The invention relates to a rinse-off foaming cleansing cosmetic composition comprising, in a physiologically acceptable medium: - a surfactant system in an active material content of greater than or equal to 3% by weight relative to the total weight of the composition, - at least one suspension agent, - at least one cosmetic additive in the form of particles, fibres or mixtures thereof, - at least one water-insoluble film-forming polymer in the form of particles, of the type such as a copolymer comprising at least one monomer unit of acrylate type, the said polymer particles having a number-average primary size of greater than 0.0 nm. The invention also relates to a process for cleansing keratin materials, which consists in applying the said composition to the said keratin materials, in working it into a foam and then in rinsing off the said composition.
"Rinse-off composition comprising a film-forming polymer"

The present invention relates to a rinse-off foaming cosmetic composition containing at least one cosmetic additive in the form of particles, fibres or mixtures thereof and a water-insoluble adhesive polymer of the type such as a copolymer comprising at least one monomer unit of acrylate type, for depositing the said at least one cosmetic additive onto keratin materials.

The deposition of cosmetic additives onto keratin materials under leave-on conditions is known. However, such a deposition may be sought via cleansing products. Thus, consumers may be in search of additional perceptible effects such as radiance of the complexion, bleaching, matting or moisturizing of the skin, or alternatively sensory properties such as softness. Certain fillers, as a result of their physicochemical properties (refractory index, colour, oil absorption, etc.), are effectively used along these lines under leave-on conditions. Now, the deposition of fillers or active agents onto keratin materials is very poor after a cleansing product has been used and rinsed off.

To date, a few technical solutions have been proposed, which may be summarized as follows:

- the use of cationic compounds such as polymers, surfactants and cationic particles, which leads to a compatibility problem in anionic formulations, or
- the use of an emulsified oil as a particle-deposition agent, this type of oil often having as adverse effect an anti-foaming nature.

We know from document WO 95/20641 a cleansing foaming composition comprising a hydrophobic carrier material. However the feature of depositing particles and fibres onto keratin materials and the difficulties resulting from it are not mentioned.

Consequently, there is a need for foaming cleansing compositions that are free of the abovementioned drawbacks.

The inventors have demonstrated that the combination, in a foaming cleansing composition, of at least one cosmetic additive in the form of particles, fibres or mixtures thereof with a water-insoluble adhesive polymer of the type such as a copolymer comprising at least one monomer unit of acrylate type makes it possible to deposit onto keratin materials the said at least one cosmetic additive, without degrading the foaming capacities of the composition.
One subject of the present invention is thus a rinse-off foaming cleansing cosmetic composition comprising, in a physiologically acceptable medium:
- a surfactant system in an active material content of greater than or equal to 3% by weight relative to the total weight of the composition,
- at least one suspension agent,
- at least one cosmetic additive in the form of particles, fibres or mixtures thereof, and
- at least one water-insoluble film-forming polymer in the form of particles, of the type such as a copolymer comprising at least one monomer unit of acrylate type, the said polymer particles having a number-average primary size of greater than 500 nm.

For the purposes of the present invention the term "primary particle size" means the maximum dimension that it is possible to measure between two diametrically opposed points of an individual particle. Needless to say, when it is a question of a population of particles of different sizes, the size indicated corresponds to the number-average size of the population.

According to the present invention, the expression "number-average primary size" means the average primary size of the considered particles according to the total number of particles.

In the description that follows, the term "size" means the "number-average primary size".

The size may be determined by transmission electron microscopy or by measuring the specific surface area by the BET method or using a laser particle sizer.

Contrary to all expectations, the inventors have found that the use of this cosmetic composition makes it possible to deposit at least one cosmetic additive onto keratin materials, whereas the composition is deposited, spread on the keratin materials and worked into a foam in order to use its cleansing properties, and is then rinsed off with water.

According to another of its aspects, a subject of the invention is also a process for cleansing keratin materials, which consists in applying to the said keratin materials a composition according to the invention, in working the said composition into a foam and then in rinsing off the said composition, especially with water.
A subject of the present invention is also the cosmetic use of the composition as defined above, for removing makeup and/or cleansing the skin, the hair and/or mucous membranes, or for skincare.

For the purposes of the present invention, the term "physiologically acceptable medium" means a medium that is suitable for the topical administration of a composition.

A physiologically acceptable medium is preferably a cosmetically or dermatologically acceptable medium, that is to say a medium which is devoid of unpleasant odour 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.

The compositions of the invention are rinse-off compositions (rinsing with water or with a tonic) and they may be used in the field of the makeup removal and cleansing of facial or bodily skin, the hair, including the scalp, and mucous membranes such as the lips. They may also constitute care products, for instance rinse-off masks (in the usual manner in which these products are used).

**COSMETIC ADDITIVES**

For the purposes of the present invention, a "cosmetic additive" is a compound intended to impart a cosmetic property that may be chosen, for example, from: supplying colour, texture modification, antisun protection, improvement of the remanence, skin moisturization, etc.

As above mentioned, the cosmetic additive(s) present in the composition according to the invention is(are) in the form of particles, fibres or mixtures thereof.

Cosmetic additive particles are filled or hollow solid particles and are preferably insoluble in the composition according to the invention; the composition of course may include several different types of filled or hollow solid cosmetic additive particles.

Said particles are generally insoluble in water. For the purposes of the present invention "insoluble in water" means a compound for which the solubility in water at 25°C and atmospheric pressure is less than 0.1 %, preferably less than 0.001 % by weight.

"Hollow particles" means according to the invention particles that have at least one cavity; this expression namely includes porous particles.
"Filled particles" means according to the invention particles that do not have a structure that is hollow.

Cosmetic additive particles used in the composition according to the present invention may have different shapes for instance a shape of spheres, flakes, needles or wafers; they are preferably substantially spherical.

Among the cosmetic additives in the form of particles that may be included in the composition according to the present invention, mention may be made of:

- organic pigments. Among the organic pigments that may be mentioned are carbon black, pigments of D&C type and lakes based on cochineal carmine or on barium, strontium, calcium or aluminium,

- mineral pigments such as:
  - titanium oxide, zinc oxide, coloured iron oxide,
  - alumina,
  - nacres,
  - carbonates,
  - ceramic particles, for instance boron nitride,
  - diamond/graphite,
  - magnesia,
  - glass, for instance borosilicate and phosphosilicate,
  - silica, for instance amorphous, colloidal, precipitated or fumed silica, in natural form or in the form of silica gels,
  - clay, for instance montmorillonite,
  - zirconium and barium sulfate,
  - silicates, for instance talc, illite, kaolin, zeolite, sepiolite, laponite, hectorite or bentonite,
  - mica, or
  - Lionite PC particles sold by the company Lion Corporation based on silica, ZnO, Al₂O₃ and TiO₂, composites of the above cited materials, in particular TiO₂ and silica composites,

- polymer particles, for instance particles of polymethyl methacrylate (PMMA), of polytetrafluoroethylene (PTFE), of polyamide, of polyacrylate, of polystyrene or copolymers thereof,
wax particles, for instance carnauba wax,
- mineral and/or organic sunscreen particles, for instance TiO\(_2\),
- perlite particles,
- silica aerogel particles, and
- mixtures thereof.

All the particles mentioned above may be sought for different purposes, such as to impart colour, different types of tints, softness or mattness, to modify the texture of the skin or to provide the skin with protection, especially antisun protection.

According to a particular embodiment of the present invention, the particles have a size of less than 1 mm, preferably less than 100 \(\mu\)m and more preferentially less than 30 \(\mu\)m.

Among the cosmetic additives in the form of fibres that may be included in the composition according to the present invention, examples that may be mentioned include polyamide or Nylon fibres, polyaramid, viscose, cotton, polyacrylic, poly(vinyl acetate) or PVA, or composite fibres.

The composition may simultaneously comprise particles and fibres as cosmetic additives. In this case, the content considered of the said at least one cosmetic additive is that of the particles and fibres, taken in their entirety.

The said at least one cosmetic additive may be included in the composition according to the present invention in an active material content of between 0.1% and 10% by weight and in particular between 0.1% and 5% by weight relative to the total weight of the composition, for example between 0.5 to 5 %, or between 1 and 4 %.

**ACRYLATE COPOLYMER**

The composition according to the invention comprises at least one water-insoluble film-forming polymer in the form of particles, of the type such as a copolymer comprising at least one monomer unit of acrylate type, the said polymer particles having a size of greater than 500 nm.

The term "film-forming" polymer means a polymer that is capable, by itself or in the presence of an auxiliary film-forming agent, of forming a macroscopically continuous film on a support, especially on keratin materials, and preferably a cohesive film.
The said at least one film-forming polymer is capable of remanently attaching particles to the skin to induce visible effects without having a negative impact on the foam properties of the composition according to the invention.

The at least one film-forming polymer according to the invention is adhesive.

According to a particular embodiment of the invention, the particle size of the said at least one film-forming polymer is greater than 500 nm, preferably from 500 nm to 200 \( \mu \text{m} \), even more preferentially from 500 nm to 50 \( \mu \text{m} \) and even more preferentially from 1 to 40 \( \mu \text{m} \).

The at least one film-forming polymer may be included in the composition according to the present invention in an active material content ranging from 0.1% to 20% by weight and in particular from 0.1% to 5% by weight, for instance from 0.1 to 1% by weight relative to the total weight of the composition.

Preferably, the at least one film-forming polymer is included in the composition according to the present invention in an active material content greater than or equal to 1% by weight, in particular greater than or equal to 1.5% by weight, more particularly greater than or equal to 2% by weight relative to the total weight of the composition, for example in a content ranging from 1% to 10% by weight, from 1.5% to 10% by weight or from 2% to 8% by weight relative to the total weight of the composition.

According to a particular embodiment of the invention, the said at least one film-forming polymer has a glass transition temperature (Tg) of less than or equal to 10°C.

The glass transition temperature (Tg) of the said at least one film-forming polymer according to the present invention may be measured by differential calorimetric analysis (Differential Scanning Calorimetry, DSC) under the following conditions:

To measure the glass transition temperature, a film about 150 mm thick of test polymer is prepared by depositing an aqueous solution or dispersion of the polymer in a circular Teflon die 40 mm in diameter and leaving the deposit to dry. The film is dried in an oven at a temperature of about 23°C under a relative humidity of 45%, until the weight no longer changes. About 5 to 15 mg of the film are taken up and placed in a crucible, which is then introduced into the analyser. The thermal analyser is a DSC-2920 model from the company TA Instruments. The initial and final temperatures of the temperature
sweep are chosen so as to surround the desired glass transition temperature. The temperature sweep is performed at a rate of 10°C/minute.

This analysis is performed according to ASTM standard D3418-97 apart from the above changes.

The said at least one film-forming polymer according to the present invention preferably has a self-adhesiveness such that the tensile force \( F_{\text{max}} \) in newtons (N) necessary to separate two surfaces coated with the said polymer is greater than 1 N and preferably greater than 3 N.

The tensile force \( F_{\text{max}} \) may be measured under the following conditions using an extensometer: two rigid, inert, non-absorbent glass supports (A) and (B) each having a surface area of 0.95 cm\(^2\) are coated with a layer of the test polymer. The polymer is deposited using a coating composition with a solids concentration (C) of 10% (in grams per 100 grams of composition) in a suitable solvent, and the surfaces of the supports are coated at a rate of 4/C mg/cm\(^2\). After evaporating the said solvent for 24 hours at 22°C under a relative humidity of 50%, the two coated surfaces of the discs are superimposed and the supports are pressed against one another for 20 seconds at a pressure of 3 N using a Lloyd model LR5K extensometer.

The stuck supports are then pulled apart at a rate of 20 mm/minute and the tensile force is continuously recorded. The maximum tensile force, recorded at the moment of the separation of the two surfaces, referred to as \( F_{\text{max}} \), characterizes the self-adhesiveness of the polymer. The greater this force, the greater the self-adhesiveness of the polymer.

According to a particular embodiment, the film-forming polymers according to the invention, in particular of formulae (I), (II), (Γ) and (II’) defined below, or the film-forming polymers described more specifically hereinbelow, have a weight-average molar mass of between 50 000 and 200 000 g/mol, more particularly between 100 000 and 200 000 g/mol and even more preferentially between 110 000 and 180 000 g/mol.

According to a first particular embodiment of the invention, the said at least one film-forming polymer comprises at least one monomer unit of alkylacrylamide type.

According to a particular embodiment of the invention, the said at least one film-forming polymer comprises at least the following two monomer units represented by the general formulae (A) and (B):
in which \( R_1, R_2 \) and \( R_3 \) are represented by a hydrogen atom or a \((\text{Ci-C}_{50})\)alkyl and preferably \((\text{Ci-C}_{20})\)alkyl group.

More particularly, the said monomer units may be linked together according to the general formula (I) below:

\[
\begin{align*}
\text{(I),}
\end{align*}
\]

in which \( x \) and \( z \) are, independently of each other, integers greater than or equal to 1.

Preferably, the said polymer comprises at least the following three monomer units represented by the general formulae (A), (B) and (C):

\[
\begin{align*}
\text{(A)} & \quad \begin{array}{c}
\text{(B)} \\
\end{array} \\
\text{(C)} & 
\end{align*}
\]

in which \( R_1, R_2 \) and \( R_3 \) are represented by a hydrogen atom or a \((\text{Ci-C}_{50})\)alkyl and preferably \((\text{Ci-C}_{20})\)alkyl group.

More particularly, the said monomer units may be linked together according to the general formula (II) below:

\[
\begin{align*}
\text{(II),}
\end{align*}
\]
in which \(x\), \(y\) and \(z\) are, independently of each other, integers greater than or equal to 1.

According to a particular embodiment of the invention, the said at least one film-forming polymer is of the acrylate(s)/octylacrylamide copolymer type.

Thus, according to a particular embodiment of the invention, the said at least one film-forming polymer comprises at least the following two monomer units represented by the general formulae (A) and (B ‘):

\[
\begin{align*}
\text{(A)} & \quad \text{with} \quad \text{R}_1 \text{ and } \text{R}_2 \text{ represented by a hydrogen atom or a (C}_1-\text{C}_8\text{)alkyl and preferably (C}_1-\text{C}_2\text{)alkyl group.} \\
\text{(B ‘)} & \quad \text{with} \quad \text{R}_1 \text{ and } \text{R}_2 \text{ represented by a hydrogen atom or a (C}_1-\text{C}_8\text{)alkyl and preferably (C}_1-\text{C}_2\text{)alkyl group.}
\end{align*}
\]

More particularly, the said monomer units may be linked together according to the general formula (I ‘) below:

\[
\begin{align*}
\text{(I ‘)} & \quad \text{with} \quad \text{x and z are, independently of each other, integers greater than or equal to 1.}
\end{align*}
\]

Preferably, the said polymer comprises at least the following three monomer units represented by the general formulae (A), (B ‘) and (C):
in which \( R_1 \) and \( R_2 \) are represented by a hydrogen atom or a \((C_i-C_{20})\)alkyl and preferably \((C_i-C_{20})\)alkyl group.

More particularly, the said monomer units may be linked together according to the general formula (II) below:

\[
\text{(II),}
\]

in which \( x, y \) and \( z \) are, independently of each other, integers greater than or equal to 1.

According to a particular embodiment of the invention, the said at least one film-forming polymer is a copolymer of octylacrylamide/acylates type or a copolymer of octylacrylamide/acylate/butylaminoethyl/methacrylate type.

Among the copolymers of octylacrylamide/acylates type in accordance with the invention, mention may be made especially of Dermacryl 79 from the company Akzo Nobel, of general formula (III) below.
Dermacryl 79 has a weight-average molecular weight of between 120,000 and 170,000 g/mol. It is in the form of beads of about 10 μη at acidic pH, which swell during neutralization.

Among the copolymers of octylacrylamide/acylates/butylamino ethyl methacrylate type in accordance with the invention, mention may also be made of Amphomer LV71 from the company Akzo Nobel, which is formed from octylacrylamide, t-butylaminoethyl methacrylate and at least two monomers of acrylic acid, of methacrylic acid or of an ester thereof.

According to a second particular embodiment of the invention, the said at least one film-forming polymer is a copolymer consisting of at least two different monomer units of acrylate type.

For the purposes of the invention, the term "monomer unit of acrylate type" means the monomer unit (A) represented above.

The term "two different monomer units of acrylate type" means two units of acrylate type in which at least one of the radicals from among R1 and R2 has a different meaning in these two monomer units.

The film-forming polymers in accordance with the invention comprising an acid function may be deprotonated with a suitable base such as potassium hydroxide in order to be water-soluble.

**SUSPENSION AGENT**

The role of the suspension agents is to gel or thicken the compositions and to avoid sedimentation of the particles present in the cleansing product according to the present invention.
The suspension agents may be of natural origin. They may then be chosen from xanthan, carrageenan, guar and starch.

The suspension agents may be of synthetic origin. They may then be chosen from the following products: Aculyn 38 (CTFA name: Acrylates/Vinyl Neodecanoate Crosspolymer) sold by Rohm & Haas, Aqua SF1 (slightly crosslinked acrylic polymer) sold by Lubrizol, or, more generally, the products of the Carbopol® family sold by Lubrizol.

The suspension agent may be included in the composition according to the present invention in an active material content of between 0.1% and 10% by weight and in particular between 0.1% and 2.5% by weight relative to the total weight of the composition, for example between 0.5 and 8%, namely between 1.5 and 8% by weight.

**FOAMING SURFACTANT**

The foaming composition according to the invention contains a surfactant system that gives the composition its foaming nature. The said surfactant system may consist of one or more surfactants.

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.

The composition according to the present invention comprises a surfactant system in an active material content of greater than 3% by weight, preferably greater than 5% by weight and more preferably greater than 10% by weight relative to the total weight of the composition.

The surfactants are preferably selected from anionic, amphoteric (or zwitterionic), nonionic and/or cationic foaming surfactants, and mixtures thereof.
Anionic surfactants

The anionic surfactants that may be present in the composition according to the invention may be chosen in particular from anionic derivatives of proteins of plant origin or of silk proteins, phosphates and alkyl phosphates, carboxylates, sulfosuccinates, amino acid derivatives, alkyl sulfates, alkyl ether sulfates, sulfonates, isethionates, taurates, alkyl sulfoacetates, polypeptides, anionic derivatives of alkyl polyglucoside, and soaps (fatty acid salts), and mixtures thereof.

a) Anionic derivatives of proteins of plant origin are protein hydrolysates containing a hydrophobic group, it being possible for the said hydrophobic group to be naturally present in the protein or to be added by reaction of the protein and/or of the protein hydrolysate with a hydrophobic compound. The proteins are of plant origin or are derived from silk, and the hydrophobic group may in particular be a fatty chain, for example an alkyl chain comprising from 10 to 22 carbon atoms. As anionic derivatives of proteins of plant origin, mention may more particularly be made of apple, wheat, soybean or oat protein hydrolysates comprising an alkyl chain having from 10 to 22 carbon atoms, and salts thereof. The alkyl chain may especially be a lauryl chain and the salt may be a sodium, potassium and/or ammonium salt.

Thus, as protein hydrolysates comprising a hydrophobic group, mention may be made, for example, of salts of protein hydrolysates where the protein is a silk protein modified by lauric acid, such as the product sold under the name Kawa Silk by Kawaken; salts of protein hydrolysates where the protein is a wheat protein modified by lauric acid, such as the potassium salt sold under the name Aminofoam W OR by the company Croda (CTFA name: potassium lauroyl wheat amino acids) and the sodium salt sold under the name Proteol LW 30 by the company SEPPIC (CTFA name: sodium lauroyl wheat amino acids); salts of protein hydrolysates where the protein is an oat protein comprising an alkyl chain having from 10 to 22 carbon atoms and more especially salts of protein hydrolysates where the protein is an oat protein modified by lauric acid, such as the sodium salt sold under the name Proteol OAT (30% aqueous solution) by the company SEPPIC (CTFA name: sodium lauroyl oat amino acids); or salts of apple protein hydrolysates comprising an alkyl chain having from 10 to 22 carbon atoms, such as the sodium salt sold under the name Proteol APL (30% aqueous glycol solution) by the company SEPPIC (CTFA name:
sodium cocoyl apple amino acids). Mention may also be made of the mixture of lauroyl amino acids (aspartic acid, glutamic acid, glycine, alanine) neutralized with sodium N-methylglycinate sold under the name Proteol SAV 50 S by the company SEPPIC (CTFA name: sodium cocoyl amino acids).

b) Examples of phosphates and alkyl phosphates that may be mentioned include monoalkyl phosphates and dialkyl phosphates, such as the lauryl monophosphate sold under the name MAP 20® by the company Kao Chemicals, the potassium salt of dodecylphosphoric acid, the mixture of monoester and diester (predominantly diester) sold under the name Crafol AP-31® by the company Cognis, the mixture of octylphosphoric acid monoester and diester sold under the name Crafol AP-20® by the company Cognis, the mixture of ethoxylated (7 mol of EO) phosphoric acid monoester and diester of 2-butyloctanol, sold under the name Isofol 12 7 EO-Phosphate Ester® by the company Condea, the potassium or triethanolamine salt of mono(C12-C13)alkyl phosphate sold under the references Arlatone MAP 230K-40® and Arlatone MAP 230T-60® by the company Uniqema, the potassium lauryl phosphate sold under the name Dermalcare MAP XC-99/09® by the company Rhodia Chimie, and the potassium cetyl phosphate sold under the name Arlatone MAP 160K by the company Uniqema.

c) As carboxylates, mention may be made of:

- amido ether carboxylates (AEC), such as sodium lauryl amido ether carboxylate (3 EO), sold under the name Akypo Foam 30® by the company Kao Chemicals;
- polyoxyethylenated carboxylic acid salts, such as oxyethylenated (6 EO) sodium lauryl ether carboxylate (65/25/10 C12-14-16) sold under the name Akypo Soft 45 NV® by the company Kao Chemicals, polyoxyethylenated and carboxymethylated fatty acids originating from olive oil, sold under the name Olivem 400® by the company Biologia E Tecnologia, or oxyethylenated (6 EO) sodium tridecyl ether carboxylate, sold under the name Nikkol ECTD-6NEX® by the company Nikkol;
- salts of fatty acids (soaps) having a C6 to C22 alkyl chain which are neutralized with an organic or mineral base, such as potassium hydroxide, sodium hydroxide, triethanolamine, N-methylglucamine, lysine and arginine.

d) Amino acid derivatives that may especially be mentioned include alkali metal salts of amino acids, such as:
• sarcosinates, such as the sodium lauroyl sarcosinate sold under the name Sarkosyl NL 97® by the company Ciba or sold under the name Oramix L30® by the company SEPPIC, sodium myristoyl sarcosinate sold under the name Nikkol Sarcosinate MN® by the company Nikkol, and sodium palmitoyl sarcosinate sold under the name Nikkol Sarcosinate PN® by the company Nikkol,

- alaninates, such as sodium N-lauroyl N-methyl amidopropionate sold under the name Sodium Nikkol Alaninate LN30® by the company Nikkol, or sold under the name Alanone ALE® by the company Kawaken, and triethanolamme N-lauroyl N-methyl alanine sold under the name Alanone Alta® by the company Kawaken,

- glutamates, such as triethanolamme monococoyl glutamate sold under the name Acylglutamate CT-12® by the company Ajinomoto, or triethanolamme lauroyl glutamate sold under the name Acylglutamate LT-12® by the company Ajinomoto,

- aspartates, such as the mixture of triethanolamine N-lauroyl aspartate and of triethanolamme N-myristoyl aspartate, sold under the name Asparack® by the company Mitsubishi,

- glycine derivatives (glycinates), such as the sodium N-cocoyl glycinate sold under the names Amilite GCS-12® and Amilite GCK 12 by the company Ajinomoto,

- citrates, such as the oxyethylenated (9 mol) citric monoester of cocoyl alcohols sold under the name Witconol EC 1129 by the company Goldschmidt,

- galacturonates, such as the sodium dodecyl-D-galactoside uronate sold by the company Soliance.

e) Examples of sulfosuccinates that may be mentioned include the oxyethylenated (3 EO) lauryl alcohol monosulfosuccinate (70/30 C_{12}/C_{14}) sold under the names Setacgin 103 Special® and Rewopol SB-FA 30 K 4® by the company Witco, the disodium salt of a hemisulfosuccinate of C_{12}–C_{14} alcohols, sold under the name Setacgin F Special Paste® by the company Zschimmer Schwarz, the oxyethylenated (2 EO) disodium oleamidosulfosuccinate sold under the name Standapol SH 135® by the company Cognis, the oxyethylenated (5 EO) laurylamide monosulfosuccinate sold under the name Lebon A-5000® by the company Sanyo, the oxyethylenated (10 EO) disodium salt of lauryl citrate monosulfosuccinate sold under the name Rewopol SB CS 50® by the company Witco, and the ricinoleic monoethanolam ide monosulfosuccinate sold under the name Rewoderm S 1333® by the company Witco. Polydimethylsiloxane sulfosuccinates may also be used,
such as disodium PEG-12 dimethicone sulfosuccinate sold under the name Mackanate-DC30 by the company Maclntyre.

f) Mention may be made, as alkyl sulfates, for example, of triethanolamine lauryl sulfate (CTFA name: TEA-lauryl sulfate), such as the product sold by the company Huntsman under the name Empicol TL40 FL or the product sold by the company Cognis under the name Texapon T42, which products are at 40% in aqueous solution. Mention may also be made of ammonium lauryl sulfate (CTFA name: ammonium lauryl sulfate), such as the product sold by the company Huntsman under the name Empicol AL 30FL, which is at 30% in aqueous solution.

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g) Mention may be made, as alkyl ether sulfates, for example, of sodium lauryl ether sulfate (CTFA name: sodium laureth sulfate), such as that sold under the names Texapon N40 and Texapon AOS 225 UP by the company Cognis, or ammonium lauryl ether sulfate (CTFA name: ammonium laureth sulfate), such as that sold under the name Standapol EA-2 by the company Cognis.

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h) Mention may be made, as sulfonates, for example, of a-olefmsulfonates, such as the sodium a-olefmsulfonate (C14-C16), sold under the name Bio-Terge AS-40® by the company Stepan, sold under the names Witconate AOS Protege® and Sulframine AOS PH 12® by the company Witco or sold under the name Bio-Terge AS-40 CG® by the company Stepan, secondary sodium olefmsulfonate, sold under the name Hostapur SAS 30® by the company Clariant; or linear alkylarylsulfonates, such as sodium xlyenesulfonate, sold under the names Manrosol SXS30®, Manrosol SXS40® and Manrosol SXS93® by the company Manro.

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i) Mention may be made, as isethionates, of acylisethionates, such as sodium cocoisethionate, such as the product sold under the name Jordapon CI P® by the company Jordan.

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j) Mention may be made, as taurates, of the sodium salt of palm kernel oil methyltaurate, sold under the name Hostapon CT Pate® by the company Clariant; N-acyl-N-methyltaurates, such as sodium N-cocoyl-N-methyltaurate, sold under the name Hostapon LT-SF® by the company Clariant or sold under the name Nikkol CMT-30-T® by the company Nikkol, or sodium palmitooyl methyltaurate, sold under the name Nikkol PMT® by the company Nikkol.
k) The anionic derivatives of alkyl polyglucosides can in particular be citrates, tartrates, sulfosuccinates, carbonates and glycerol ethers obtained from alkyl polyglucosides. Mention may be made, for example, of the sodium salt of cocoyl polyglucoside (1,4) tartaric ester, sold under the name Eucarol AGE-ET® by the company Cesalpinia, the disodium salt of cocoyl polyglucoside (1,4) sulfosuccinic ester, sold under the name Essai 512 MP® by the company SEPPIC, or the sodium salt of cocoyl polyglucoside (1,4) citric ester, sold under the name Eucarol AGE-EC® by the company Cesalpinia.

l) The soaps are obtained from a fatty acid which is partially or completely saponified (neutralized) with a basic agent. These are alkali metal or alkaline-earth metal soaps or soaps of organic bases. Use may be made, as fatty acids, of saturated, linear or branched fatty acids comprising from 8 to 30 carbon atoms and preferably comprising from 8 to 22 carbon atoms. This fatty acid can be chosen in particular from palmitic acid, stearic acid, myristic acid, lauric acid and mixtures thereof.

Use may be made, as basic agents, for example, of alkali metal hydroxides (sodium hydroxide or potassium hydroxide), alkaline-earth metal hydroxides (for example magnesium hydroxide), ammonium hydroxide or organic bases, such as triethanolamine, N-methylglucamine, lysine and arginine.

The soaps can in particular be fatty acid alkali metal salts, the basic agent being an alkali metal hydroxide and preferably potassium hydroxide (KOH).

The amount of basic agent must be sufficient for the fatty acid to be at least partially neutralized.

Preferably, the anionic surfactant is chosen from alkyl sulfates, alkyl ether sulfates such as sodium lauryl ether sulfate, isethionates, amino acid derivatives, in particular glycine derivatives (glycinates), such as sodium N-cocoyl glycinate, and mixtures thereof.

Amphoteric and zwitterionic foaming surfactants
The amphoteric and zwitterionic surfactants can be chosen, for example, from betaines, N-alkylamidobetaines and derivatives thereof, sultaines, alkyl polyaminocarboxylates, alkylamphoacetates, and mixtures thereof.
Mention may in particular be made, as betaines, of alkyl betaines, such as, for example, coco betaine, such as the product sold under the name Dehyton AB-30® by the company Cognis, lauryl betaine, such as the product sold under the name Genagen KB® by the company Clariant, oxyethylenated (10 EO) lauryl betaine, such as the product sold under the name Laureyl Ether (10 EO) Betaine® by the company Shin Nihon Rica, or oxyethylenated (10 EO) stearyl betaine, such as the product sold under the name Stearyl Ether (10 EO) Betaine® by the company Shin Nihon Rica.

Mention may be made, among N-alkylamidobetaines and derivatives thereof, for example, of cocamidopropyl betaine, sold under the name Lebon 2000 HG® by the company Sanyo or sold under the name Empigen BB® by the company Albright & Wilson, or lauramidopropyl betaine, sold under the name Rewoteric AMB12P® by the company Witco.

Mention may be made, as sultaines, of hydroxysultaines, cocamidopropyl hydroxysultaine, such as the product sold under the name Rewoteric AM CAS by the company Goldschmidt-Degussa or the product sold under the name Crosultaine C-50® by the company Croda.

Mention may be made, as alkyl polyaminocarboxylates (APACs), of sodium cocoylethanolamine, sold under the names Ampholak 7 CX/C® and Ampholak 7 CX® by the company Akzo Nobel, sodium stearylpolyamidocarboxylate, sold under the name Ampholak 7 TX/C by the company Akzo Nobel, or sodium carboxymethylhexylpolypropylamine, sold under the name Ampholak X07/C® by the company Akzo Nobel.

Mention may be made, as alkylamphoacetates, for example, of N-disodium N-cocoyl-N-carboxymethoxyethy 1-N-(carboxymethyl)ethylenediamine (CTFA name: disodium cocoamphodiacetate), such as the product sold under the name Miranol C2M Concentre NP® by the company Rhodia, N-sodium N-cocoyl-N-hydroxyethyl-N-(carboxymethyl)ethylenediamine (CTFA name: sodium cocamphoacetate) or sodium cocoamphohydroxypropylsulfonate, sold under the name Miranol CSE by the company Rhodia.

Preferably, the amphoteric or zwitterionic surfactant is chosen from betaines, and especially alkylbetaines, and alkylamphoacetates such as sodium cocoamphoacetate, and mixtures thereof.
Nonionic foaming surfactant

The nonionic foaming surfactants that may be present in the composition of the invention may be chosen especially from alkyl polyglucosides (APG), oxyalkylenated glycerol esters and oxyalkylenated sugar esters, and mixtures thereof. They are preferably APGs.

Use is preferably made, as alkyl polyglucosides, of those containing an alkyl group comprising from 6 to 30 carbon atoms and preferably from 8 to 16 carbon atoms and containing a glucoside group preferably comprising from 1.2 to 3 glucoside units. The alkylpolyglucosides may be chosen, for example, from decylglucoside (alkyl-C9/Cl 1-polyglucoside (1.4)), such as the product sold under the name Mydol 10® by the company Kao Chemicals or the product sold under the name Plantacare 2000 UP® by the company Cognis; caprylyl/capryl glucoside, such as the product sold under the name Plantacare KE 371 1® by the company Cognis; laurylglucoside, such as the product sold under the name Plantacare 1200 UP® by the company Cognis; cocoglucoside, such as the product sold under the name Plantacare 818 UP® by the company Cognis; caprylylglycerol, such as the product sold under the name Plantacare 810 UP® by the company Cognis; and mixtures thereof.

The oxyalkylenated glycerol esters are in particular the polyoxyethylenated derivatives of esters of glycerol and of a fatty acid and of their hydrogenated derivatives. These oxyalkylenated glycerol esters can be chosen, for example, from esters of glycerol and of fatty acids which are hydrogenated and oxyalkylenated, such as PEG-200 hydrogenated glyceryl palmitate, sold under the name Rewoderm LI-S 80 by the company Goldschmidt; oxyalkylenated glycerol cocomates, such as PEG-7 glyceryl cocomate, sold under the name Tegosoft GC by the company Goldschmidt, and PEG-30 glyceryl cocomate, sold under the name Rewoderm LI-63 by the company Goldschmidt; and mixtures thereof.

The oxyalkylenated sugar esters are in particular polyethylene glycol ethers of fatty acid and sugar esters. These oxyalkylenated sugar esters can be chosen, for example, from oxyethylenated glucose esters, such as PEG-120 methyl glucose dioleate, sold under the name Glucamate DOE 120 by the company Amerchol.

According to a preferred embodiment of the invention, the nonionic surfactant is an alkyl polyglucoside which may be chosen especially from decylglucoside,
caprylyl/capryl glucoside, laurylglucoside, cocoylglucoside and caprylylg glucoside, and mixtures thereof.

Cationic foaming surfactant

According to one embodiment, the composition according to the invention may comprise at least one cationic surfactant, in particular in the case where it comprises an amphoteric foaming surfactant. The cationic surfactants that may be used according to the present invention are especially optionally polyoxyalkylated primary, secondary or tertiary fatty amine salts, quaternary ammonium salts, imidazoline derivatives, and amine oxides of cationic nature, and mixtures thereof.

Examples of quaternary ammonium salts include:

- those that have the general formula (IV) below:

\[
\begin{array}{c}
\left[ \begin{array}{c}
R_1 \\
R_2 \\
R_3 \\
R_4 \\
\end{array} \right] + \\
N \\
\end{array}
\]

\[X^-\]

(IV)

in which the radicals R1 to R4, which may be identical or different, represent a linear or branched aliphatic radical comprising from 1 to 30 carbon atoms or an aromatic radical, such as aryl or alkylaryl. The aliphatic radicals may contain heteroatoms such as, in particular, oxygen, nitrogen, sulfur and halogens. The aliphatic radicals are for example selected from alkyl, alkoxy, polyoxyalkylene(C2-Ce), alkylamide, (C2-C22)alkylamido(C2-C6)alkyl, (C2-C22)alkylacetate and hydroxyalkyl radicals containing approximately from 1 to 30 carbon atoms; X is an anion chosen from the group consisting of halides, phosphates, acetates, lactates, (C2-Ce)alkyl sulfates, and alkyl or alkylaryl sulfonates. Preferably R1 and R2 denote a C1-C4 alkyl or a C1-C4 hydroxyalkyl.

- quaternary ammonium salts of imidazolinium, for instance the salt of formula (V) below:

\[
\begin{array}{c}
\left[ \begin{array}{c}
R_6 \\
\end{array} \right] + \\
\end{array}
\]

\[CH_2-CH_2-N(R_8)-CO-R_5\]

\[X^-\]

(V)
in which \( R \) represents an alkenyl or alkyl radical containing from 8 to 30 carbon atoms, for example coconut fatty acid derivatives, \( R_6 \) represents a hydrogen atom, a C1-C4 alkyl radical or an alkenyl or alkyl radical containing from 8 to 30 carbon atoms, \( R_7 \) represents a C1-C4 alkyl radical, \( R_8 \) represents a hydrogen atom or a C1-C4 alkyl radical, \( X^- \) is an anion chosen from the group of halides, phosphates, acetates, lactates, alkyl sulfates and alkyl or alkyaryl sulfonates. \( R_5 \) and \( R_6 \) preferably denote a mixture of alkenyl or alkyl radicals comprising from 12 to 21 carbon atoms, for example fatty acid derivatives of tallow, \( R_7 \) denotes methyl and \( R_8 \) denotes hydrogen.

- the diquaternary ammonium salts of formula (VI):

\[
\begin{array}{c}
\text{R}_9 \quad \text{N} \quad (\text{CH}_2)_3 \quad \text{N} \quad \text{R}_{14} \\
\text{R}_{10} \quad \text{R}_{12} \\
\text{R}_{11} \quad \text{R}_{13}
\end{array}
\]

\( + + \)

\( 2X^- \)

(VI)

in which \( R_9 \) denotes an aliphatic radical containing approximately from 16 to 30 carbon atoms, \( R_{10} \), \( R_{11} \), \( R_{12} \), \( R_{13} \) and \( R_{14} \), which are identical or different, are selected from hydrogen or an alkyl radical containing from 1 to 4 carbon atoms, and \( X \) is an anion selected from the group consisting of halides, acetates, phosphates, nitrates and methyl sulfates.

- quaternary ammonium salts comprising at least one ester function, for example those of formula (VII) below:

\[
\begin{array}{c}
\text{R}_{17} \quad \text{O} \\
\text{C} \quad (\text{O}_{\text{C}_\text{H}_2\text{O}})_z \quad \text{R}_{18}
\end{array}
\]

\[
\begin{array}{c}
\text{R}_{15} \quad \text{N} \\
(\text{C}_\text{pH}_{2\text{pO}})_x \quad \text{R}_{16}
\end{array}
\]

\( X^- \)

(VII)

in which:

- \( R_{15} \) is chosen from C1-C6 alkyl radicals and C1-C6 hydroxyalkyl or dihydroxyalkyl radicals;
- \( R_{16} \) is chosen from:
- the radical \( R_{19} -C^I \)
- linear or branched, saturated or unsaturated C1-C22 hydrocarbon-based radicals R20,
- a hydrogen atom,
5
- R18 is chosen from:
\[
\begin{array}{c}
\text{O} \\
\hline
\text{R}_{21} -C \\
\end{array}
\]
- the radical \( R_{21} -C \)
- linear or branched, saturated or unsaturated C1-C6 hydrocarbon radicals R22,
- a hydrogen atom,
10
- R17, R19 and R21, which are identical or different, are chosen from linear or branched, saturated or unsaturated C7-C21 hydrocarbon radicals;
- n, p and r, which may be identical or different, are integers ranging from 2 to 6;
- y is an integer ranging from 1 to 10;
15
- x and z, which may be identical or different, are integers ranging from 0 to 10;
- \( X^- \) is a simple or complex, organic or mineral anion;
with the proviso that the sum \( x + y + z \) is from 1 to 15, that when \( x \) is 0, then R16 denotes R20 and that when \( z \) is 0, then R18 denotes R22.
20
The alkyl radicals R15 may be linear or branched, and more particularly linear. Preferably R15 denotes a methyl, ethyl, hydroxyethyl or dihydroxypropyl radical, and more particularly a methyl or ethyl radical.
Advantageously, the sum \( x + y + z \) is from 1 to 10.
When R16 is a hydrocarbon radical R20, it may be long and may have 12 to 22 carbon atoms, or may be short and may have from 1 to 3 carbon atoms.
When R18 is a hydrocarbon radical R22, it has preferably 1 to 3 carbon atoms. Advantageously, R17, R19 and R21, which may be identical or different, are chosen from linear or branched, saturated or unsaturated C11-C21 hydrocarbon-based
radicals, and more particularly from linear or branched, saturated or unsaturated C_{11}-C_{21} alkyl and alkenyl radicals.

Preferably, x and z, which may be identical or different, are equal to 0 or 1. Advantageously, y is equal to 1.

Preferably n, p and r, which may be identical or different, are equal to 2 or 3, and more particularly are equal to 2.

The anion is preferably a halide (chloride, bromide or iodide) or an alkyl sulfate, more particularly methyl sulfate. However, it is possible to use 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 containing an ester function.

The anion X\(^-\) is even more particularly chloride or methyl sulfate.

The ammonium salts more particularly used are those of formula (VII) in which:

- R15 denotes a methyl or ethyl radical;
- x and y are equal to 1;
- z is equal to 0 or 1;
- n, p and r are equal to 2;
- R16 is chosen from:

\[
\stackrel{\text{O}}{\text{R}_{19}} - \text{C}^- \\
\]

- methyl, ethyl or C_{14}-C_{22} hydrocarbon-based radicals,
- a hydrogen atom.

- R18 is chosen from:

\[
\stackrel{\text{O}}{\text{R}_{21}} - \text{C}^- \\
\]

- a hydrogen atom.

R17, R19 and R21, which may be identical or different, are chosen from linear or branched, saturated or unsaturated C_{13}-C_{17} hydrocarbon-based radicals, and preferably from linear or branched, saturated or unsaturated C_{13}-C_{17} alkyl and alkenyl radicals.

The hydrocarbon-based radicals are advantageously linear.
Among the quaternary ammonium salts of formula (IV), preference is given, on the one hand, to tetraalkylammonium chlorides, for instance dialkyldimethylammonium or alkyltrimethylammonium chlorides in which the alkyl radical contains approximately 12 to 22 carbon atoms, in particular behenyltrimethylammonium chloride, distearyldimethylammonium chloride, cetyltrimethylammonium chloride and benzyldimethylstearylammonium chloride, or else, on the other hand, to palmitylamidopropyltrimethylammonium chloride or the stearamidopropyldimethyl(myristyl acetate)ammonium chloride sold under the name "Ceraphyl 70" by the company Van Dyk.

Examples of compounds of formula (V) that may be mentioned include the diacyloxyethyldimethylammonium, diacyloxyethylhydroxyethylmethylammonium, monoacyloxyethylhydroxyethylmethylammonium, triacyloxyethylmethylammonium and monoacyloxyethylhydroxyethyltrimethylammonium salts (chloride or methyl sulfate in particular), and mixtures thereof. The acyl radicals 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 radicals, these radicals may be identical or different.

These products are obtained, for example, by direct esterification of triethanolamine, triisopropanolamine, an alkyl diethanolamine or an alkyl diisopropanolamine, which are optionally oxyalkylenated, 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 quaternionization using an alkylating agent such as an alkyl halide (preferably a methyl or ethyl halide), a dialkyl sulfate (preferably dimethyl or diethyl sulfate), methyl methanesulfonate, methyl para-toluenesulfonate, glycol chlorohydrin or glycerol chlorohydrin.

Such compounds are sold, for example, under the names Dehyquart by the company Cognis, Stepanquat by the company Stepan, Noxamium by the company CECA or Rewoquat WE 18 and Rewoquat W75 by the company Degussa.

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.

Quaternary diammonium salts of formula (VI) that are suitable for the invention comprise, in particular, propanetallowdiammonium chloride.
According to a preferred embodiment of the invention, the composition comprises:
- a surfactant system comprising at least an anionic surfactant in particular an amino acid derivative, preferably a glycine derivative (glycinate) and at least an amphoteric and zwitterionic surfactant, preferably chosen from betaines, the said surfactant system being advantageously included in a content greater than 10% by weight relative to the total weight of the composition;
- at least one suspension agent of synthetic origin chosen from aculyn 38 (CTFA name: ACRYLATES/VINYL NEODECANOATE CROSSPOLYMER) sold by Rohm&Haas, Aqua SFI (slightly crosslinked acrylic polymer) sold by Lubrizol or more generally, the products of the carbopol® family sold by Lubrizol, the said suspension agent being advantageously included in the composition in an active material content ranging from 0.1 and 2.5% by weight relative to the total weight of the composition;
- at least one cosmetic additive in the form of particles, chosen from mineral pigments, the said cosmetic additive being advantageously included in the composition in a content ranging from 0.1 and 5% by weight relative to the total weight of the composition;
- at least one water-insoluble film-forming polymer in the form of particles of the type such as a copolymer comprising at least one monomer unit of acrylate type, the said polymer particles having a number-average primary size greater than 500 nm, the said film-forming polymer being chosen from acrylates/octylacrylamide copolymer type, the said at least one film-forming polymer preferably comprising at least the two following monomer units represented by the general formulae (A) and (B’):

\[
\text{(A) } \begin{array}{c}
\text{CH}_3 \\
\text{CH}_2 \\
\text{H}_3\text{C} \end{array} \quad \text{(B’) } \begin{array}{c}
\text{NH} \\
\text{O} \\
\text{H}_2 
\end{array}
\]

in which R1 and R2 are represented by a hydrogen atom or a (Ci-C5o)alkyl group and preferably a (Ci-C2o)alkyl group,
in particular, the said polymer comprising at least the three following monomer units represented by the general formulae (A), (B’) and (C):

\[
\begin{align*}
&\text{(A)}: \quad \text{CH}_3 \\
&\text{(B’): } \quad \text{CO}_2 \text{H} \\
&\text{(C)}: \quad \text{CO}_2 \text{R}_1 \\
\end{align*}
\]

in which R1 and R2 are represented by a hydrogen atom or a (Ci-C5o)alkyl group and preferably a (Ci-C2o)alkyl group; said film-forming polymer being advantageously included in the composition in a content between 1.5 % and 10 % by weight relative to the total weight of the composition.

**ADDITIVES**

The composition according to the invention may contain various water-soluble or liposoluble additives, chosen from those conventionally used in skincare or makeup-removing products, insofar as these additives and the amounts thereof do not harm the qualities desired for the composition according to the invention.

The cleansing composition in accordance with the present invention may thus comprise the following additives: cosurfactants; oil; preserving agents; sequestrants (EDTA and salts thereof); antioxidants; fragrances; dyestuffs; encapsulated or non-encapsulated pigments or soluble dyes; hydrophilic or lipophilic, anionic, nonionic, cationic or amphoteric, thickening or dispersing polymers.

The amounts of these various adjuvants are those conventionally used in the field under consideration, for example from 0.01% to 20% of 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 may also comprise a polymeric quaternary ammonium salt (other than the preceding surfactants).
These compounds are conditioning agents, i.e. they increase the amount of foam and produce a comfortable sensation of softness on the skin (moisturization maintenance).

The polymeric quaternary ammonium salts are cationic or amphoteric polymers containing at least one quaternized nitrogen atom. Polymeric quaternary ammonium salts that may especially be mentioned include the Polyquatemium products (CTFA name), which afford softness and creaminess to the foaming cream. These polymers may preferably be chosen from the following polymers:

- Polyquatemium 5, such as the product Merquat 5 sold by the company Nalco;
- Polyquatemium 6, such as the product Salcare SC 30 sold by the company Ciba, and the product Merquat 100 sold by the company Nalco;
- Polyquatemium 7, such as the products Merquat S, Merquat 2200 and Merquat 550 sold by the company Nalco, and the product Salcare SC 10 sold by the company Ciba;
- Polyquatemium 10, such as the product Polymer JR400 sold by the company Amerchol;
- Polyquatemium 11, such as the products Gafquat 755, Gafquat 755N and Gafquat 734 sold by the company ISP;
- Polyquatemium 15, such as the product Rohagit KF 720 F sold by the company Rohm;
- Polyquatemium 16, such as the products Luviquat FC905, Luviquat FC370, Luviquat HM552 and Luviquat FC550 sold by the company BASF;
- Polyquatemium 22, such as the product Merquat 280 sold by the company Nalco;
- Polyquatemium 28, such as the product Styleze CCIO sold by the company ISP;
- Polyquatemium 39, such as the products Merquat Plus 3330 and Merquat 3330PR sold by the company Nalco;
- Polyquatemium 44, such as the product Luviquat Care sold by the company BASF;
• Polyquaternium 46, such as the product Luviquat Hold sold by the company BASF;
• Polyquaternium 47, such as the product Merquat 2001 sold by the company Nalco.

 Preferably, the quaternary ammonium salts are chosen from Polyquaternium-7, Polyquaternium-10, Polyquaternium-39 and Polyquaternium-47, and mixtures thereof.

 The polymeric quaternary ammonium salts may be in an (active material) amount ranging, for example, from 0.01% to 5% by weight and better still from 0.05% to 1% by weight relative to the total weight of the composition.

 As an example of a particular conditioning agent, mention may be made of Polyquaternium-39, sold especially by the company Nalco under the names Merquat Plus 3330 and Merquat 3330PR.

 The composition of the present invention may also include some active agents that are not in the form of particles or fibres, as additives.

 Among the active agents that may be included in the composition according to the present invention, mention may be made of vitamins, for instance vitamins A, B3, PP, B5, E, K1 and/or C and derivatives of these vitamins and especially esters thereof; keratolytic or pro-desquamating agents, for example hydroxy acids, keto acids, retinoids and esters thereof, retinal, retinoic acid and derivatives thereof; plant extracts such as extracts of butcher's broom and/or of common horse chestnut; xanthine bases such as caffeine; free-radical scavengers; organic or mineral sunscreens; moisturizers such as polyols; ceramides; DHEA and derivatives thereof; coenzyme Q10; biologically-acting bleaching and depigmenting agents such as kojic acid, extracts of skullcap, of mulberry, of licorice and/or of camomile; para-aminophenol derivatives, arbutin and derivatives thereof, bacterial anti-adhesion active agents such as salicylic acid and capryloylsalicylic acid, and mixtures thereof.

 For a use in the cosmetic treatment of greasy or combination skin, the composition according to the invention may contain in particular at least one anti-seborrhoeic active agent chosen from vitamins B3 and B5; zinc salts, and in particular zinc oxide and zinc gluconate; salicylic acid and derivatives thereof such as 5-n-octanoylsalicylic acid; triclosan; capryloylglycine; an extract of clove; Octopirox; hexamidine; azelaic acid and derivatives thereof.
According to a particular embodiment, the active agents in accordance with the invention may be conveyed in cage molecules of the type such as cyclodextrins, niosomes or liposomes.

In the event of incompatibility or to stabilize them, the active agents mentioned above may be incorporated into spherules, especially ionic or nonionic vesicles and/or nanoparticles (nanocapsules and/or nanospheres).

**COMPOSITION**

The composition according to the present invention may especially be in the form of an aqueous composition that is thickened by means of the suspension agent described above.

The composition according to the invention comprises an aqueous medium or aqueous phase, i.e. a medium comprising 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.

The aqueous phase of the compositions according to the invention may contain, besides water, one or more solvents chosen from monoalcohols comprising from 1 to 6 carbon atoms, and polyols, and mixtures thereof. A monoalcohol that may especially be mentioned is ethanol. Examples of polyols that may especially be mentioned include glycerol; glycols such as butylene glycol, isoprene glycol or propylene glycol, polyethylene glycols such as PEG-8; sorbitol; sugars such as glucose, fructose, maltose, lactose and sucrose; and mixtures thereof.

When they are present, the amount of monoalcohols and of polyols in the composition of the invention may range, for example, from 0.01% to 30% by weight, preferably from 2% to 25% by weight and better still from 4% to 20% by weight relative to the total weight of the composition.

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.

**Example 1**: Cleansing composition

The amounts are indicated as weight percentages.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Component</th>
<th>A Comparative composition</th>
<th>B Composition of the invention</th>
<th>C Composition of the invention</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Water</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Glycerol</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Octylacrylamide/acrylates copolymer (1)</td>
<td></td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>A1</td>
<td>Acrylates/vinyl neodecanoate crosslinked copolymer (2)</td>
<td>6.87</td>
<td>6.87</td>
<td>6.87</td>
</tr>
<tr>
<td>B</td>
<td>Sodium N-cocoyl glycinate (3)</td>
<td>21.7</td>
<td>21.7</td>
<td>21.7</td>
</tr>
<tr>
<td></td>
<td>Cocoylbetaine (4)</td>
<td>21.7</td>
<td>21.7</td>
<td>21.7</td>
</tr>
<tr>
<td></td>
<td>Salicylic acid</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Phenoxyethanol</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Chlorphenesin</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Sodium benzoate</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>C</td>
<td>PEG 14000</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>D</td>
<td>Sodium hydroxide 10% dilution</td>
<td>qs pH = 6.4</td>
<td>qs pH = 6.4</td>
<td>qs pH = 6.4</td>
</tr>
<tr>
<td>E</td>
<td>Polyquaternium-39 (5)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>F</td>
<td>Sodium chloride</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>G</td>
<td>Water</td>
<td>25.03</td>
<td>23.78</td>
<td>20.78</td>
</tr>
<tr>
<td>H</td>
<td>Polyquaternium-6 (6)</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>TiO₂</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

The values "AM" below indicate the amount of active material contained in the commercial product under consideration.
(1) Dermacryl 79 sold by the company Akzo Nobel, 97% AM
(2) Aculyn 38 Polymer sold by the company Rohm & Haas (Dow Chemical), 29% AM
(3) Amilite GCS-12K sold by the company Ajinomoto, 30% AM
(4) Empigen BB / FL sold by the company Huntsman, 30% AM
(5) Merquat 3330PR sold by the company Nalco, 9.25% AM
(6) Merquat 100 sold by the company Nalco, 40% AM

Procedure

1- A is heated to 80°C with stirring using a Rayneri blender.
2- A1 is poured slowly into A.
3- The mixture is neutralized with potassium hydroxide, until the gel swells.
4- Phase B is prepared and is then placed in a water bath, at 85°C.
5- Phase B is poured in a single portion into phase A.
6- C is sprinkled in, with continued stirring using a Rayneri blender.
7- The mixture is left for 10 minutes.
8- It is brought to the correct pH with D.
9- It is cooled in a bath of cold water, to 25°C.
10- E is added while cold, with stirring using a Rayneri blender.
11- The mixture is left for 5 minutes.
12- F is added.
13- G is added.
14- H is added.
15- I is added.

Composition A is the reference. It contains Polyquaternium-6 or PQ6, the chemical name of which is poly(dimethyldiallylammonium) chloride, which is a polymer with a molecular weight of 150 000 g/mol, and is a conditioning agent frequently encountered in foaming bases and known to be a very good deposition agent (or predeposition agent) by virtue especially of its high charge density of 6.2 meq./g.

Compositions B and C contain Dermacryl 79 at 2% and 5% AM, respectively.
It should be noted that, as for any polymer with carboxylic acid groups, the acrylates need to be neutralized with a suitable base such as potassium hydroxide. By neutralizing the carboxylic acid groups, the polymer becomes water-soluble.

**Example 2:** Comparison of the foaming performance

**Protocol**

The three formulations are tested under the following conditions:

The experimenter takes 1 g of product in his wet hands. He applies it by shearing ten times, estimates the mixing with water, the coverage of the film and the start of foaming on a scale from 1 to 10. He then adds 2 ml of water and works it around ten times in his hand to generate the foam. He then notes the volume of foam, the size of the bubbles and the density of the foam. He repeats once and then notes the ease of rinsing.

**Results**

Three people evaluated, one after the other, each of the three products.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixing with water</td>
<td>8</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Coverage</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Start of foaming</td>
<td>8</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Foam volume</td>
<td>8</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Bubble size</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Foam density</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Rinsing</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

Product C, containing 5% by weight of a water-insoluble polymer of the acrylate/alkylacrylamide copolymer type (Dermacryl 79) gives a foam that is more present, creamier, finer and denser than product B containing 2% by weight of Dermacryl 79, which gives a foam that is more present, creamier, finer and denser than product A.

**Example 3:** Characterization by SEM of the deposit

**Protocol**

40 μl of the foaming product are applied directly onto a 2×2 cm² area of wet skin on the forearm. The product is worked into a foam for a few seconds by effecting
rotations on the defined area. It is rinsed off under a stream of water of controlled rate, for
30 seconds. Finally, this corresponds to a deposited amount of 1000 mg/100 cm².

The skin is then delicately dried by dabbing with a hair-free wipe.

Skin imprints are taken in two steps: imprint with silflo, and then negative
imprint with araldite.

The negative imprints are then observed directly on a scanning electron

Results

The SEM observations of the amilite/betaine gels A and B based on 2% TiO₂
produce the images supplied in the appendix (Figure 1):

Dermacryl shows a more uniform polymer deposit, on the one hand, and more
TiO₂ particles deposited, on the other hand.

Example 4: X-Ray fluorescence quantification of the deposit

Protocol

The measurements are taken using a PW 4030 X-ray spectrophotometer from
PANalytical - (ED-XRF, energy dispersive X-ray fluorescence spectrometry), settings:
voltage 15 kV, intensity 580 µA - no filter.

This method conventionally used for illustrating the presence of impurities in
products was adapted to quantify the deposits of mineral particles and especially TiO₂
particles on the skin. The method consists in measuring the scattered intensity of an X-ray
source on a skin stripping sample produced after application/rinsing of the foam. The
results of the scattered intensity, proportional to the amount of TiO₂ deposited, as a number
of counts per second (cps), are given here.

To ensure recovery of all the particles left on the skin, five successive strips are
taken after cleansing the forearm, by applying them one by one for 30 seconds under the
pressure of a weight of 180 g. The sum of all of the intensities measured on each of them is
determined. The test is repeated twice to determine a mean.

In this example, the amount of Polyquaternium-6 introduced into the
composition corresponds to an amount usually present in a cleansing product.
Results

<table>
<thead>
<tr>
<th>Example</th>
<th>Nature of the adhesion agent</th>
<th>Scattered intensity (cps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Polyquaternium-6 (0.75%)</td>
<td>15 ± 8</td>
</tr>
<tr>
<td>B</td>
<td>Dermacryl 79 (2%)</td>
<td>12 ± 1.5</td>
</tr>
<tr>
<td>C</td>
<td>Dermacryl 79 (5%)</td>
<td>93 ± 33</td>
</tr>
</tbody>
</table>

It is manifest from this test that the amount of TiO₂ particles deposited via the composition according to the present invention is greater than the amount of TiO₂ particles deposited via the comparative composition when the amount of Dermacryl 79 is sufficient (5% by weight).

**Example 5: in vivo evaluation of the deposit**

**Test protocol**

Beauticians evaluate the sheen, the powdery effect, the lightening, the uniformity of the complexion, the visibility of the dilated pores, and the attenuation of the redness and lines on the face on six models after cleansing the face in a half-face test under controlled conditions (300 mg of product applied per half-face) with the foaming agent.

<table>
<thead>
<tr>
<th>Example</th>
<th>Evaluated deposition agents</th>
<th>Immediate effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aesthetic flashes</td>
</tr>
<tr>
<td>A</td>
<td>Polyquaternium-6 (0.75%)</td>
<td>Powdery finish and attenuation of dehydration lines</td>
</tr>
<tr>
<td>B</td>
<td>Dermacryl 79 (2%)</td>
<td>The most efficient of the formulations on the redness, the dilation of the pores and the homogeneity of the complexion</td>
</tr>
</tbody>
</table>

The foaming gel in accordance with the invention (Example B) is more efficient than the comparative composition (Example A): substantial effects are noted.
CLAIMS

1. Rinse-off foaming cleansing cosmetic composition comprising, in a physiologically acceptable medium:
   - a surfactant system in an active material content of greater than or equal to 3% by weight relative to the total weight of the composition,
   - at least one suspension agent,
   - at least one cosmetic additive in the form of particles, fibres or mixtures thereof, and
   - at least one water-insoluble film-forming polymer in the form of particles, of the type such as a copolymer comprising at least one monomer unit of acrylate type, the said polymer particles having a number-average primary size of greater than 500 nm.

2. Cosmetic composition according to Claim 1, in which the said at least one film-forming polymer has a glass transition temperature ($T_g$) of less than or equal to 10°C.

3. Cosmetic composition according to Claim 1 or 2, in which the said at least one film-forming polymer has a self-adhesiveness such that the tensile force ($F_{\text{max}}$ in newtons (N)) necessary to separate two surfaces coated with the said polymer is greater than 1 N and preferably greater than 3 N.

4. Cosmetic composition according to any one of the preceding claims, in which the said at least one film-forming polymer has a weight-average molar mass of between 50 000 and 200 000 g/mol, more particularly between 100 000 and 200 000 g/mol and even more preferentially between 110 000 and 180 000 g/mol.

5. Cosmetic composition according to any one of the preceding claims, in which the said at least one film-forming polymer comprises at least one monomer unit of alkylacrylamide type.

6. Cosmetic composition according to any one of the preceding claims, in which the said at least one film-forming polymer comprises at least the following two monomer units represented by the general formulae (A) and (B):

(A) \[ \text{H}_2\text{C} \left( \text{CO}_2\text{R}_1 \right) \text{R}_2 \]

(B) \[ \text{H}_2\text{C} \left( \text{O} \right) \text{R}_3 \]
in which \( R_1, R_2 \) and \( R_3 \) are represented by a hydrogen atom or a \((\text{Ci-C}_\text{so})\)alkyl
and preferably \((\text{Ci-C}_\text{2o})\)alkyl group,

preferably, the said polymer comprising at least the following three monomer units represented by the general formulae (A), (B) and (C):

\[
\begin{align*}
&\text{(A)} \quad (\text{C}_2\text{H}_4\text{O}_2\text{R}_1) \quad \text{(B)} \quad (\text{C}_2\text{H}_3\text{N}_2\text{R}_3) \quad \text{(C)} \quad (\text{C}_2\text{H}_4\text{O}_2\text{H})
\end{align*}
\]

in which \( R_1, R_2 \) and \( R_3 \) are represented by a hydrogen atom or a \((\text{Ci-C}_\text{so})\)alkyl
and preferably \((\text{Ci-C}_\text{2o})\)alkyl group.

7. Cosmetic composition according to any one of the preceding claims, in

which the said at least one film-forming polymer is of the acrylate(s)/octylacrylamide
copolymer type, the said at least one film-forming polymer possibly comprising at least the
following two monomer units represented by the general formulae (A) and (B‘):

\[
\begin{align*}
&\text{(A)} \quad (\text{C}_2\text{H}_4\text{O}_2\text{R}_1) \quad \text{(B‘)} \quad (\text{C}_2\text{H}_3\text{N}_2\text{R}_3)
\end{align*}
\]

in which \( R_1 \) and \( R_2 \) are represented by a hydrogen atom or a \((\text{Ci-C}_\text{so})\)alkyl and

preferably \((\text{Ci-C}_\text{2o})\)alkyl group,

preferably, the said polymer comprising at least the following three monomer units represented by the general formulae (A), (B‘) and (C):
in which $R_i$ and $R_2$ are represented by a hydrogen atom or a (Ci-C$_{so}$)alkyl and preferably (Ci-C$_{2o}$)alkyl group.

8. Cosmetic composition according to any one of Claims 1 to 4, in which the said at least one film-forming polymer is a copolymer consisting of at least two different monomer units of acrylate type.

9. Cosmetic composition according to any one of the preceding claims, in which the said at least one film-forming polymer is included in an active material content ranging from 0.1% to 20% by weight and in particular from 0.1% to 5% by weight, for instance from 0.1 to 1% by weight relative to the total weight of the composition, preferably, the at least one film-forming polymer being included in an active material content greater than or equal to 1% by weight, in particular greater than or equal to 1.5% by weight, more particularly greater than or equal to 2% by weight relative to the total weight of the composition, for example in a content ranging from 1% to 10% by weight, from 1.5% to 10% by weight or from 2% to 8% by weight relative to the total weight of the composition.

10. Cosmetic composition according to any one of the preceding claims, in which the surfactant system 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 anionic derivatives of proteins of plant origin or of silk proteins, phosphates and alkyl phosphates, carboxylates, sulfo succinates, amino acid derivatives, alkyl sulfates, alkyl ether sulfates, sulfonates, isethionates, taurates, alkyl sulfoacetates, polypeptides, anionic derivatives of alkyl polyglucoside, and soaps (fatty acid salts), and mixtures thereof, more particularly from alkyl sulfates, alkyl ether sulfates, isethionates, amino acid derivatives, and mixtures thereof, the said amphoteric or zwitterionic surfactant being in particular chosen from
betaines, N-alkylamidobetaines and derivatives thereof, sultaines, alkyl polyaminocarboxylates, alkylamphoacetates more particularly from betaines, alkylamphoacetates and mixtures thereof, and mixtures thereof, and the said nonionic surfactant being in particular chosen from alkyl polyglucosides (APG), oxyalkylenated glycerol esters and oxyalkylenated sugar esters, and mixtures thereof, more particularly from APGs, and the said cationic surfactant being in particular chosen from optionally polyoxyalkylenated primary, secondary or tertiary fatty amine salts, quaternary ammonium salts, imidazoline derivatives, and amine oxides of cationic nature, and mixtures thereof.

11. Cosmetic composition according to any one of the preceding claims, in which the suspension agent is chosen from a suspension agent of natural origin such as xanthan, carrageenan, guar and starch or a suspension agent of synthetic origin, the suspension agent possibly being included in the said composition in an active material content of between 0.1% and 10% by weight and in particular between 0.1% and 2.5% by weight relative to the total weight of the composition.

12. Cosmetic composition according to any one of the preceding claims, in which the cosmetic additive(s) are chosen from the following particles:

- organic pigments, in particular carbon black, pigments of D&C type and lakes based on cochineal carmine or on barium, strontium, calcium or aluminium,
  - mineral pigments such as:
    - titanium oxide, zinc oxide, coloured iron oxide,
    - alumina,
    - nacres,
    - carbonates,
    - ceramic particles, for instance boron nitride,
    - diamond/graphite,
    - magnesia,
    - glass, for instance borosilicate and phosphosilicate,
    - silica, for instance amorphous, colloidal, precipitated or fumed silica, in natural form or in the form of silica gels,
    - clay, for instance montmorillonite,
    - zirconium and barium sulfate,
silicates, for instance talc, illite, kaolin, zeolite, sepiolite, laponite, hectorite or bentonite,
mica, or
Lionite PC particles sold by the company Lion Corporation based on silica, ZnO, Al₂O₃ and TiO₂, composites of the above cited materials, in particular TiO₂ and silica composites,
polymer particles, for instance particles of polymethyl methacrylate (PMMA), of polytetrafluoroethylene (PTFE), of polyamide, of polyacrylate, of polystyrene or copolymers thereof,
wax particles such as carnauba wax,
mineral and/or organic sunscreen particles such as TiO₂,
perlite particles,
silica aerogel particles, and
mixtures thereof;
and/or the following fibres: polyamide or Nylon fibres, polyaramid, viscose, cotton, polyacrylic, poly(vinyl acetate) or PVA, or composite fibres.

13. Cosmetic composition according to any one of the preceding claims, in which the said at least one cosmetic additive is included in the composition in an active material content of between 0.1% and 10% by weight and in particular between 0.1% and 5% by weight relative to the total weight of the composition.

14. Process for cleansing keratin materials, which consists in applying to the said keratin materials a composition according to any one of the preceding claims, in working the said composition into a foam and then in rinsing off the said composition.