 or 3, and even more particularly are equal to 2.

The anion X- is preferably a halide, preferably chloride, bromide or iodide, a (Ci-C4)alkyl sulfate, (Ci-C4)alkyl sulfonate or (Ci-C4)alkylaryl sulfonate, methanesulfonate, phosphate, nitrate, tosylate, an anion derived from an organic acid, such as acetate or lactate, or any other anion that is compatible with the ammonium comprising an ester function. The anion X- is more particularly chloride, methyl sulfate or ethyl sulfate.

Use is made more particularly, in the composition according to the invention, of the ammonium salts having formula (IVa) in which:
- R22 denotes a methyl or ethyl group,
- x and y are equal to 1,
- z is equal to 0 or 1,
- r, s and t are equal to 2,
- R23 is chosen from the group R26-C(=0)-; methyl groups, ethyl groups or hydrocarbon-based C14-C22 groups; and a hydrogen atom,
- R25 is chosen from the group R28-C(=0)-; and a hydrogen atom,
- R24, R26 and R28, which may be identical or different, are chosen from linear or branched, saturated or unsaturated C13-C17 hydrocarbon groups, and preferably from linear or branched, saturated or unsaturated C13-C17 alkyl and alkenyl groups.

The hydrocarbon-based groups are advantageously linear.

Among the compounds of formula (IVa), examples that may be mentioned include salts, in particular the chloride or methyl sulfate of diacyloxyethyltrimethylammonium, diacyloxyethylhydroxyethyltrimethylammonium, monoacyloxyethylldihydroxyethylmethylammonium, triacyloxyethylmethylammonium or monoacyloxyethylhydroxyethyltrimethylammonium, and mixtures thereof. The acyl groups preferably contain 14 to 18 carbon atoms and are obtained more particularly from a plant oil, such as palm oil or sunflower oil. When the compound contains several acyl groups, these groups may be identical or different.
These products are obtained, for example, by direct esterification of triethanolamine, triisopropanolamine, alkyldiethanolamine or alkyldiisopropanolamine, which are optionally oxyalkylated, with fatty acids or with fatty acid mixtures of plant or animal origin, or by transesterification of the methyl esters thereof. This esterification is followed by a quaternization by means of an alkylating agent, such as an alkyl halide, preferably methyl or ethyl halide, a dialkyl sulfate, preferably methyl or ethyl sulfate, methyl methanesulfonate, methyl para-toluenesulfonate, glycol chlorohydrin or glycerol chlorohydrin. Such compounds are, for example, sold under the names Dehyquart® by the company Henkel, Stepanquat® by the company Stepan, Noxamium® by the company Ceca or Rewoquat® WE 18 by the company Rewo-Witco.

The composition according to the invention may contain, for example, a mixture of quaternary ammonium monoester, diester and triester salts with a weight majority of diester salts. Use may also be made of the ammonium salts containing at least one ester function that are described in patents US-A-4 874 554 and US-A-4 137 180. Use may also be made of behenoxypropyltrimethylammonium chloride, for example, sold by the company Kao under the name Quartamin BTC 131.

Preferably, the ammonium salts containing at least one ester function contain two ester functions.

Preferably, the cationic surfactants are chosen from the compounds of formula (1a) and the compounds of formula (IVa), preferably from cetyltrimethylammonium, behenyltrimethylammonium, and dipalmitoylethylhydroxyethylmethylammonium salts, and mixtures thereof, and more particularly from behenyltrimethylammonium chloride or methosulfate, cetyltrimethylammonium chloride or methosulfate, and dipalmitoylethylhydroxyethylammonium chloride or methosulfate, and mixtures thereof. Even more preferentially, the cationic surfactant is a behenyltrimethylammonium salt.

According to a preferred embodiment, the composition comprises at least one anionic surfactant, preferably chosen from alkyl ether sulfate comprising 6 to 24 carbon atoms, preferably 2 to 20 carbon atoms; amino acids, in particular glycinates; and mixtures thereof.
In a particular embodiment, the composition comprises at least one anionic surfactant, preferably chosen from sodium lauryl ether sulfate (SLES), in particular SLES 1EO, such as the one sold under the name Galaxy LES 170 by Galaxy Surfactants; glycinates, such as sodium cocooyl glycinate.

**VISCOSITY ENHANCING POLYMER**

The cleansing composition according to the invention comprises at least one viscosity enhancing polymer comprising at least a hydroxy(C_{1-6})alkyl(C_{6})alkylcellulose. According to one particular embodiment, the viscosity enhancing polymer comprises at least a hydroxy(C_{1-4})alkyl(C_{1-4})alkylcellulose.

The viscosity of the viscosity enhancing polymer may be measured according to the here above described protocol for an aqueous solution comprising 2% by weight of said polymer.

According to a particular embodiment, the viscosity of the viscosity enhancing polymer, when present in an aqueous solution at a weight concentration of 2%, varies between 75,000 and 140,000 mPa.s.

The cellulose ether that may be used in accordance with the invention can especially be selected from hydroxymethylbutylcellulose, hydroxyethylmethylcellulose, hydroxyethylbutylcellulose and hydroxypropylmethylcellulose (also known as HPMC) and mixtures thereof.

More preferably, the hydroxy(C_{1-6})alkyl(C_{1-6})alkylcellulose that is suitable for use in the invention is hydroxypropylmethylcellulose.

According to said particular embodiment, hydroxypropylmethylcellulose presents a hydroxypropyl content ranging for example from 7 to 12% by weight with respect to the total weight of hydroxypropylmethylcellulose, and presents a methoxy content ranging for example from 20 to 24% by weight with respect to the total weight of hydroxypropylmethylcellulose.

Hydroxypropylmethylcellulose is especially sold under the name Metolose™ by the company Shin-Etsu, and more specifically, for example, under the names Metolose™ 60 SH 4000, Metolose™ 60 SH 50, Metolose™ 90 SH 100, Metolose™ 90 SH 4000, Metolose™ 90 SH 15000, Metolose™ 65 SH 50, Metolose™ 65 SH 4000,
Metolose™ 60 SH 4000, and Metolose™ 60 SH 5, under the name Methocel™ by the company The Dow Chemical Company, and more specifically, for example, under the names Methocel™ E-3, Methocel™ E-6, Methocel™ E-50, Methocel™ E4M, Methocel™ F50, Methocel™ F4M, Methocel™ K100, Methocel™ K4M and Methocel™ K100M, under the name Headcel™ by the company Shandong Head, and more specifically, for example, under the names Headcel™ 60HD3, Headcel™ 60HD15, Headcel™ 60HD4000, Headcel™ 65HD50, Headcel™ 75HD100, Headcel™ 75HD4000, Headcel™ 75HD15000 and Headcel™ 75HD100000, and under the name BENECEL K100M sold by Ashland.

Among said hydroxypropylmethylcellulose, one may particularly cite BENECEL K100M sold by Ashland.

The viscosity enhancing polymer may be present in a cleansing composition according to the present invention in an amount ranging from 0.2 to 6% by weight, in particular from 0.5 to 5% by weight and more particularly from 0.8 to 1.2% by weight, with respect to the total weight of the composition.

**COMPOSITION**

The composition according to the invention may present a viscosity, measured according to the here above described protocol, ranging from ranging from 0.1 Pa.s to 3 Pa.s, in particular from 0.2 to 2 Pa.s, and more particularly from 0.3 to 1.3 Pa.s.

The composition according to the invention comprises an aqueous medium or aqueous phase.

The composition may comprise an amount of water of at least 50% by weight, preferably ranging from 50% to 95% by weight and better still from 60% to 90% by weight relative to the total weight of the composition. According to a particular embodiment, the composition according to the invention comprises less than 1% by weight of oily component relative to the total weight of the composition. According to a particular embodiment, the composition is free of oil.

The cleansing composition according to the invention may contain various water-soluble additives, chosen from those conventionally used in skincare or makeup-removing products, insofar as these additives and the amounts thereof do not impact neither the transparency, nor the stability desired for the composition according to the invention.
The cleansing composition in accordance with the present invention may thus comprise the following additives: preserving agents; sequestrants (EDTA and salts thereof); antioxidants; fragrances; active ingredients.

The amounts of these various adjuvants are those conventionally used in the field under consideration, for example from 0.01% to 20% of active material of the total weight of the composition. These adjuvants and the amounts thereof should be such that they do not modify the property desired for the composition of the invention.

The composition according to the invention may also optionally comprise one or more polymers chosen from amphoteric polymers, cationic polymers, and mixtures thereof.

The term "cationic polymer" means any polymer comprising cationic groups and/or groups that can be ionized to cationic groups. Preferably, the cationic polymer is hydrophilic or amphiphilic. The preferred cationic polymers are chosen from those that contain units comprising primary, secondary, tertiary and/or quaternary amine groups that may either form part of the main polymer chain or may be borne by a side substituent directly connected thereto.

The cationic polymers that may be used preferably have a weight-average molar mass (Mw) of between 500 and 5 x 10^6 approximately and preferably between 10^3 and 3 x 10^6 approximately.

Among the cationic polymers, mention may be made more particularly of:

1. homopolymers or copolymers derived from acrylic or methacrylic esters or amides and comprising at least one of the units of the following formulae:
in which:
- R3, which may be identical or different, denote a hydrogen atom or a C¼ radical;
- A, which may be identical or different, represent a linear or branched divalent alkyl group of 1 to 6 carbon atoms, preferably 2 or 3 carbon atoms, or a hydroxyalkyl group of 1 to 4 carbon atoms;
- R4, R5 and R6, which may be identical or different, represent an alkyl group containing from 1 to 18 carbon atoms or a benzyl radical, preferably an alkyl group containing from 1 to 6 carbon atoms;
- R1 and R2, which may be identical or different, represent a hydrogen atom or an alkyl group containing from 1 to 6 carbon atoms, preferably methyl or ethyl;
- X denotes an anion derived from a mineral or organic acid, such as a methosulfate anion or a halide such as chloride or bromide.

The copolymers of family (1) may also contain one or more units derived from comonomers that may be selected from the family of acrylamides, methacrylamides, diacetone acrylamides, acrylamides and methacrylamides substituted on the nitrogen with (C₁-C₄)alkyl, acrylic or methacrylic acids or esters thereof, vinyllactams such as vinylpyrrolidone or vinylcaprolactam, and vinyl esters.

Among these copolymers of family (1), mention may be made of:
- copolymers of acrylamide and of dimethylaminoethyl methacrylate quatemized with dimethyl sulfate or with a dimethyl halide, such as the product sold under the name Hercofloc by the company Hercules,
- copolymers of acrylamide and of methacryloyloxyethyltrimethylammonium chloride, such as those sold under the name Bina Quat P 100 by the company Ciba Geigy,
- copolymers of acrylamide and of methacryloyloxyethyltrimethylammonium methosulfate, such as the product sold under the name Reten by the company Hercules,
- quatemized or non-quatemized vinylpyrrolidone/dialkylaminoalkyl acrylate or methacrylate copolymers, such as the products sold under the name Gafquat by the company ISP, for instance Gafquat 734 or Gafquat 755, or alternatively the products known as Copolymer 845, 958 and 937. These polymers are described in detail in French patents 2 077 143 and 2 393 573,
- dimethylaminoethyl methacrylate/vinylcaprolactam/vinylpyrrolidone terpolymers, such as the product sold under the name Gaffix VC 713 by the company ISP,
- vinylpyrrolidone/methacrylamidopropyldimethylamine copolymers, such as those sold under the name Styleze CC 10 by ISP,
- quaternized vinylpyrrolidone/dimethylaminopropylmethacrylamide copolymers such as the product sold under the name Gafquat HS 100 by the company ISP,
- preferably crosslinked polymers of methacryloyloxy(Ci-C4)alkyltri(Ci-C4)alkylammonium salts, such as the polymers obtained by homopolymerization of dimethylaminoethyl methacrylate quaternized with methyl chloride, or by copolymerization of acrylamide with dimethylaminoethyl methacrylate quaternized with methyl chloride, the homopolymerization or copolymerization being followed by crosslinking with an olefinically unsaturated compound, more particularly methylenebisacrylamide. A crosslinked acrylamide/methacryloyloxyethyltrimethylammonium chloride copolymer (20/80 by weight) in the form of a dispersion containing 50% by weight of the said copolymer in mineral oil may be used more particularly. This dispersion is sold under the name Salcare® SC 92 by the company Ciba. A crosslinked methacryloyloxyethyltrimethylammonium chloride homopolymer containing about 50% by weight of the homopolymer in mineral oil or in a liquid ester can also be used. These dispersions are sold under the names Salcare® SC 95 and Salcare® SC 96 by the company Ciba.

(2) Cationic polysaccharides, especially cationic celluloses and galactomannan gums. Among the cationic polysaccharides, mention may be made more particularly of cellulose ether derivatives comprising quaternary ammonium groups, cationic cellulose copolymers or cellulose derivatives grafted with a water-soluble quaternary ammonium monomer and cationic galactomannan gums.

The cellulose ether derivatives comprising quaternary ammonium groups are especially described in French patent 1 492 597, and mention may be made of the polymers sold under the name Ucare Polymer "JR." (JR 400 LT, JR 125 and JR 30M) or "LR" (LR 400 or LR 30M) by the company Amerchol. These polymers are also defined in
the CTFA dictionary as quaternary ammoniums of hydroxyethylcellulose that have reacted with an epoxide substituted with a trimethylammonium group.

Cationic cellulose copolymers or cellulose derivatives grafted with a watersoluble quaternary ammonium monomer are described especially in US patent 4,131,576, and mention may be made of hydroxyalkylcelluloses, for instance hydroxymethyl-, hydroxyethyl- or hydroxypropylcelluloses grafted, in particular, with a methacryloylethyltrimethylammonium, methacrylamidopropyltrimethylammonium or dimethylallylammonium salt. The commercial products corresponding to this definition are more particularly the products sold under the names Celquat L 200 and Celquat H 100 by the company National Starch.

The cationic galactomamian gums are described more particularly in US patents 3,589,578 and 4,031,307, and mention may be made of guar gums comprising cationic trialkylammonium groups. Use is made, for example, of guar gums modified with a 2,3-epoxypiperidyltrimethylammonium salt (for example, chloride). Such products are especially sold under the names Jaguar CB S, Jaguar C 15, Jaguar C 17 or Jaguar C162 by the company Rbodia.

(3) Polymers formed from piperazinyl units and divalent alkylene or hydroxyalkylene radicals containing straight or branched chains, optionally interrupted with oxygen, sulfur or nitrogen atoms or with aromatic or heterocyclic rings, and also the oxidation and/or quaternization products of these polymers.

(4) Water-soluble polyamino amides prepared in particular by polycondensation of an acidic compound with a polyamine; these polyamino amides can be crosslinked with an epihalohydrin, a diepoxide, a dianhydride, an unsaturated dianhydride, a bis-unsaturated derivative, a bis-halohydrin, a bis-azetidinium, a bis-haloacyldiamine, a bis-alkyl halide or alternatively with an oligomer resulting from the reaction of a difunctional compound which is reactive with a bis-halohydrin, a bis-azetidinium, a bis-haloacyldiamine, a bis-alkyl halide, an epihalohydrin, a diepoxide or a bis-unsaturated derivative; the crosslinking agent being used in proportions ranging from 0.025 to 0.35 mol per amine group of the polyamino amide; these polyamino amides can
be alkylated or, if they comprise one or more tertiary amine functions, they can be quaternized.

(5) Polyamino amide derivatives resulting from the condensation of polyalkylene polyamines with polycarboxylic acids followed by alkylation with bifunctional agents. Mention may be made, for example, of adipic acid/dialkylaminohydroxyalkyldialkylamidetri amine polymers in which the alkyl radical comprises from 1 to 4 carbon atoms and preferably denotes methyl, ethyl or propyl. Among these derivatives, mention may be made more particularly of the adipic acid/dimethylaminohydroxypropyl/diethylenetriamine polymers sold under the name Cartaretine F, F4 or F8 by the company Sandoz.

(6) Polymers obtained by reacting a polyalkylene polyamine comprising two primary amine groups and at least one secondary amine group with a dicarboxylic acid chosen from diglycolic acid and saturated aliphatic dicarboxylic acids containing from 3 to 8 carbon atoms; the mole ratio between the polyalkylene polyamine and the dicarboxylic acid preferably being between 0.8:1 and 1.4:1; the resulting polyamino amide being reacted with epichlorohydrin in a mole ratio of epichlorohydrin relative to the secondary amine group of the polyamino amide preferably of between 0.5:1 and 1.8:1. Polymers of this type are sold in particular under the name Hercosett 57 by the company Hercules Inc. or alternatively under the name PD 170 or Delsette 101 by the company Hercules in the case of the adipic acid/epoxypropyl/diethylenetriamine copolymer.

(7) Cycopolymers of alkyldiallylamine or of dialkyldiallylammonium, such as the homopolymers or copolymers containing, as main constituent of the chain, units corresponding to formula (I) or (II):
in which:
- \( k \) and \( t \) are equal to 0 or 1, the sum \( k + t \) being equal to 1;
- \( R_{12} \) denotes a hydrogen atom or a methyl radical;
- \( R_{10} \) and \( R_{11} \), independently of each other, denote a C1-C6 alkyl group, a hydroxyl\((\text{Cl-C5})\)alkyl group, a C1-C4 amidoalkyl group; or alternatively \( R_{10} \) and \( R_{11} \) may denote, together with the nitrogen atom to which they are attached, an heterocyclic group such as piperidinyl or morpholinyl; \( R_{10} \) and \( R_{11} \), independently of each other, preferably denote a C1-C4 alkyl group;
- \( Y^{-} \) is an anion such as bromide, chloride, acetate, borate, citrate, tartrate, bisulfate, bisulfite, sulfate or phosphate.

Mention may be made more particularly of the dimethyldiallylammonium salt (for example chloride) homopolymer sold for example under the name Merquat 100 by the company Nalco, and the copolymers of diallyldimethylammonium salts (for example chloride) and of acrylamide, sold especially under the name Merquat 550 or Merquat 7SPR.

(8) Quaternary diammonium polymers comprising repeating units of formula:
in which:

- R13, R14, R15 and R16, which may be identical or different, represent aliphatic, alicyclic or arylaliphatic radicals comprising from 1 to 20 carbon atoms, or Cl-C12 hydroxyalkaliphatic radicals,

or else R13, R14, R15 and R16, together or separately, constitute, with the nitrogen atoms to which they are attached, heterocycles optionally comprising a second non-nitrogen heteroatom,

or else R13, R14, R15 and R16 represent a linear or branched C1-C6 alkyl radical substituted with a nitrile, ester, acyi, amide or -CO-0-R17-D or -CO-NH-R17-D group in which R17 is an alkylene and D is a quaternary ammonium group;

- A1 and B1 represent divalent polymethylene groups comprising from 2 to 20 carbon atoms, linear or branched, saturated or unsaturated, and which may contain, linked to or intercalated in the main chain, one or more aromatic rings or one or more oxygen or sulfur atoms or sulfoxide, sulfone, disulfide, amino, aikylamino, hydroxyl, quaternary ammonium, ureido, amide or ester groups, and

- X- denotes an anion derived from a mineral or organic acid;

it being understood that A1, R13 and R15 can form, with the two nitrogen atoms to which they are attached, a piperezine ring;

in addition, if A1 denotes a linear or branched, saturated or unsaturated alkylene or hydroxyalkylene radical, B1 may also denote a group (CH2)n-CO-D-OC-(CH2)n- in which D denotes:

a) a glycol residue of formula -0-Z-0-, in which Z denotes a linear or branched hydrocarbon-based radical, or a group corresponding to one of the following formula: -(CH2-CH2-0)x-CH2-CH2- and -(CH2-CH(CH3)-0)y-CH2-CH(CH3)-, where x and y denote an integer from 1 to 4, representing a defined and unique degree of polymerization or any number from 1 to 4 representing an average degree of polymerization;

b) a bis-secondary diamine residue such as a piperezine derivative;
c) a bis-primary diamine residue of formula: \(-\text{NH}-\text{Y}-\text{NH}\)-, where \(\text{Y}\) denotes a linear or branched hydrocarbon-based radical, or else the divalent radical \(-\text{CH}_2\text{-CH}_2\text{-S-S-CH}_2\text{-CH}_2\)-;

d) a ureylene group of formula: \(-\text{NH-CO-NH}\)-;

Preferably, \(\text{X}^\text{-}\) is an anion such as chloride or bromide. These polymers have a number-average molar mass (Mn) generally of between 1000 and 100 000.

Mention may be made more particularly of polymers that are composed of repeating units corresponding to the formula:

\[
\begin{array}{cccc}
\text{R}_1 & \text{R}_2 & \text{R}_3 & \text{R}_4 \\
\text{R}_1 & \text{X}^- & \text{N}^+ & \text{(CH}_2\text{)_n} & \text{N}^+ & \text{(CH}_2\text{)_p} & \text{X}^- \\
\end{array}
\]

\(\text{R}_1, \text{R}_2, \text{R}_3 \text{ and } \text{R}_4, \text{ which may be identical or different, denote an alkyl or hydroxyalkyl radical containing from } 1 \text{ to } 4 \text{ carbon atoms, } n \text{ and } p \text{ are integers ranging from } 2 \text{ to } 20, \text{ and } \text{X}^- \text{ is an anion derived from an organic or mineral acid.}

A particularly preferred compound of formula (IV) is that for which \(\text{R}_1, \text{R}_2, \text{R}_3 \text{ and } \text{R}_4 \text{ represent a methyl radical and } n = 3, p = 6 \text{ and } \text{X}^- = \text{Cl}, \text{ known as Hexadimethrine chloride according to the INCI (CTFA) nomenclature.}

(9) Polyquaternary ammonium polymers comprising units of formula (V):

\[
\begin{array}{cccc}
\text{R}_{18} & \text{R}_{20} \\
\text{R}_{19} & \text{R}_{21} \\
\text{X}^- & \text{N}^+ & \text{(CH}_2\text{)_q} & \text{CO} & \text{(CH}_2\text{)_s} & \text{CO} & \text{NH} & \text{(CH}_2\text{)_S} & \text{N}^+ & \text{A} & \text{X}^- \\
\end{array}
\]

in which:

- \(\text{R}_{18}, \text{R}_{19}, \text{R}_{20} \text{ and } \text{R}_{21}, \text{ which may be identical or different, represent a hydrogen atom or a methyl, ethyl, propyl, } \beta\text{-hydroxyethyl, } \beta\text{-hydroxypropyl or } \text{-CH}_2\text{Cl } \text{I}_2\text{(OCH}_2\text{CH}_2\text{)_pOH group, in which } p \text{ is equal to } 0 \text{ or to an integer between } 1 \text{ and } 6,\)
with the proviso that R18, R19, R20 and R21 do not simultaneously represent a hydrogen atom,

- r and s, which may be identical or different, are integers between 1 and 6,
- q is equal to 0 or to an integer between 1 and 34,
- X- denotes an anion such as a halide,
- A denotes a dihalide radical or preferably represents -CH2-CH2-O-CH2-CH2-.

Examples that may be mentioned include the products Mirapol® A15, Mirapol® AD1, Mirapol® AZ1 and Mirapol® 175 sold by the company Miranol.

(10) Quaternary polymers of vinylpyrrolidone and of vinylimidazole, for instance the products sold under the names Luviquat® FC 905, FC 550 and FC 370 by the company BASF.

(11) Polyamines such as Polyquart® H sold by Cognis, referred to under the name Polyethylene glycol (15) tallow polyamine in the CTFA dictionary.

(12) Polymers comprising in their structure:
(a) one or more units corresponding to formula (A) below:

\[
\begin{align*}
\text{CH}_2 & \quad \text{CH} \quad \text{NH}_2 \\
\end{align*}
\]

(A)

(b) optionally, one or more units corresponding to formula (B) below:

\[
\begin{align*}
\text{CH}_2 & \quad \text{CH} \quad \text{NH} \quad \text{C} \quad \text{H} \\
\end{align*}
\]

(B)

In other words, these polymers may be chosen especially from homopolymers or copolymers composing one or more units derived from vinylamine and optionally one or more units derived from vinylformamide.

Preferably, these cationic polymers are chosen from polymers comprising, in their structure, from 5 mol% to 100 mol% of units corresponding to formula (A) and from 0 to 95 mol% of units corresponding to formula (B), preferentially from 10 mol% to 100
mol% of units corresponding to formula (A) and from 0 to 90 mol% of units corresponding to formula (B).

These polymers may be obtained, for example, by partial hydrolysis of polyvinylformamide. This hydrolysis may be performed in an acidic or basic medium.

The weight-average molecular mass of the said polymer, measured by light scattering, may range from 1000 to 3 000 000 g/mol, preferably from 10 000 to 1 000 000 g/mol and more particularly from 100 000 to 500 000 g/mol.

The polymers comprising units of formula (A) and optionally units of formula (B) are sold especially under the name Lupamin by the company BASF, for instance, and in a non-limiting manner, the products sold under the names Lupamin 9095, Lupamin 5095, Lupamin 1095, Lupamin 9030 (or Luviquat 9030) and Lupamin 9010.

Other cationic polymers that may be used in the context of the invention are cationic proteins or cationic protein hydrolysates, polyalkyleneimines, in particular polyethyleneimines, polymers comprising vinylpyridine or vinylpyridinium units, condensates of polyamines and of epichlorohydrin, quaternary polyureylenes and chitin derivatives.

Preferably, the cationic polymers are chosen from the polymers of families (1), (2), (7) and (10) mentioned above.

Among the cationic polymers mentioned above, the ones that may preferably be used are cationic polysaccharides, especially cationic celluloses and galactomannan gums, and in particular quaternary cellulose ether derivatives such as the products sold under the name "JR 400" by the company Amerchol, cationic cyclopolymermers, in particular dimethyldiallylammonium salt (for example chloride) homopolymers or copolymers, sold under the names Merquat 100, Merquat 550 and Merquat S by the company Nalco, quaternary polymers of vinylpyrrolidone and of vinylimidazole, optionally crosslinked homopolymers or copolymers of methacryloyloxy(Ci-C4)alkyltri(Cl-C4)alkylammonium salts, and mixtures thereof.

It is also possible to use amphoteric polymers, which may preferably be chosen from amphoteric polymers comprising a repetition of:
(i) one or more units derived from a monomer of (meth)acrylamide type,
(ii) one or more units derived from a monomer of (meth)acrylamidoalkyltrialkylammonium type, and
(iii) one or more units derived from an acidic monomer of (meth)acrylic acid type.

Preferably, the units derived from a monomer of (meth)acrylamide type (i) are units of structure (la) below:

\[
\begin{array}{c}
\text{CH}_2 \\
\text{O} \\
R_1 \\
R_2 \\
\end{array}
\]

(la)

in which \( R_i \) denotes H or \( \text{CH}_3 \) and \( R_2 \) is chosen from an amino, dimethylamino, tert-butyl amino, dodecylamino or \( -\text{NH-CH}_2\text{OH} \) radical.

Preferably, the said amphoteric polymer comprises a repetition of only one unit of formula (la).

The unit derived from a monomer of (meth)acrylamide type of formula (la) in which \( R_1 \) denotes H and \( R_2 \) is an amino radical \( (\text{NH}_2) \) is particularly preferred. It corresponds to the acrylamide monomer per se.

Preferably, the units derived from a monomer of (meth)acrylamidoalkyltrialkylammonium type (ii) are units of structure (lla) below:

\[
\begin{array}{c}
\text{CH}_2 \\
\text{O} \\
\text{NH} \\
R_3 \\
R_4 \\
N^+ \\
R_5 \\
R_6 \\
R_7 \\
Y \\
\end{array}
\]

(lla)

in which:
- \( R_3 \) denotes H or CH3,
- R.4 denotes a group (CH₂)ᵏ with k being an integer ranging from 1 to 6 and preferably from 2 to 4;
- R.5, R₆ and R₇, which may be identical or different, denote an alkyl group containing from 1 to 4 carbon atoms;
- Y⁻ is an anion such as bromide, chloride, acetate, borate, citrate, tartrate, bisulfate, bisulfite, sulfate or phosphate.

Preferably, the said amphoteric polymer comprises a repetition of only one unit of formula (IIa).

Among these units derived from a monomer of (meth)acrylamidoalkyltrialkylammonium type of formula (Ha), the ones that are preferred are those derived from the methacrylamidopropyltrimethylammonium chloride monomer, for which R₃ denotes a methyl radical, k is equal to 3, R₅, R₆ and R₇ denote a methyl radical, and Y⁻ denotes a chloride anion.

Preferably, the units derived from a monomer of (meth)acrylic acid type (iii) are units of formula (IIia):

![Image](image.png)

(iIla)

in which R₈ denotes H or CH₃ and R₉ denotes a hydroxyl radical or a -NH-C(CH₃)₂-CH₂-SO₃⁻H radical.

The preferred units of formula (IIIa) correspond to the acrylic acid, methacrylic acid and 2-acrylamino-2-methylpropanesulfonic acid monomers.

Preferably, the unit derived from a monomer of (meth)acrylic acid type of formula (IIia) is that derived from acrylic acid, for which R₈ denotes a hydrogen atom and R₉ denotes a hydroxyl radical.

The acidic monomer(s) of (meth)acrylic acid type may be non-neutralized or partially or totally neutralized with an organic or mineral base.

Preferably, the said amphoteric polymer comprises a repetition of only one unit of formula (IIia).
According to a preferred embodiment of the invention, the amphoteric polymer(s) of this type comprise at least 30 mol% of units derived from a monomer of (meth)acrylamide type (i). Preferably, they comprise from 30 mol% to 70 mol% and more preferably from 40 mol% to 60 mol% of units derived from a monomer of (meth)acrylamide type.

The content of units derived from a monomer of (meth)acrylamidoalkyltrialkylammonium type (ii) may advantageously be from 10 mol% to 60 mol% and preferentially from 20 mol% to 55 mol%.

The content of units derived from an acidic monomer of (meth)acrylic acid type (iii) may advantageously be from 1 mol% to 20 mol% and preferentially from 5 mol% to 15 mol%.

According to a particularly preferred embodiment of the invention, the amphoteric polymer of this type comprises:

- from 30 mol% to 70 mol% and more preferably from 40 mol% to 60 mol% of units derived from a monomer of (meth)acrylamide type (i),

- from 10 mol% to 60 mol% and preferentially from 20 mol% to 55 mol% of units derived from a monomer of (meth)acrylamidoalkyltrialkylammonium type (ii), and

- from 1 mol% to 20 mol% and preferentially from 5 mol% to 15 mol% of units derived from a monomer of (meth)acrylic acid type (iii).

Amphoteric polymers of this type may also comprise additional units, other than the units derived from a monomer of (meth)acrylamide type, of (meth)acrylamidoalkyltrialkylammonium type and of (meth)acrylic acid type as described above.

However, according to a preferred embodiment of the invention, the said amphoteric polymers consist solely of units derived from monomers (i) of (meth)acrylamide type, (ii) of (meth)acrylamidoalkyltrialkylammonium type and (iii) of (meth)acrylic acid type.

As examples of amphoteric polymers that are particularly preferred, mention may be made of acrylamide/methacrylamidopropyltrimethylammonium chloride/acrylic acid terpolymers. Such polymers are listed in the CTFA Dictionary (International Cosmetic Ingredient Dictionary) under the name Polyquaternium 53. Corresponding products are
especially sold under the names Merquat 2003 and Merquat 2003 PR by the company Nalco.

As another type of amphoteric polymer that may be used, mention may also be made of copolymers based on (meth)acrylic acid and on a diaikylidiallylammonium salt, such as copolymers of (meth)acrylic acid and of dimethylallylammonium chloride. An example that may be mentioned is Merquat 280 sold by the company Nalco.

The composition according to the invention may comprise the cationic and/or amphoteric polymers, preferably in an amount ranging from 0.01 to 0.5% by weight relative to the total weight of the composition.

**Polyols**

For the purpose of the present invention, the term "polyol" should be understood to mean any organic molecule comprising at least two free hydroxy groups.

The composition according to the invention may comprise one or more polyols(s) in an amount ranging from 0.1 to 20% by weight, preferably from 1 to 15% by weight, relative to the total weight of the composition.

A polyol suitable for the invention may be a compound such as a saturated or unsaturated, linear, branched or cyclic alkyl bearing, on the alkyl chain, at least two -OH functions, in particular at least three –OH functions, and more particularly at least four -OH functions.

The polyols advantageously suitable for the formulation of the foaming cleansing composition according to the present invention are those having, in particular, from 2 to 16 carbon atoms, preferably 3 to 8 carbon atoms.

Among polyols, the following may be cited: glycerin, sorbitol, 1,3-propanediol, isoprene glycol, pentylene glycol, hexylene glycol, glycerol, glycols such as ethylene glycol, propylene glycol, butylene glycol, pentylene glycol, diethylene glycol, decylene glycol, caprylyl glycol, polyethylene glycol such as PEG-8, polyglycerols, such as glycerol oligomers, for instance diglycerol, erythritol, arabitol, adonitol, sorbitol, dulcitol, glucose, fructose, xylose, trehalose, sucrose, maltose, saccharose and lactose, and mixtures thereof.
According to a preferred embodiment the following polyols may be used:
glycerin, sorbitol, propylene glycol, decylene glycol, caprylyl glycol, butylene glycol,
hexylene glycol, polyethylene glycol and mixtures thereof.

According to a particular embodiment of the present invention, the polyol is not a polymer with repeating units.

According to a more particularly preferred embodiment, the polyol comprises at least sorbitol.

Throughout the description, including the claims, the expression "comprising a" should be understood as being synonymous with "comprising at least one", unless otherwise specified.

The expressions "between ... and ..." and "ranging from ... to ..." should be understood as meaning limits included, unless otherwise specified.

The examples that follow illustrate the present invention without limiting the scope thereof.

The cleansing compositions described in the following examples are prepared using the following general process:

1. Soap is formed in situ in the main vessel at 75-80 °C and mixing is started at low speed for solubilization in water.
2. Preservatives, chelating agent and polyols are added to main vessel.
3. Viscosity enhancing polymer is dispersed at high speed keeping temperature of the main vessel greater than 80°C.
4. Surfactants are added at 45 - 65 °C.
5. In case of acrylates based polymers and GHTC, polymer is dispersed in water at room temperature and neutralized at later stage.

Ingredient amounts are indicated in the following examples in active material weight percentages "%wgt".

Example 1: Selection of viscosity enhancing polymers

Formulations were made with different polymers mentioned below. The molar ratio between fatty acid and triethanolamine is 1:1.3 in the following example.
The following polymers are tried:
1. Methocel K15M sold by Dow Chemical: Hydroxypropyl methyl cellulose
2. Natrosol 250 HHR sold by Hashland: Hydroxyethyl cellulose
3. Carbopol ultrez 20 sold by Lubrizol: Acrylates/C 10-30 Alkyl acrylate crosspolymer
5. Keltrol CG-T sold by CP Kelco: Xanthan gum
6. Jaguar C13-S sold by Solvay: Guar hydroxypropyl trimonium chloride (GHTC)
7. Benecel K100M sold by Ashland: Hydroxypropylmethylcellulose with Hydroxy propyl content of 7-12% and methoxyl content ranging from 20-24% showing a viscosity of 75,000 to 140,000 mPa.s (viscosity of 2% solution water as measured by Brookfield (rotational) viscometer)

"comp" in the following table means that the composition is outside the scope of the present invention and "inv" means that the corresponding composition illustrates the invention as claimed.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>72.96</td>
<td>72.96</td>
<td>72.96</td>
<td>72.96</td>
<td>72.96</td>
<td>72.96</td>
<td>72.96</td>
</tr>
<tr>
<td>Lauric acid</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
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<tr>
<td>Triethanolamine</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
</tr>
<tr>
<td>Sorbitol</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
</tr>
<tr>
<td>Propylene glycol</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>BHT</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>Propyl paraben</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Butyl paraben</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Disodium EDTA</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>SLES 1EO (70%) sold under the name Galaxy</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
</tr>
<tr>
<td>LES 170 by Galaxy Surfactants</td>
<td>Polyquaternium 7 sold under the name Merquat 7SPR polymer by Lubrizol</td>
<td>Phenoxyethanol</td>
<td>Methocel K 15M</td>
<td>Natrosol 250 HHR</td>
<td>Carbopol ultrez20</td>
<td>Carbopol ETD 2020</td>
<td>Keltrol CG-T</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------------------------</td>
<td>----------------</td>
<td>--------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td>0.25 0.25 0.25 0.25 0.25 0.25 0.25</td>
<td>0.20 0.20 0.20 0.20 0.20 0.20 0.20</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2:

**Effect of polymer on transparency and viscosity**

Cleansers prepared in Example 1 were compared and the results are summarized below.

<table>
<thead>
<tr>
<th>Formula</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exp 1 (inv)°</td>
<td>Transparent appearance with a viscosity of 0.2 Pa.s</td>
</tr>
<tr>
<td>Exp 2 (comp)</td>
<td>translucent appearance</td>
</tr>
<tr>
<td>Exp 3 (comp)</td>
<td>translucent appearance</td>
</tr>
<tr>
<td>Exp 4 (comp)</td>
<td>translucent appearance</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Exp 5 (comp)</td>
<td>non uniform appearance</td>
</tr>
<tr>
<td>Exp 6 (comp)</td>
<td>opaque appearance</td>
</tr>
<tr>
<td>Exp 7 (inv)</td>
<td>Transparent appearance with a viscosity of 0.92 Pa.s</td>
</tr>
</tbody>
</table>

It comes out that composition "Exp 1" and "Exp 7" both comply with the transparency requirement. As far as viscosity is concerned, it comes out that "Exp 7" shows a greater viscosity value, therefore constituting a preferred embodiment of the invention.

**Example 2: implementation of various polyols**

**Table 3:**

<table>
<thead>
<tr>
<th>INCI Name</th>
<th>Exp 8 (inv)</th>
<th>Exp 9 (inv)</th>
<th>Exp 10 (inv)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>73.16</td>
<td>73.16</td>
<td>73.16</td>
</tr>
<tr>
<td>LAURIC ACID</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>TRIETHANOLAMINE</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
</tr>
<tr>
<td>SORBITOL</td>
<td>8.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLYCERIN</td>
<td></td>
<td>8.00</td>
<td></td>
</tr>
<tr>
<td>PROPYLENE GLYCOL</td>
<td>1.00</td>
<td>1.00</td>
<td>9.00</td>
</tr>
<tr>
<td>BHT</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>PROPYLPARABEN</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>BUTYLPARABEN</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>DISODIUM EDTA</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>SLES 1EO (70%) sold under the name Galaxy LES 170 by Galaxy Surfactants</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
</tr>
</tbody>
</table>
1% Propylene glycol was kept in all experiments to dissolve parabens.

All the tested compositions were transparent and stable.

**Example 3: various molar ratios between fatty acid and neutralizing agent**

A combination of C12 and C14 fatty acid soap gives desired creamy foam with adequate foam volume.

Formulations were made with different molar ratios of fatty acids and triethanolamine as mentioned below.

**Table 4:**

<table>
<thead>
<tr>
<th>Nom</th>
<th>INCI</th>
<th>Fla 4I</th>
<th>Fla 4J</th>
<th>Fla 4K</th>
<th>Fla 4L</th>
<th>Fla 4M</th>
<th>Fla 4N</th>
<th>Fla 4O</th>
<th>Fla 4P</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td>74.28</td>
<td>73.53</td>
<td>72.79</td>
<td>72.41</td>
<td>72.04</td>
<td>71.67</td>
<td>71.30</td>
<td>70.55</td>
<td></td>
</tr>
<tr>
<td>LAURIC ACID</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>TRIETHANOLAMINE</td>
<td>3.72</td>
<td>4.47</td>
<td>5.21</td>
<td>5.59</td>
<td>5.96</td>
<td>6.33</td>
<td>6.70</td>
<td>7.45</td>
<td></td>
</tr>
<tr>
<td>SORBITOL</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td>8.00</td>
<td></td>
</tr>
<tr>
<td>PROPYLENE GLYCOL</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>BHT</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>PROPYL PARABEN</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>BUTYLPARABEN</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>DISODIUM EDTA</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>BENECCEL K100M sold by Ashland</td>
<td>0.80</td>
<td>0.80</td>
<td>0.80</td>
<td>0.80</td>
<td>0.80</td>
<td>0.80</td>
<td>0.80</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>SLES 1EO (70%) sold under the name Galaxy LES 170 by Galaxy Surfactants</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>POLYQUATERNIUM 7 sold under</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td></td>
</tr>
</tbody>
</table>
the name Merquat 7SPR polymer by Lubrizol

<table>
<thead>
<tr>
<th>PHENOXYETHANOL</th>
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<th>0.20</th>
<th>0.20</th>
<th>0.20</th>
<th>0.20</th>
<th>0.20</th>
<th>0.20</th>
<th>0.20</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Molar ratio - Fatty acid : TEA</td>
<td>1:1</td>
<td>1:1.2</td>
<td>1:1.4</td>
<td>1:1.5</td>
<td>1:1.6</td>
<td>1:1.7</td>
<td>1:1.8</td>
<td>1:2</td>
</tr>
</tbody>
</table>

Table 5:

<table>
<thead>
<tr>
<th>Formula</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula 4I</td>
<td>Milky product</td>
</tr>
<tr>
<td>Formula 4J</td>
<td>Transparent product but crystallization observed at 4°C in 24 hours</td>
</tr>
<tr>
<td>Formula 4K</td>
<td>Transparent product but crystallization observed at 4°C in 24 hours</td>
</tr>
<tr>
<td>Formula 4L</td>
<td>Some crystallization seen at 4°C in 24 hours</td>
</tr>
<tr>
<td>Formula 4M</td>
<td>Slight crystallization seen at 4°C in 48 hours</td>
</tr>
<tr>
<td>Formula 4N</td>
<td>Some crystallization seen at 4°C in 2 weeks</td>
</tr>
<tr>
<td>Formula 4O</td>
<td>No crystallization, transparent</td>
</tr>
<tr>
<td>Formula 4P</td>
<td>No crystallization, transparent</td>
</tr>
</tbody>
</table>

In the present formula architecture, the molar ratio between fatty acids and triethanolamine gives satisfactory results in terms of transparency when 1:1.8 or above.

Example 4: utilization of the composition according to the invention

Compositions according to example 2 are applied on wet skin of the face. Then, it is foamed and rinsed with water.

After washing, the skin is clean and moisturized in all cases.
CLAIMS

1. A transparent cleansing liquid composition containing, in a physiologically acceptable aqueous medium:
   - at least a soap,
   - at least one foaming surfactant,
   - at least an organic neutralizing agent present in a molar ratio between soap and said organic neutralizing agent of at least 1:1.75, preferably of at least 1:1.8, and
   - at least a viscosity enhancing polymer comprising at least a hydroxy(Ci-C6)alkyl(Ci-C6)alkyl cellulose,

   wherein said composition has a pH ranging from 8 to 9, preferably from 8 to 8.5.

2. A composition according to claim 1, wherein said soap is present in the composition in an amount ranging from 2 to 7% by weight relative to the total weight of the composition, in particular from 3 to 6% by weight and most preferably from 4 to 5% by weight.

3. A composition according to claim 1 or 2, wherein the soap is an organic soap of fatty acid from 10 to 22 carbon atoms, more preferably from 12 to 18 carbon atoms and most preferably from 12 to 14 carbon atoms.

4. A composition according to anyone of the preceding claims, wherein the fatty acid is selected among the caproic acid, capric acid, caprylic acid, oleic acid, linoleic acid, lauric acid, the myristic acid, the stearic acid, the palmitic acid and mixtures thereof.

5. A composition according to anyone of the preceding claims, wherein the molar ratio between fatty acid to neutralization agent ranges from 1:1.75 to 1:3, in particular from 1:1.8 to 1:2.5.

6. A composition according to anyone of the preceding claims, wherein the hydroxy(Ci-C6)alkyl(Ci-C6)alkylcellulose is hydroxy(Ci-C4)alkyl(C4)alkyl cellulose and is more particularly selected from hydroxymethylbutylcellulose, hydroxyethylmethylcellulose, hydroxyethylbutylcellulose and hydroxypropylmethylcellulose and mixtures thereof.
7. A composition according to anyone of the preceding claims, wherein the viscosity of the viscosity enhancing polymer, when present in an aqueous solution at a weight concentration of 2%, varies between 75 000 and 140 000 Pa.s.

8. A composition according to anyone of the preceding claims, wherein the cellulose ether is a hydroxypropylmethylcellulose, and in particular presents a hydroxypropyl content ranging from 7 to 12% by weight with respect to the total weight of hydroxypropylmethylcellulose, and presents a methoxy content ranging from 20 to 24% by weight with respect to the total weight of hydroxypropylmethylcellulose.

9. A composition according to anyone of the preceding claims, wherein the viscosity enhancing polymer is present in the composition in an amount ranging from 0.2 to 6% by weight, in particular from 0.5 to 5% by weight, and more particularly from 0.8 to 1.2% by weight, with respect to the total weight of the composition.

10. A composition according to anyone of the preceding claims, wherein the composition comprises at least one foaming surfactant chosen from anionic, amphoteric (or zwitterionic), nonionic and/or cationic foaming surfactants, and mixtures thereof, the said anionic surfactant being in particular chosen from alkyl sulfates, alkyl ether sulfates, alkylamido ether sulfates, alkylaryl polyether sulfates, monoglyceride sulfates, alkyl sulfonates or alpha olefin sulfonates, alkylamide sulfonates, alkylarylsulfonates, paraffin sulfonates, alkyl sulfosuccinates, alkyl ether sulfosuccinates, alkylamide sulfosuccinates, alkyl sulfoacetates, acylsarcosinates, acylglutamates, alkyl sulphasuccinamates, acylisethionates and N-acyl taurates, salts of alkyl monoesters and polyglycosidepolycarboxylic acids, acyl lactylates, N-acyl glycinates, salts of D-galactoside-uronic acids, salts of alkyl ether carboxylic acids, alkyl aryl ether carboxylic acid salts, salts of alkyl amidoether carboxylic acids, sulfoacetates, sulfolaurates, and the corresponding non-salt forms all of these compounds, the said amphoteric or zwitterionic surfactant being in particular chosen from (Cg-C2o)alkylbetaines, sulfobetaines, (Cs-C2o)alkylsulfobetaines, (Cs-C2o)alkyamido(Ci-C6)alkylbetaines, (Cs-C2o)alkylamphodiacetates, (Cs-C2o)alkylamphodiacetates and mixtures thereof, and the said nonionic surfactant being in particular chosen from alkyl polyglucosides, and the said cationic surfactant being in particular chosen from optionally polyoxyalkylated primary, secondary or tertiary fatty amine salts, quaternary ammonium salts, imidazoline quaternary ammonium salts,
quaternary di- or triammonium salts, quaternary ammonium salts containing one or more ester functions, and mixtures thereof.

11. A composition according to anyone of the preceding claims, wherein the foaming surfactant at least contains an anionic surfactant(s), and is in particular chosen from (C₆-C₄₄)alkyl sulfates, (C₆-C₄₄)alkyl ether sulfates such as sodium lauryl ether sulfate, isethionates, amino acids, in particular glycines, such as sodium N-cocoyl glycinate, their alkali salts, and mixtures thereof.

12. A composition according to anyone of the preceding claims, wherein the foaming surfactant is present in the composition in an amount ranging from 0.5 to 10% by weight, in particular from 2 to 8% by weight, and more particularly from 3 to 6% by weight, with respect to the total weight of the composition.

13. A composition according to anyone of the preceding claims, wherein the organic neutralizing agent is selected from aminoalcohols such as ethanolamine, amino sugars, amino acids and their alkali salts.

14. A composition according to anyone of the preceding claims, wherein it further comprises a polyol such as glycerin, sorbitol, propylene glycol, decylene glycol, caprylyl glycol, butylene glycol, pentylene glycol, polyethylene glycol and mixtures thereof.

15. A composition according to anyone of the preceding claims, presenting a viscosity ranging from 0.1 to 3 Pa.s, in particular from 0.2 to 2 Pa.s, and more particularly from 0.3 to 1.3 Pa.s.

16. Process for cleansing keratin materials, which consists in applying to the said keratin materials a composition according to any one of the preceding claims, eventually with water, followed by rinsing with water to eliminate foam and dirt.
**INTERNATIONAL SEARCH REPORT**

**PCT/EP2015/075275**

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### A. CLASSIFICATION OF SUBJECT MATTER

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### B. FIELDS SEARCHED

**C11D** A61K A61Q

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### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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**X** Further documents are listed in the continuation of Box C.  
**X** See patent family annex.

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Date of the actual completion of the international search

8 January 2016

Date of mailing of the international search report

27/01/2016

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### DOCUMENTS CONSIDERED TO BE RELEVANT

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