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(54) Title: COSMETIC CARE AND/OR MAKEUP COMPOSITION COMPRISING AT LEAST ONE POLYESTERAMIDE POLYMER

(57) Abstract: Cosmetic care and/or makeup composition comprising, in a cosmetically acceptable medium: - an organic liquid phase; and - at least one linear or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on its main chain: at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and at least two groups chosen from amide and/or sulfonamide groups. Cosmetic process for making up or caring for keratin materials, comprising the application to the keratin materials of the said cosmetic composition.

COSMETIC CARE AND/OR MAKEUP COMPOSITION COMPRISING AT LEAST ONE POLYESTERAMIDE POLYMER

DESCRIPTION

TECHNICAL FIELD

The present invention relates to a cosmetic care and/or makeup composition for keratin materials, in particular for the skin, including the scalp and/or the lips, keratin fibres such as the eyelashes, the eyebrows or the hair, but also the nails of human beings, comprising at least one organic liquid phase comprising a polyesteramide polymer.

The composition may be a makeup composition such as a loose or compacted powder, a foundation, a makeup rouge, an eyeshadow, a concealer product, a blusher, a lipstick, a lip balm, a lip gloss, a lip pencil, an eye pencil, a mascara, an eyeliner, a nail varnish, a body makeup product or a skin colouring product.

A cosmetic care composition is a composition that comprises at least one active compound, especially for treating wrinkles, for moisturizing the skin and the lips, for protecting the skin, the lips and the integuments against ultraviolet rays, for treating acne and/or for acting as a self-tanning agent; cosmetic care compositions also include deodorant compositions.

The invention relates more particularly to cosmetic compositions such as makeup products, having

staying-power properties, but also transfer-resistance and stability properties.

PRIOR ART

Cosmetic products or media such as makeup media or products may be classified into two major categories according to the organic liquid-solvent phase they contain.

The first category is that of media comprising organic liquid phases that are oils (liquid fatty phase): such as products for the eyes, the lips and the complexion.

The second category is that of media comprising organic liquid phases that are more polar organic solvents such as short esters, for instance short alkyl acetates, for example ethyl acetate and butyl acetate; and lower alcohols, for instance ethanol; these are essentially nail compositions such as nail varnishes or nailcare products.

The two media thus defined, i.e. oils, on the one hand, and organic solvents such as short esters or alcohols, on the other hand, generally have different properties and in particular different polarities.

However, in both cases, it is generally sought to include into these media thickening, gelling or structuring agents, and also film-forming or co-film-forming agents that provide staying power and maintenance of this staying power, often with, especially as regards nail varnishes and lip products, maintenance of the gloss.

For the purposes of the patent application, the term "organic liquid phase" means a phase that is liquid at room temperature (25°C) and atmospheric pressure (760 mmHg).

When this liquid phase is defined as being a fatty phase, it comprises one or more mutually compatible fatty substances that are liquid at room temperature, also known as oils.

For the purposes of the patent application, the term "structured liquid phase", for example structured liquid fatty phase, means a rigidified or gelled liquid phase.

According to the invention, the expression "liquid phase rigidified with a polyesteramide" means that this phase does not flow under its own weight.

In the present patent application, the terms "film-forming polymer" and "film-forming agent" mean a polymer or agent capable of forming, by itself or in the presence of an auxiliary film-forming agent, a macroscopically continuous film on keratin materials.

For the purposes of the patent application, the term "gelled or thickened liquid phase", for example liquid fatty phase, means that the viscosity of this phase is increased by the addition of the polyesteramide to this liquid phase, for example to this liquid fatty phase.

If we firstly consider media containing a liquid phase based on oils, for example based on oils of diverse polarity such as hydrocarbon-based oils or mono-, di- or triester oils, it is generally sought to obtain thickening and structuring while at the same

time maintaining the gloss, and/or it is sought to obtain a film-forming effect, staying power and comfort with or without "transfer resistance".

In particular, in the case of compositions in solid form such as lipsticks or foundation sticks, it is sought to structure the liquid fatty phase, for example using waxes, fillers or bentone. However, these compounds have the drawback of making the film of composition matt, which is not desirable, in particular in the case of a lipstick where the consumer wishes to obtain a glossy film.

Gelling polymers such as polyamides with ester (or amide) end groups are also known, described in particular by the company Arizona, which are polyamides obtained by condensation of a fatty acid dimer with a diamine containing at least one carboxylic acid end group esterified or amidated with a monofunctional monoalcohol or monoamine compound, such as those described in documents US 5 998 570, US 5 783 657, US 6 503 522 or US 6 268 466. These polyamides are suitable for gelling relatively apolar oily media.

For gelling more polar media, for instance triglyceride oils, polyamides with ester end groups are available, which incorporate in their skeleton hydrophilic polyether blocks; mention may be made, for example, of the polyamides known as "PAOPA" by the company Arizona, which are described in particular in documents US 2003 00 65084 and US 6 399 713.

Polyamides with ester end groups incorporating in the skeleton a few ester bonds (but

not polyesters) obtained by copolymerizing a mixture of a fatty monoalcohol, a fatty acid dimer, a diamine and a polyol are also known, as described in documents US 2002 01 87170 and WO 02/092663.

However, the incorporation of hydrophilic blocks into these polyamides has the drawback of increasing the water sensitivity of the composition (for example the sensitivity to saliva, sweat or tears), and/or of giving an amphiphilic nature that is not desirable in many applications and that arises to the detriment of the staying power.

In the case of compositions containing a liquid phase based on organic solvents of short ester type, as is especially the case for nail varnishes, gelling agents such as bentone or silicas are conventionally used and have a tendency to make the film of varnish matt and do not make it possible to avoid the long-term sedimentation of the pigments.

Moreover, the polyamide gelling agents mentioned above are not compatible with media that are as polar as the short esters.

It emerges from the foregoing text that there is a need for thickening, gelling or structuring agents both for cosmetic compositions comprising liquid fatty phases based on oils and for cosmetic compositions comprising solvent-based media, especially based on short esters and/or on alcohols, irrespective of the polarity of these media.

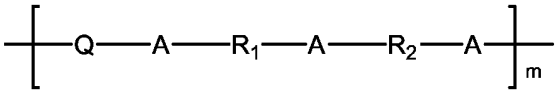
The aim of the present invention is that of providing cosmetic makeup and/or care compositions comprising a wide range of non-aqueous oil and solvent

media, which satisfy, inter alia, all of the needs listed above, which do not have the drawbacks, limitations, faults and disadvantages of the thickened and structured compositions and/or the compositions with film-forming properties of the prior art, and which solve the problems of the prior art.

This aim, and others, are achieved in accordance with the invention by means of a cosmetic care and/or makeup composition comprising, in a cosmetically acceptable medium:

- an organic liquid phase; and
- at least one linear or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on its main chain:
  - at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and
  - at least two groups chosen from amide and/or sulfonamide groups ;

in which the polyesteramide polymer comprises at least one unit corresponding to formula (I) below:



(I)

in which:

1) the groups -Q-, which may be identical or different, represent a group chosen from:

a) saturated or unsaturated, linear, branched or cyclic, C_{2-50} divalent hydrocarbon-based groups ($-R_3-$), such as alkylene and arylene groups, which may contain one or more hetero atoms such as O, N, S and/or Si, and which may be partially or totally substituted with fluorine atoms;

b) divalent aliphatic polyester groups (-POL-), which may contain in their main chain or in the form of side groups or grafts one or more hetero atoms chosen from O, N, S and/or Si, and which may be partially or totally substituted with fluorine atoms;

2) m is an integer ranging from 2 to 3000 and preferably ranging from 2 to 2000;

3) the groups -A-, which may be identical or different, represent divalent groups chosen from the following groups:

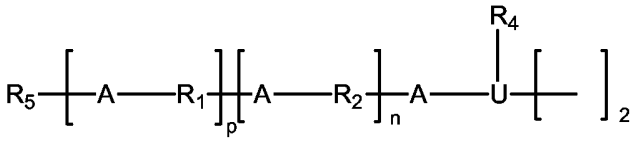
- ester Y corresponding to the formula: -(C=O)O- or -O-(C=O)-;
- amide Z corresponding to the formula: -(C=O)NH- or -NH-(C=O)-;
- sulfonamide: $-(HN)SO_2-$ or $-SO_2-(HN)-$; with the condition that at least two of the groups -A- are amide or sulfonamide groups; preferably, at least 50% of the groups -A- are ester groups ;

4) $-R_1-$ and $-R_2-$, which may be identical or different, represent a group chosen from:

a) linear, branched or cyclic divalent hydrocarbon-based groups such as saturated or unsaturated, C_{2-50} alkylene and arylene, preferably alkylene, groups, which may contain one or more hetero

atoms such as O, N, S and/or Si, and which may be totally or partially substituted with fluorine atoms,

b) divalent groups providing side branching, such that the polyesteramide polymer unit corresponds to the following formula:



in which:

- U is a C_{3-20} hydrocarbon-based tetravalent radical possibly containing one or more hetero atoms such as O, N, S and/or Si, and linked to a monovalent radical R_4 such as H or a C_1-C_4 alkyl group;

- or alternatively U is a trivalent nitrogen atom N bearing three C_2 to C_8 divalent alkylene groups, and possibly containing a hetero atom such as O; two of the divalent alkylene groups linking the nitrogen atom to the main chain of the polymer, the third linking the nitrogen atom to a side group or graft;

- -A-, $-R_1-$, and $-R_2-$ have the same meaning as above;

- p and n are integers ranging from 1 to 1000;

- $-R_5$ is a monovalent radical such as H or a C_{1-10} alkyl group.

The term "branched polymer" means a polymer having a skeleton comprising at least one side chain or

pendent graft on the main chain or located at the end of the main chain.

The cosmetic compositions of the invention differ fundamentally from the compositions of the prior art in that they contain a specific polyesteramide polymer which, surprisingly, makes it possible both to structure, gel and thicken the composition and to give this composition film-forming properties.

Some of the polyesteramide polymers included in the compositions according to the invention are known, but in applications that are entirely different from those according to the invention, such as hot-melt adhesives and plastics engineering, and their incorporation into cosmetic compositions is not suggested in the prior art.

The specific family of polyesteramides used according to the invention, more specifically the polyamides with aliphatic polyester blocks and/or grafts according to the invention, have been found, surprisingly, to have thickening, structuring and gelling properties both for oil-based media and for solvent-based media.

The polyesteramides of the composition according to the invention may also, surprisingly, act as film-forming agents and give the said composition film-forming properties.

These polymers thus make it possible to obtain a film of composition that gives a tack-free feel, having excellent adhesion, staying power (by virtue of the presence of polar but non-hydrophilic units) and/or transfer-resistance properties, and is

resistant to mechanical attack, water, sweat, tears and saliva, these properties being combined with an excellent sensation of comfort.

In particular, in the case of nail varnishes, the polyesteramides of the composition according to the invention may be used as film-forming or co-film-forming agents, for example in combination with nitrocellulose.

The polyesteramides included in the compositions of the invention incorporate blocks that are no longer polyethers, but rather polar but non-hydrophilic polyesters that do not afford affinity for water, saliva, sweat or tears: the polarity is thus increased without providing hydrophilicity.

The fact that this type of specific polymer can achieve both the structuring and gelation of a very wide variety of cosmetic compositions and/or the formation of a film from these compositions is entirely surprising and unexpected.

Avantageously, the specific polymers included in the compositions of the invention can simultaneously structure a composition and give it film-forming properties.

In particular, by virtue of the specific polymers incorporated into the compositions according to the invention, it is possible to structure, gel and thicken very different cosmetic compositions, and to communicate film-forming properties to cosmetic compositions containing different organic liquid phases, whether they are liquid fatty phases consisting, for example, predominantly of oils, or

alternatively organic phases consisting, for example, predominantly of one or more solvents, such as short esters and/or alcohols, in the case of nail compositions.

The effects and advantages afforded by the compositions of the invention as regards both the properties of the compositions themselves and the properties of deposits or films obtained therefrom are obtained independently of the organic liquid medium included in these compositions, whereas, in the prior art, it was usually necessary to use different compounds according to the medium, and moreover to use different compounds depending on whether it was desired to achieve thickening or to give the composition film-forming properties.

Without wishing to be bound by any theory, the presence in the polymers according to the invention of aliphatic polyester blocks and/or grafts that are both soluble in the oils and the organic solvents such as esters affords better compatibility of these macromolecules in the formulation medium.

By virtue of the particular polyamide polymers containing polyester blocks incorporated into the compositions of the invention, it is also possible to gel, structure and thicken compositions containing liquid phases based on solvents, such as short esters, while at the same time ensuring no sedimentation under all kinds of temperature conditions and for a long period, and also gloss of the final film, without impairing the mechanical properties.

As for oily media, with the structure of the polyester polyamides included in the compositions of the invention, the polymer may be piloted rather towards a film-forming/staying power application than towards a gelling application by:

- increasing the degree of polymerization of the polyester blocks,
- simultaneously increasing the overall molecular weight of the final polymer,
- reducing the number of amide groups in the chain.

In contrast with oily media, elastomeric film-forming agents will not be sought for these nail varnish applications, but rather polymers that are sufficiently hard and rigid, but not brittle.

To increase the rigidity, the process will be performed by:

- using polyester blocks that are more rigid while at the same time remaining soluble in solvents such as nail varnish solvents,
- incorporating rings (cycloaliphatic or aromatic rings) by means of the choice of reagents.

The invention applies in particular to the case where the organic liquid phase is a liquid fatty phase comprising at least one oil, not only to lip makeup products, for instance lipsticks, lip pencils or lip glosses, but also to products for caring for the skin, including the scalp, and the lips, for instance products in stick form for antisun protection of the skin, the face or the lips, or lip balms, skin makeup products, for both the human face and body, for

instance foundations cast in stick or dish form, concealer products and temporary tattoo products, cleansing products, especially in stick form, and eye makeup products, for instance eyeliners, in particular in pencil form, and mascaras, especially mascara cakes for keratin fibres (eyelashes, eyebrows or hair).

The invention also applies to nailcare or nail makeup products, and in particular when the organic liquid phase comprises at least one organic solvent, to nail varnishes and nail makeup removers.

The composition according to the invention may contain one or more structuring polymers.

Organic liquid phase

The composition according to the invention comprises at least one non-aqueous organic liquid phase.

In a first embodiment of the composition according to the invention, the said organic liquid phase is a liquid fatty phase.

The definition of a fatty phase has already been given above.

In a second embodiment of the composition according to the invention, the said organic liquid phase comprises at least one solvent and is then defined by the term "liquid solvent phase".

The organic phase, for example the fatty phase or the solvent phase, may form a continuous phase of the composition.

The total organic liquid phase of the composition may represent from 1% to 99%, preferably from 5% to 75% and more preferably from 10% to 60% of the total weight of the composition.

Liquid fatty phase

According to a first embodiment, the organic liquid phase of the composition is a liquid fatty phase.

The liquid fatty phase of the composition according to the invention comprises at least one fatty substance that is liquid at room temperature (25°C) and atmospheric pressure (10^5 Pa), also known as an oil, generally chosen from hydrocarbon-based oils, silicone oils and fluoro oils, and mixtures thereof.

As indicated above, an oil is a non-aqueous, water-immiscible compound.

Preferably, the liquid fatty phase comprises at least one hydrocarbon-based oil and optionally at least one silicone oil and/or at least one fluoro oil. Specifically, the polyesteramides according to the invention are soluble only in hydrocarbon-based oils.

The liquid fatty phase of the composition may be a continuous fatty phase.

The oils may be volatile or non-volatile, and polar or apolar.

For the purposes of the invention, the term "volatile oil" means any non-aqueous medium capable of evaporating on contact with keratin materials in less than one hour, at room temperature (25°C) and

atmospheric pressure (10^5 Pa). The volatile oil(s) of the invention is (are) volatile cosmetic oils, which are liquid at room temperature, with a non-zero vapour pressure, at room temperature and atmospheric pressure, ranging from 0.13 Pa to 40 000 Pa (10^{-3} to 300 mmHg), in particular ranging from 1.3 Pa to 13 000 Pa (0.01 to 100 mmHg) and more particularly ranging from 1.3 Pa to 8000 Pa (0.01 to 60 mmHg).

The term "non-volatile oil" means an oil that remains on keratin materials, at room temperature and atmospheric pressure, for at least several hours and that especially has a vapour pressure of less than 0.13 Pa (0.01 mmHg).

The term "hydrocarbon-based oil" means an oil mainly containing hydrogen and carbon atoms, and possibly oxygen, nitrogen, sulfur or phosphorus atoms, and containing no silicon or fluorine atoms. The volatile hydrocarbon-based oils may be chosen from hydrocarbon-based oils containing from 8 to 16 carbon atoms, and especially C_8-C_{16} branched alkanes, for instance C_8-C_{16} isoalkanes of petroleum origin (also known as isoparaffins), for instance isododecane (also known as 2,2,4,4,6-pentamethylheptane), isodecane, isohexadecane and, for example, the oils sold under the commercial names "Isopars" and "Permetyls".

A volatile hydrocarbon-based oil chosen from branched C_8-C_{16} alkanes, for instance C_8-C_{16} isoparaffins, such as isododecane, isodecane and isohexadecane, is preferably used.

The volatile oil may be present in the composition according to the invention in a content

ranging from 0.1% to 95% by weight, preferably from 1% to 65% by weight and better still from 2% to 50% by weight, relative to the weight of the composition.

Non-volatile hydrocarbon-based oils that may especially be mentioned include:

- hydrocarbon-based oils of animal origin;
- hydrocarbon-based oils of plant origin, such as triglycerides consisting of fatty acid esters of glycerol, the fatty acids of which may have varied chain lengths of from C_4 to C_{24}, these chains possibly being linear or branched, and saturated or unsaturated; these oils are especially wheatgerm oil, sunflower oil, grapeseed oil, sesame seed oil, corn oil, apricot oil, castor oil, shea oil, avocado oil, olive oil, soybean oil, sweet almond oil, palm oil, rapeseed oil, cottonseed oil, hazelnut oil, macadamia oil, jojoba oil, alfalfa oil, poppyseed oil, pumpkin oil, marrow oil, blackcurrent oil, evening primrose oil, millet oil, barley oil, quinoa oil, rye oil, safflower oil, candlenut oil, passionflower oil or musk rose oil; or alternatively caprylic/capric acid triglycerides, for instance those sold by the company Stéarineries Dubois or those sold under the names Miglyol 810, 812 and 818 by the company Dynamit Nobel;
- synthetic ethers containing from 10 to 40 carbon atoms;
- linear or branched hydrocarbons of mineral or synthetic origin, such as petroleum jelly, polydecenes, hydrogenated polyisobutene such as parleam, squalane and liquid paraffins, and mixtures thereof;

- synthetic esters, for instance oils of formula R_aCOOR_b in which R_a represents a linear or branched fatty acid residue containing from 1 to 40 carbon atoms and R_b represents a hydrocarbon-based chain, especially a branched chain, containing from 1 to 40 carbon atoms, on condition that $R_a + R_b \geq 10$, for instance purcellin oil (cetostearyl octanoate), isopropyl myristate, isopropyl palmitate, C_{12} to C_{15} alkylbenzoate, hexyl laurate, diisopropyl adipate, isononyl isononanoate, 2-ethylhexyl palmitate, isostearyl isostearate, and alcohol or polyalcohol octanoates, decanoates or ricinoleates, for instance propylene glycol dioctanoate; hydroxylated esters, for instance isostearyl lactate or diisostearyl malate; and pentaerythritol esters;

- fatty alcohols that are liquid at room temperature, with a branched and/or unsaturated carbon-based chain containing from 12 to 26 carbon atoms, for instance octyldodecanol, isostearyl alcohol, oleyl alcohol, 2-hexyldecanol, 2-butyloctanol or 2-undecylpentadecanol;

- higher fatty acids such as oleic acid, linoleic acid or linolenic acid;

and mixtures thereof.

The composition according to the invention may comprise, besides the hydrocarbon-based oil, an oil chosen from silicone oils and/or fluoro oils, which may be volatile or non-volatile.

Volatile silicone oils that may be mentioned include volatile linear or cyclic silicone oils, especially those with a viscosity ≤ 6 centistokes

(6×10^{-6} m^2/s) and especially containing from 3 to 6 silicon atoms, these silicones optionally comprising alkyl or alkoxy groups containing from 1 to 3 carbon atoms. As volatile silicone oils that may be used in the invention, mention may be made especially of octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, heptamethylhexyltrisiloxane, heptamethyloctyltrisiloxane, hexamethyldisiloxane, octamethyltrisiloxane, decamethyltetrasiloxane and dodecamethylpentasiloxane, and mixtures thereof.

The non-volatile silicone oils that may be used in the composition according to the invention may be non-volatile polydimethylsiloxanes (PDMS), polydimethylsiloxanes comprising alkyl or alkoxy groups, which are pendent and/or at the end of a silicone chain, these groups each containing from 2 to 24 carbon atoms, phenyl silicones, for instance phenyl trimethicones, phenyl dimethicones, phenyltrimethylsiloxydiphenylsiloxanes, diphenyl dimethicones, diphenylmethyldiphenyltrisiloxanes and 2-phenylethyl trimethylsiloxysilicates, and mixtures thereof.

The non-volatile oils may be present in the composition according to the invention in a content ranging from 0.01% to 95% by weight, preferably from 0.1% to 80% by weight and better still from 1% to 50% by weight (especially 0.1% to 10%) relative to the total weight of the composition.

Generally, the liquid fatty phase represents from 5% to 99% and better still from 20% to 75% of the total weight of the composition.

Liquid organic solvent phase

According to a second embodiment, the organic liquid phase of the composition is a liquid organic solvent phase comprising at least one volatile or non-volatile organic solvent.

The term "solvent" means a non-aqueous organic compound that is liquid at room temperature, other than the oils listed above in the context of the description of the liquid fatty phase.

When the composition comprises such an organic phase or solvent medium comprising an organic solvent, as organic solvent that may be used in the composition according to the invention comprising a polyamide containing polyester blocks, mention may be made of:

- short-chain esters (containing from 3 to 8 carbon atoms in total), such as ethyl acetate, methyl acetate, propyl acetate, n-butyl acetate or isopentyl acetate;
- ketones that are liquid at room temperature, such as methyl ethyl ketone, methyl isobutyl ketone, diisobutyl ketone, isophorone, cyclohexanone or acetone;
- alcohols that are liquid at room temperature, such as ethanol, isopropanol, diacetone alcohol, 2-butoxyethanol or cyclohexanol;
- glycols that are liquid at room temperature, such as ethylene glycol, propylene glycol, pentylene glycol or glycerol;

- propylene glycol ethers that are liquid at room temperature, such as propylene glycol monomethyl ether, propylene glycol monomethyl ether acetate or dipropylene glycol mono-n-butyl ether;
- aldehydes that are liquid at room temperature, such as benzaldehyde or acetaldehyde;
- carbonates such as propylene carbonate or dimethyl carbonate;
- acetals such as methylal; and
- mixtures thereof.

Preferably, the solvent is a volatile solvent chosen from short-chain esters (containing from 3 to 8 carbon atoms in total) such as ethyl acetate, methyl acetate, propyl acetate, n-butyl acetate or isopentyl acetate, and mixtures thereof.

Generally, the liquid organic solvent phase (organic solvent or mixture of organic solvents) represents from 5% to 95% and preferably from 10% to 85% by weight of the total weight of the composition.

The composition according to the invention may also comprise an aqueous phase consisting essentially of water or of a mixture of water and of a water-miscible solvent (miscibility in water of greater than 50% by weight at 25°C), for instance lower monoalcohols containing from 1 to 5 carbon atoms, such as ethanol or isopropanol, glycols containing from 2 to 8 carbon atoms, such as propylene glycol, ethylene glycol, 1,3-butylene glycol or dipropylene glycol, C_3-C_4 ketones and C_2-C_4 aldehydes, and mixtures thereof.

The aqueous phase (water and optionally the water-miscible solvent) may be present in a content ranging from 0.1% to 65% by weight, preferably ranging from 1% to 55% by weight and better still from 5% to 30% by weight, relative to the total weight of the composition.

According to one embodiment, the composition according to the invention is anhydrous. The term "anhydrous composition" means a composition comprising an aqueous phase as defined above in a proportion of less than or equal to 20% by weight, preferably less than or equal to 10%, more preferably less than or equal to 5%, and better still less than or equal to 3%, or even free of water.

Structuring and/or film-forming polyesteramide polymer

The polyesteramide polymer(s) of the composition is (are) preferably solid at room temperature (25°C) and atmospheric pressure (10^5 Pa). Advantageously, the said polymers are soluble in the organic liquid phase of the composition, i.e. they are soluble at a concentration of at least 1% by weight relative to the total weight of the composition, in the oil or solvent that forms the weight majority of the liquid organic phase, at a temperature ranging from 25°C to 150°C and at atmospheric pressure (10^5 Pa), depending on whether it is a liquid fatty phase or a liquid solvent phase.

For the purposes of the invention, the term "polymer" means a compound comprising at least two

repeating units, preferably at least 3 repeating units and better still 10 repeating units.

In the composition of the invention, the polyesteramide polymer generally represents from 0.1% to 50%, preferably from 0.5% to 45%, more preferably from 1% to 40% and better still from 4% to 30% by weight of solids relative to the total weight of the composition.

Moreover, when the composition comprises a liquid fatty phase, the structuring polymer/fatty phase mass ratio preferably ranges from 0.1% to 50%.

According to the invention, the polyesteramide polymer of the composition is linear or branched and comprises in its main chain and/or in the form of one or more side grafts on its main chain:

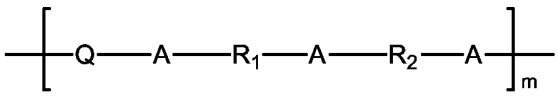
- at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and
- at least two groups chosen from amide and/or sulfonamide groups.

Advantageously, the polyesteramide is solid at room temperature (25°C) and at atmospheric pressure (10^5 Pa).

Advantageously, the polyesteramide is linear (non-branched) and comprises in its main chain:

- at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and
- at least two groups chosen from amide and/or sulfonamide groups.

These polymers are polymers comprising at least one unit corresponding to formula (I) below:



(I)

in which:

1) the groups -Q-, which may be identical or different, represent a group chosen from:

a) saturated or unsaturated, linear, branched or cyclic, C_{2-50} divalent hydrocarbon-based groups ($-R_3-$), such as alkylene groups, which may for example contain in their chain one or more hetero atoms such as O, N, S and/or Si, and which may be partially or totally substituted with fluorine atoms (as substituent for all or some of the hydrogen atoms),

b) divalent aliphatic polyester groups (-POL-), which may contain in their main chain or in the form of side grafts or groups one or more hetero atoms chosen from O, N, S and/or Si, and which may be partially or totally substituted with fluorine atoms.

These divalent aliphatic polyester radicals result either from the polyaddition of at least one C_{3-20} lactone, which may or may not be substituted with a C_{1-6} alkyl group, or from the polycondensation of at least one linear, branched or cyclic C_{4-50} aliphatic diacid and of at least one linear, branched or cyclic C_{4-50} aliphatic diol;

2) m is an integer ranging from 2 to 3000 and preferably ranging from 2 to 2000;

3) the groups –A–, which may be identical or different, represent divalent groups chosen from the following groups:

– ester Y corresponding to the formula: –(C=O)O– or –O–(C=O)–;

– amide Z corresponding to the formula: –(C=O)NH– or –NH–(C=O)–;

– sulfonamide: –(HN)SO_2– or –SO_2–(HN)– with the condition that at least two of the groups –A– are amide or sulfonamide groups; preferably, at least 50% of the groups –A– are ester groups ;

4) –R_1–, –R_2–: which may be identical or different, represent a group chosen from:

a) linear, branched or cyclic divalent hydrocarbon-based groups such as saturated or unsaturated, C_{2-50} alkylene and arylene, preferably alkylene, groups, which may contain one or more hetero atoms such as 0, N, S and/or Si, and which may be totally or partially substituted with fluorine atoms (as substituent for all or some of the hydrogen atoms).

These hydrocarbon-based groups, for example these C_{2-50} alkylene groups, are preferably:

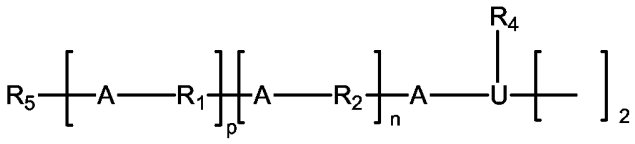
– either linear or branched C_{1-20}, possibly also comprising from 1 to 5 amide and/or sulfonamide groups,

– or branched C_{30-50}, possibly comprising rings and non-conjugated unsaturations and derived from the polycondensation with: either a fatty acid dimer (as defined in the document US-A-5 411 729 from Siltech), or a diol dimer (as defined in the article by R. Hofer, European Coating Journal, March 2000, pages

26-37), or a diamine dimer (as defined in the same journal),

- or C_5-C_6 cycloalkane groups;

b) divalent groups providing side branching, such that the polyesteramide polymer unit corresponds to the following formula:



in which:

- U is a C_{3-20} hydrocarbon-based tetravalent radical possibly containing (in its chain) one or more hetero atoms such as O, N, S and/or Si, and linked to a monovalent radical R_4 such as H or a C_1-C_4 alkyl group;

- or alternatively U is a trivalent nitrogen atom N (in this case $-R_4$ is absent) bearing three C_2 to C_8 divalent alkylene groups, and possibly containing (in their chain) a hetero atom such as O; two of the divalent alkylene groups then link the nitrogen atom in the main chain of the polymer, the third linking the nitrogen atom to a side group or graft;

$-A-$, $-R_1-$, and $-R_2-$ have the same meaning as above;

p and n are integers ranging from 1 to 1000;

$-R_5$ is a monovalent radical such as H or a C_{1-10} alkyl group.

Another definition of the ester polymers of formula (I) included in the compositions of the invention may be given from the reagents used for the synthesis of these polyesteramides.

The polyesteramides comprising at least one unit defined by formula (I) above may be obtained by reacting at least three reagents chosen from the groups of reagents a), b), c), d), e), f), g), h), i) and j) below, at least three of these reagents each belonging to a different group of reagents:

a) aliphatic diols, HO-R_3-OH, in which R_3 represents a group chosen from saturated or unsaturated, C_{2-50} linear, branched or cyclic divalent hydrocarbon-based groups, such as alkylene groups, which may contain in their chain one or more hetero atoms such as O, N, S and/or Si and which may be partially or totally substituted with fluorine atoms;

b) aliphatic polyesterdiols HO-POL-OH, which may contain in their main chain or in the form of side groups or grafts one or more hetero atoms chosen from O, N, S and/or Si, the said divalent aliphatic polyester groups resulting either from the polyaddition of at least one C_{4-20} lactone, which may or may not be substituted with a C_{1-6} alkyl group, or from the polycondensation of at least one linear, branched or cyclic C_{4-50} aliphatic diacid and of at least one linear, branched or cyclic C_{4-50} aliphatic diol;

c) aliphatic dicarboxylic acids, HOOC-R_2-COOH, in which R_2 represents a group chosen from saturated or unsaturated, C_{2-50} linear, branched or cyclic divalent hydrocarbon-based groups, such as

alkylene or arylene groups, preferably alkylene groups, which may contain in their chain one or more hetero atoms such as O, N, S and/or Si, and which may be partially or totally substituted with fluorine atoms, and the acid chloride and acid anhydride derivatives thereof;

d) primary aliphatic diamines, $H_2N-R_2-NH_2$, R_2 represents a group chosen from saturated or unsaturated, C_{2-50} linear, branched or cyclic divalent hydrocarbon-based groups, such as alkylene or arylene groups, preferably alkylene groups, which may contain in their chain one or more hetero atoms such as O, N, S and/or Si and which may be partially or totally substituted with fluorine atoms;

e) C_{3-20} lactones optionally substituted with one or more C_{1-6} alkyl groups possibly comprising rings, unsaturations or hetero atoms such as N, O, S, and/or Si;

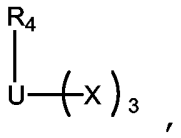
f) C_{3-20} lactams, optionally substituted with one or more C_{1-6} alkyl groups possibly comprising rings, unsaturations or hetero atoms such as N, O, S and/or Si;

g) hydroxy acids $HOOC-R_2-OH$, R_2 being defined as the $-R_2-$ of the dicarboxylic acids c);

h) amino alcohols H_2N-R_3-OH: R_3 being defined as the R_3 of the diols defined in a);

i) amino acids H_2N-R_2-COOH: R_2 being defined as the $-R_2-$ of the dicarboxylic acids c);

j) trifunctional compounds that are co-reagents of the above, i.e. the compounds of formula:



in which:

- the groups X, which may identical or different, represent a group chosen from –COOH groups and the COCl and anhydride derivatives thereof, and –OH and $-NH_2$ groups, and

$-R_4$ represents H or a C_{1-4} alkyl group;

and in which

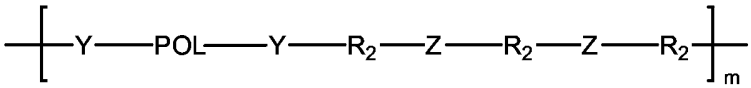
- U represents a C_{3-20} tetravalent hydrocarbon-based radical possibly containing in its chain one or more hetero atoms such as O, N, S and/or Si,

- or alternatively U represents a trivalent nitrogen atom linked to X via C_2 to C_8 alkylene groups $-R_6-$, which may be identical or different, these alkylene groups possibly comprising a hetero atom such as O,

on condition that, when U is trivalent, then $-R_4$ is absent.

Among the polyesteramides defined by the formula (I), preferred families are those in which the polymer comprises at least one unit corresponding to the formulae (II) (III) (IIIa) (IV) (IVa) (V) (VI) or (VII) given below:

Formula (II)



(II)

in which:

$-R_2-$, m, and -POL- are defined as above,

-Y- represents an ester group: -O-(C=O)- or -(C=O)-O-,

-Z- represents an amide group: -NH-(C=O) or -(C=O=)-NH-.

They may be obtained by reaction of at least:

- a polyester prepolymer: HO-POL-OH,

- a dicarboxylic acid $HOOC-R_2-COOH$ or an acid chloride or anhydride derivative thereof,

- a diamine $H_2N-R_2-NH_2$,

the R_2 of the diamine being identical to or different from that of the diacid.

The preparation of such polymers and their use in a field other than cosmetics is described in the document US-A-4 150 002 from Schering.

It should be noted that the polymers whose units correspond to the preferred formulae (II) to (VII) may also satisfy one of the following characteristics:

a) when the organic liquid phase is a liquid fatty phase containing at least one oil, preferably consisting predominantly of one or more oils, it will be preferable for at least one of the diacids $HOOC-R_2-COOH$ to be a fatty acid dimer (or for

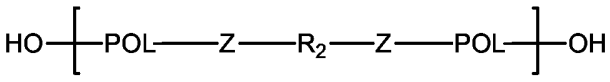
one of the diamines to be a diamine dimer, which is less common);

b) when the organic liquid phase comprises at least one volatile organic solvent, preferably consisting predominantly of one or more volatile organic solvents, for example when it is an ester medium for nail varnishes, it will be preferable, in contrast, to use a C_4 to C_{10} diacid alone, or a mixture of a fatty diacid dimer and of a short diacid (for example adipic acid); i.e. the groups R_2 represent a group derived from a C_4 to C_{10} diacid or from a mixture of a fatty diacid dimer and of a short diacid;

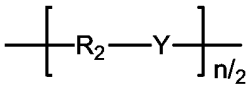
c) formulae (II) to (VII) of the preferred polyesteramides may also comprise one or more other units (i.e. units other than the units comprising at least one aliphatic polyester group and at least two groups chosen from amide and/or sulfonamide groups) due to the optional introduction into the said polymer of compounds chosen from:

- prepolymers of non-polyester nature, i.e. other than polyesters, such as polyethers and polysiloxanes, for instance polydialkylsiloxanes containing -OH end groups, in addition to the obligatory aliphatic polyesters;
- aromatic diacids, diols and diamines;
- trifunctional reactive molecules that introduce branches or grafts, such as triols, triamines or tricarboxylic acids, on condition that the trifunctional reactive molecules are present in lower amounts than the difunctional reactive molecules.

Other preferred polyesteramide polymers comprise a unit corresponding to formula (III) or to formula (IIIa) below:

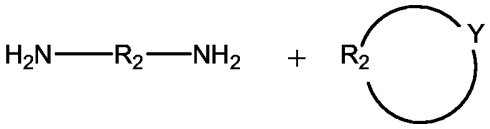


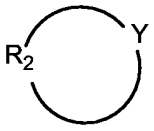
Formula (III)

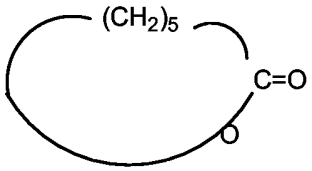
in which -Z- represents an amide group: -(C=O)-NH or -NH-(C=O) and -POL- represents a polyester group: .

in which R_2 and n are as defined above and Y is an ester group of formula -O-(C=O)- or (C=O)-O-.

These polymers are obtained in particular starting from:



 being a lactone, preferably ε-caprolactone,



the polymerization of which by ring opening is initiated by one of the $-NH_2$ end groups of the diamine.

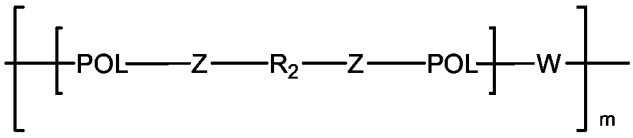
The preparation of such polymers and their use outside cosmetics is described in document WO-A-99/42514 from Bayer.

The polymer comprising at least one unit corresponding to formula (III), which contains an -OH at each end of the chain, may moreover be used as reagent for a subsequent condensation via its -OH end groups with:

- one or more diacids HOOC-R_2-COOH, the -R_2- of which are identical to the -R_2- of the prepolymer of formula (III), or different therefrom;

- in the additional presence of one or more diols or diamines HO-R_2-OH and/or H_2N-R_2-NH_2 (the respective -R_2- being identical or different).

This subsequent polycondensation then leads to a polyesteramide polymer comprising at least one unit corresponding to formula (IIIa) below:



Formula (IIIa)

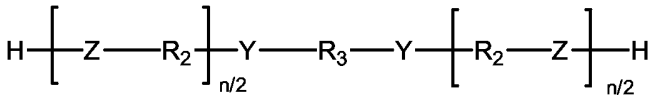
in which:

- W represents a group -A-R_2-A such as -Y-R_2-Y', or a group -Y-R_2-Y-R_2-Y- or -Y-R_2-Z-R_2-Z-,

- -A- represents an ester group -Y- or an amide group -Z- as defined above;

and POL, m and R_2 are as defined above.

Other preferred polyesteramide polymers comprise a unit corresponding to formula (IV) or to formula (IVa) below:



Formula (IV)

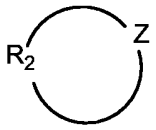
in which:

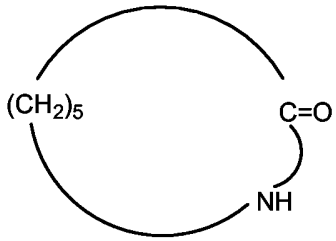
-Y- represents an ester group,

-Z- represents an amide group,

and R_2, R_3 and n have the meaning already given above.

These polymers may be obtained by reaction between a diol of formula $HO-R_3-OH$ and a lactam



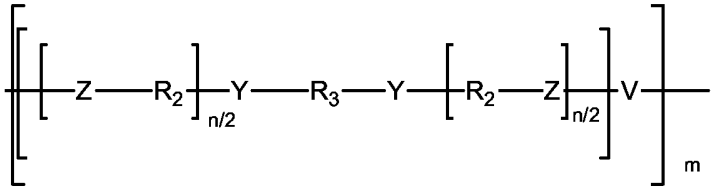


, for example ε-caprolactam by opening of the lactam ring onto the -OH end group of the diol.

As for the polymers comprising at least one unit of formula (III), these polymers, the synthesis of which is described in the already cited document WO-A-99/42514 from Bayer, may be used as reactive prepolymers for a subsequent condensation with:

- an acid or several diacids $HOO-R_2-COOH$,
- in the additional presence preferably of one or more diols $HO-R_3-OH$,

to give a polymer comprising at least one unit of formula (IVa):



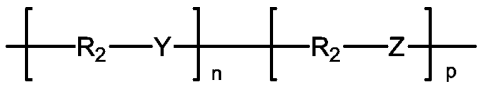
(Formula (IVa))

in which:

- V represents a group $-Y-R_2-Y-$ such as $-OCO-R_2-COO-$, or a more complex group such as $-OCO-R_2-COO-R_2-O-CO$, optionally further comprising a diamine coupler, and Y, R_2, Z, R_3, n and m are as defined above.

Another family of preferred polyesteramide polymers comprises a unit corresponding to formula (V) below.

In this case, they are polyesteramides obtained by coaddition between a lactone and a lactam, initiated, for example, with a monoalcohol, a monoacid or a monoamine.

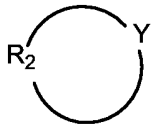
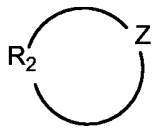


(Formula (V))

in which:

- $-R_2-$ are identical or different and are as defined above,
- $-Y-$ represents an ester, and $-Z-$ an amide (see above),
- n and p are as defined above.

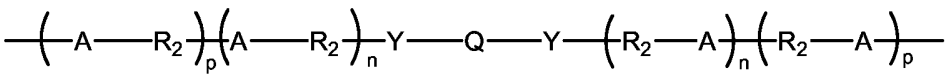
These polymers are obtained by polyaddition between

one or more lactone(s)  and one or more lactam(s) .

Such polyesteramides are described in documents US 6 486 257 and US 2002/0188067 and also in document JP-A-06200016.

Another family of preferred polymers comprises units corresponding to formula (VI) below.

These are polymers similar to those of formula (V), obtained by a combined polyaddition of lactone(s) and of lactam(s) initiated with a diol HO-R_3-OH or a polyesterdiol HO-POL-OH (the diol and the polyesterdiol both being symbolized by HO-Q-OH)



(Formula (VI))

in which the group -A- represents an ester group Y or amide group Z, on condition that, if the groups -A- of $-(R_2-A)_n$ are ester bonds (-Y-), then the -A- of $-(R_2-A)_p$- are amides (-Z-), and vice versa; Q, n and p being as defined above.

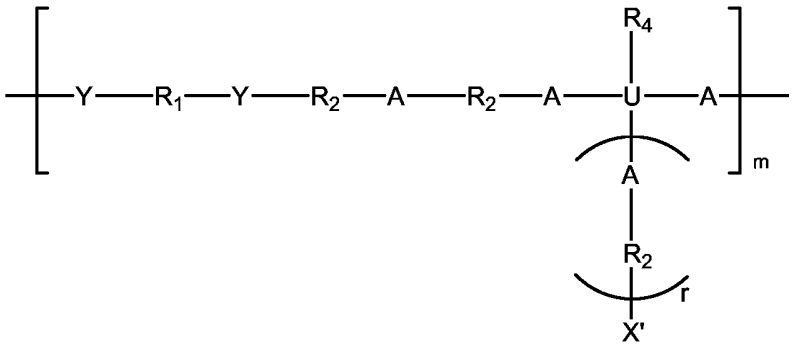
Such polymers and the use thereof in a field outside cosmetics are described in the documents WO-A-00/42091 from DSM and US-A-3 674 837 from Bayer.

A final preferred family of polymers comprises at least one unit corresponding to formula (VII) below.

These polymers have a polyesteramide structure grafted with grafts containing:

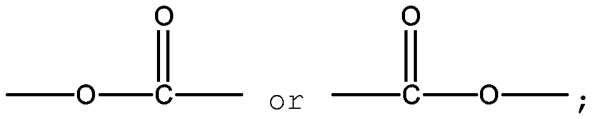
- at least two repeating units $-(A-R_2-)$, A and R_2 having the above definitions,
- at least two amide groups are located on these grafts (it suffices for at least two grafts to contain at least one amide group).

The general formula of these grafted copolymers is then:



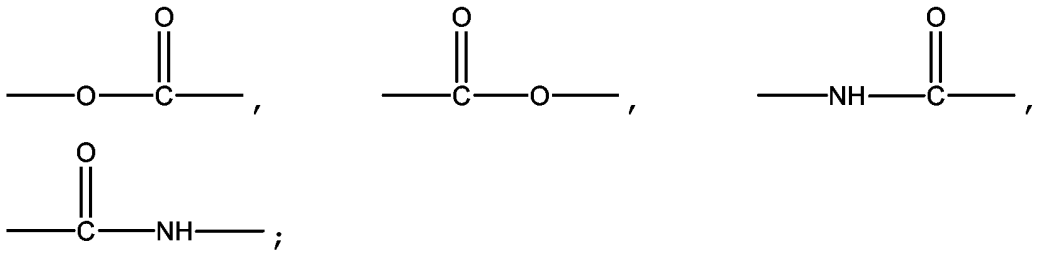
in which:

1) $-Y-$ represents an ester group



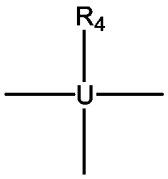
2) $-R_1-$ represents $-R_3-$ (derived from a diol) or $-POL-$, $-R_3-$ and POL have already been defined above;

3) the groups $-A-$, which may be identical or different, represent an ester or amide group



4) r, which is the DP of the grafts, represents an integer from 2 to 1000 and m is as defined above;

5)



represents:

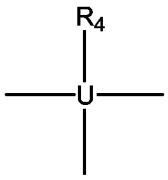
- either a C_{3-20} tetravalent hydrocarbon-based radical, which may contain one or more hetero atoms such as O, N, S and/or Si,

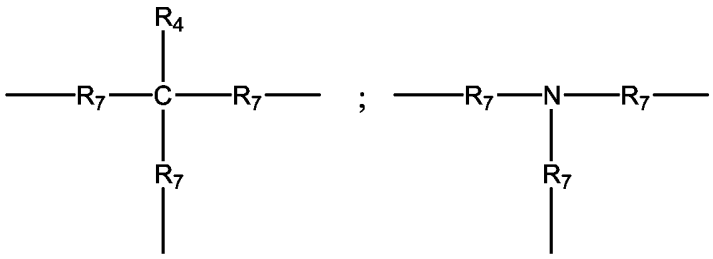
- or a trivalent nitrogen atom linked to -A- via identical or different C_2 to C_8 divalent alkylene groups $-R_6-$, these groups possibly containing one or more hetero atoms such as O, N, S and/or Si, on condition that if U is trivalent, then $-R_4$ is absent;

6) the groups X' located at the end of each graft are identical or different and represent a group $-A-R_8$ in which R_8 represents H, a linear, branched or cyclic C_{1-30} alkyl group, or alternatively a linear or branched C_{1-30} divalent alkylene group $-R_9-$, or a divalent single bond linking another graft of another polymer chain (partial crosslinking);

and

at least two grafts contain at least one amide group -Z- to satisfy formula (VII).

Among the groups , that are preferred are the groups having the following formulae:



in which the groups R_7, which may be identical or different, are linear or branched C_{1-10} and preferably C_{2-8} divalent alkylene groups.

The polymer according to the invention generally has a weight-average molecular mass ranging from 1000 to 500 000 and preferably from 5000 to 250 000.

It may be a block copolymer or a grafted polymer.

Family of reagents required for the manufacture of the polymers of the invention.

These reagents have already been described above: at least three thereof belonging to the following classes (at least three belonging to different classes) are required.

1) aliphatic diols HO-R_3-OH

2) aliphatic polyesterdiols HO-POL-OH

3) aliphatic dicarboxylic acids HOOC-R_2-COOH (or acid chloride or acid anhydride derivatives)

4) primary aliphatic diamines $H_2N-R_2-NH_2$,

5) C_{3-20} lactones

6) C_{3-20} lactams

7) hydroxy acids $HO-R_2-COOH$

8) amino alcohols $HO-R_2-NH_2$

9) amino acids $HOOC-R_2-NH_2$

10) triols, triamines or tricarboxylic acids.

Among these, the reagents of classes 1) to 6) are the most important, optionally in addition with the reagents of class 10) if branching is desired, i.e. side groups or grafts.

Aliphatic or cycloaliphatic diols $HO-R_3-OH$

For R_3, reference will be made to the definition of formula (I) given above.

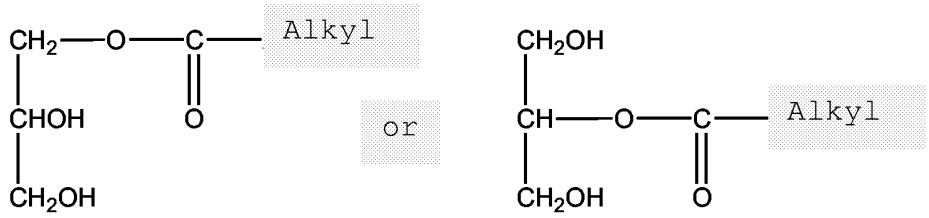
Among these diols that may be mentioned are: ethylene glycol, propylene glycol, diethylene glycol, neopentyl glycol, 1,3-butanediol, 1,3-propanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 1,6-cyclohexanediol, 1,10-decanediol, 1,12-dodecanediol, dipropylene glycol, furandimethanol, cyclohexanedimethanol and glycerol, and mixtures thereof, including diol dimers (article by R. Hofer, European Coating Journal, March 2000, pages 26-27), which are generally a C_{36-50} $-R_3-$ depending on their origin.

These diol dimers in particular comprise those sold by the company Cognis under the trade names Sovermol 908 (at 97% purity) and Sovermol 650 NS (at 68% purity).

In addition to the "standard" diols mentioned above and the diol dimers, the following may also be included for these syntheses and in the definition of $HO-R_3-OH$:

a) natural or synthetic oils bearing 2 or even 3 hydroxyl groups (i.e. diols and/or triols), for example castor oil, phytanetriol, monoalkyl glycerols (with a C_{2-22} alkyl group), alkyl diesters of pentaerythritol (with two identical or different C_{2-22} alkyl groups), dialkyl tartrates (esterified on the acid groups with C_{2-22} alcohols).

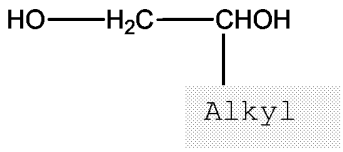
In one particular embodiment of the invention, oils bearing two hydroxyl groups per chain will be used, and preferably the monoglycerides having the structure:



in which "Alkyl" represents a linear or branched C_{2-30} alkyl group.

Diols with a long aliphatic chain may also be used. Advantageously, diols of structure HO-D-OH in which D is a linear or branched alkyl chain containing from 8 to 40 carbon atoms will be used. These diols are sold by the company Atochem under the name Vikinol®. Mention will also be made of 1,12-dodecanediol and 1,10-decanediol, the latter being sold by the company Cognis under the trade name Sovermol 110®.

It is also possible to use the diols having the structure:



in which "Alkyl" represents a linear or branched C_{2-30} and preferably C_{8-30} alkyl group.

b) Polydienes containing hydroxyl end groups, for instance those defined in French patent FR-2 782 723 comprising homopolymers and copolymers of butadiene, isoprene and 1,3-pentadiene with an MW of between 500 and 5000. They may be, for example, the polybutadiene containing hydroxyl end groups sold by Elf-Atochem under the brand names: POLY BD-45H® and POLY BDR-20LM®. These products are preferably used in hydrogenated form.

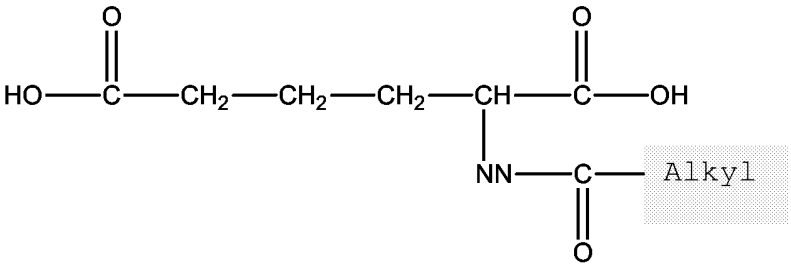
Polyisobutylene oligomers containing α,ω-hydroxy end groups.

Aliphatic or cycloaliphatic dicarboxylic acids or derivatives: acid chlorides, dimethyl esters (for transesterification) or acid anhydride

Among the dicarboxylic acids or the acid chloride, anhydride or methyl diester derivatives thereof, examples that may be mentioned include succinic acid, glutaric acid, adipic acid, pimelic acid, azelaic acid, sebacic acid, suberic acid, cyclohexanedicarboxylic acid and dodecanedicarboxylic acid. Tartrates in which the two carboxylic acid groups are free and in which the two -OH groups have been

esterified with C_{2-22} alcohols (identical or different alkyl groups) may be added. Citrates for which a –COOH group has been esterified with a C_{2-22} aliphatic alcohol, preferably in which the –OH group has also been etherified or esterified with a C_{2-22} alcohol, may be added.

It is also possible to add aliphatic glutamic acid amides:



in which "Alkyl" represents a C_{2-22} alkyl group.

Finally, and above all, among the preferred dicarboxylic acids that will be mentioned are C_{36-50} fatty acid dimers such as those described in US 5 411 729 from Siltech.

Polyesterdiols or polycarbonatediols

These are polyesters produced by a polyesterification reaction of a diol and a diacid.

Mention may be made of polyesterdiols such as the products of reaction of polyols, for instance ethylene glycol, propylene glycol, diethylene glycol, neopentyl glycol, 1,4-butanediol, 1,3-propanediol, 1,4-butanediol, 1,6-hexanediol, 1,6-cyclohexanediol, furandimethanol, cyclohexanedimethanol, glycerol,

trimethylolpropane or pentaerythritol, which are trifunctional and tetrafunctional, respectively, and mixtures thereof, with dicarboxylic acids or derivatives thereof that form esters, for example succinic acid, glutaric acid, adipic acid, pimelic acid, azelaic acid, sebacic acid or suberic acid, or the dimethyl esters thereof.

Mention may also be made of polyesterdiols resulting from the condensation between:

- a diol as mentioned above and a fatty acid dimer,
- a diacid as mentioned above and a diol dimer,
- a polyester resulting from the polyesterification between a fatty acid dimer and a diol dimer.

Mention will also be made of polyesterdiols resulting from the condensation between:

- a "standard" dicarboxylic acid and a diol and/or triol, which is a natural or synthetic oil as defined above,
- a "standard" diol and a dicarboxylic and/or tricarboxylic acid derived from oils with the natural or synthetic compound (tartrates, citrates, etc.) as defined above,
- a diol and/or triol that is a natural or synthetic oil and a dicarboxylic and/or tricarboxylic acid derived from oil with the natural compound as mentioned above.

Polyesters obtained by opening of lactone rings to give polyesterdiols

Mention may also be made of polyesters containing diol end groups obtained by polyaddition of a lactone initiated with a diol (diol as defined above). The lactones are defined hereinbelow. The most important is, of course, poly(ε-caprolactone)diol.

Mention will be made in particular of the poly(ε-caprolactone)diols of MW 500-5000 sold by the company Solvay under the name "CAPA Polycaprolactone Diols". Although less preferred than the poly(ε-caprolactone)diols, mention will also be made of homopolymers and copolymers obtained by opening of a lactide and/or glycolide ring, and containing diol end groups: polylactides, polyglycolides, copoly(lactide/glycolide) and the various racemic mixtures. Since the latter polyesters are for the most part highly crystalline and with high melting points, they will rather be used as a mixture with other sparingly crystalline or non-crystalline polyesterdiols.

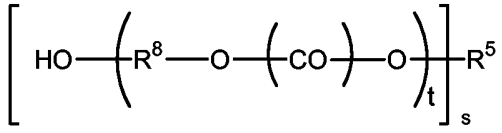
Mention may also be made of poly(lactide/caprolactone) polyesters.

Polycarbonatediols

Polycarbonates are in particular polyesters.

Mention may also be made of polycarbonatediols, such as those described in document WO-A-98/44015.

These polycarbonatediols generally correspond to the formula:



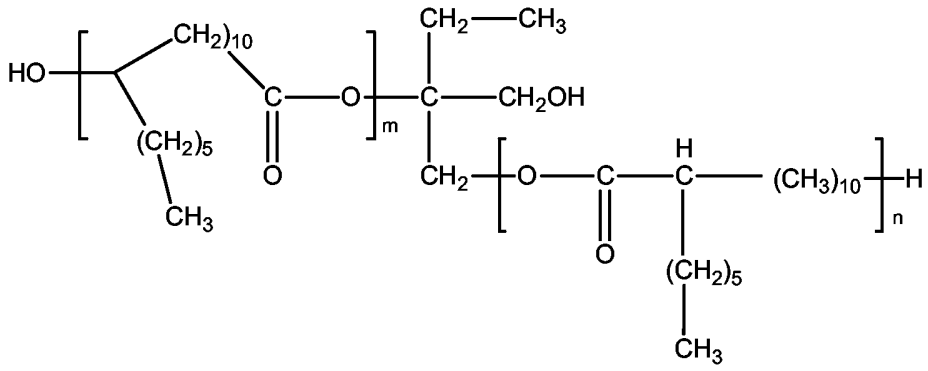
(VIII)

in which R^8 is, independently, a linear or branched, optionally substituted alkylene radical preferably containing 1 to 20 carbon atoms, R^5 is a linear or branched, optionally substituted, or trivalent, alkyl, alkenyl or alkynyl radical preferably containing 1 to 20 carbon atoms, s is an integer equal to 2 or 3 and t is such that the weight-average molar mass of the polymers is from 300 to 10 000, preferably 300 to 5000 and better still from 300 to 2000.

Poly(12-hydroxystearate)diol

It is also possible to use a branched polyester with a long alkyl chain and comprising at least two reactive groups, for instance poly(12-hydroxystearate) containing hydroxyl end groups. This polyester is obtained by self-condensation of 1,2-hydroxystearic acid followed by reaction with a polyol to consume the residual acid groups.

This oligomer has the structure



in which the sum m+n is such that the oligomer has a number-average molecular mass of about 2000 and a hydroxyl functionalization of about 1.8.

The synthesis is described in the article by Radhakrishnan, P.N., European Polymer Journal, 35, 2185-92 (1999) and in Indian patent 143864.

Preferred polyesterdiols

Among the polyesterdiols mentioned above:

- polyesterdiols will be preferred to polycarbonatediols,

- among the polyesterdiols, the following will be preferred:

a) poly-ε-caprolactonediols and also copolymers of ε-caprolactone with other lactones: and among these polyesters obtained by lactone ring opening. The ring opening giving a polycaprolactone containing -OH end groups is generally performed by initiation with a diol. There is no preference herein regarding the choice of the diol.

This preference will relate in particular to polyamides intended for applications in nail varnishes.

b) polyesters resulting from the copolymerization between:

- linear or branched, or even cyclic, short C_2-C_{10} dicarboxylic acids with linear, branched or cyclic short C_{2-10} diols: for liquid phases based on organic solvents in particular in nail varnish applications,

- in contrast, for the oil media, the polymers resulting from the reaction between a long (C_{8-50}) carboxylic acid, for example in particular a fatty acid dimer, and a C_{2-50} alcohol (without specificity but preferably a long C_{8-50} alcohol) or vice versa. But also structures such as fatty acid dimer + diol dimer.

In general, the molecular weight (or weight-average mass) of these polyesterdiols preferably ranges from 500 to 5000.

Primary or secondary aliphatic or cycloaliphatic diamines

The amines correspond to the formula H_2N-R_2-NH_2, which is preferably primary.

Reference may be made to the definition of -R_2- given for the general formula (I).

Among these diamines, mention will be made more particularly of:

a) ethylenediamine, propylenediamine, 1,4-diaminobutane; 1,3-diamino-2-methylpropane; 1,3-diamino-2,2-dimethylpropane; 1,5-diaminopentane; 1,6-diaminohexane, and diaminohexane isomers; 1,6-diamino-cyclohexane; 1,6-diaminooctane, 1,9-diaminononane;

1,10-diaminodecane; 1,12-diaminododecane, etc.; 1,6-diamino-2,2,4-trimethylhexane; isophoronediamine; piperazine; lysine;

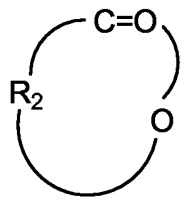
- diamine dimers, derived from fatty acid dimers and described in the article by R. Hofer, European Coatings Journal, March 2000, pages 26-37;

c) the following diamino oils sold by the company Akzo Nobel: cocopropylenediamine (distilled or undistilled) Duomeen® C or CD, hydrogenated tallowpropylenediamine Duomeen® HT, C_{16-22} alkylpropylenediamine Duomeen® M, oleylpropylenediamine Duomeen® O, tallowpropylenediamine Duomeen® T;

d) hydrophilic diamines with a polyoxyethylene skeleton of various MWs, or copoly(oxyethylene/oxypropylene) of various MWs, or poly(oxypropylene) of various MWs, for instance α,ω-bis(2-aminopropyl)polyethylene glycol and α,ω-bis(2-aminopropyl)polypropylene glycol, sold under the general reference Jeffamine® by the company Texaco.

C_{3-20} lactones

The lactones are cyclic monoesters of general formula:



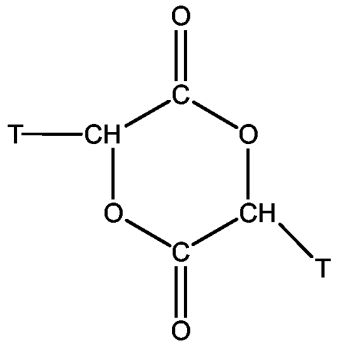
with $-R_2-$: linear or branched C_{2-19} alkylene, optionally H substituted,

reference may be made, for example, to document WO-A-00/42091 from DSM, on page 13;

- unsubstituted lactones: β-propiolactone; β-butyrolactone; β-valerolactone; δ-valerolactone; δ-caprolactone; ε-caprolactone (which is the preferred lactone); ω-enantholactone; ω-caprylolactone; ω-laurolactone;

- substituted lactones: on the Cs of the ring, one or more H may be substituted with a C_{1-22} alkyl group. This alkyl group may itself be linear or branched or may comprise a ring, and may contain one or more unconjugated unsaturations, and one or more hetero atoms such as O, N, S or Si. Mention may be made of β-methyl-δ-valerolactone and α-methyl-ε-caprolactone;

- mention should also be made of cyclic esters that are not monoesters but rather diesters and that correspond, for example, to the following formula:



in which T represents hydrogen or a $C_{1 \text{ to } 10}$ alkyl group.

If T represents CH_3, the compound is lactide.

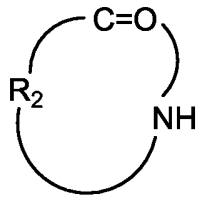
If T represents H, the compound is glycolide.

By taking various optical isomers: the following compounds may be used: L,L-lactide; D,D-lactide; D,L-lactide. It should be noted that lactones and lactides can copolymerize together.

Among these cyclic esters, ε-caprolactone will be preferred.

C_{3-20} lactams

The lactams correspond to the general formula



in which R_2 represents a substituted or unsubstituted C_{3-19} alkylene group.

The same terminology as for the lactones applies, and everything that has been stated above for the lactones may be transposed in its entirety to the lactams.

Mention will thus be made of the same cyclic monoamide compounds corresponding to the lactones mentioned above: γ-butyrolactam; ε-caprolactam; etc.

Similarly, mention will be made of the lactams corresponding to the above lactones in which one or more hydrogens on the carbons of the ring have

been substituted with a C_{1-22} alkyl group defined in the same way as for the lactones.

Hydroxy acids

Among the hydroxy acids that may be mentioned are α, β, γ and ω-hydroxycarboxylic acids. Mention may be made of 12-hydroxystearic acid, alkyl citrates containing 2 -COOH groups esterified with the same C_{1-30} alcohol (or with two different alcohols); malic acid monomers (of which one of the 2 -COOH groups is esterified with a C_{1-22} alcohol), lactic acid and ricinoleic acid.

Amino alcohols

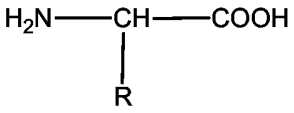
The amino alcohols correspond to the following formula $HO-R_2-NH_2$, R_2 being already defined above.

Mention may be made, for example, of 2-amino-2-methyl-1-propanol.

Amino acids

The amino acids correspond to the following formula H_2N-R_2-COOH, R_2 having already been defined above.

Mention may be made, for example, of 6-aminohexanoic acid, 9-aminononanoic acid, 11-aminoundecanoic acid, 7-aminoheptanoic acid, lysine and the amino acids corresponding to the following general formula:



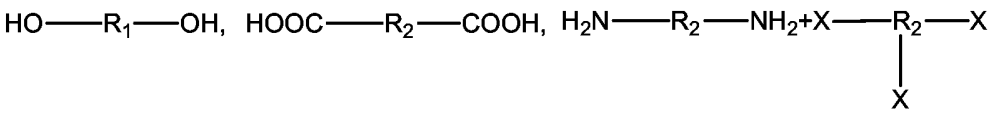
in which R represents an alkyl or branched alkyl chain as in leucine or a benzyl group as in phenylalanine.

Reagents that introduce side grafts

To create such side grafts (and it is necessary for at least two of these grafts to contain at least one amide group), 2 routes are possible in principle:

a) a trifunctional "monomeric" reagent is used in the polycondensation medium.

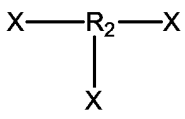
In this case, the grafts are formed "at the same time" as the skeleton: the polymerization and attachment of the graft takes place at the same time as the polymerization of the skeleton, since, in both cases, it is a polycondensation reaction with:



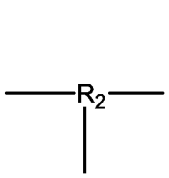
with $-R_1-$ = $-R_3-$ or -POL-,

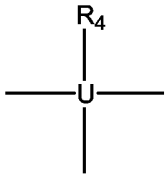
X- = HO-, H_2N- and/or HOOC-.

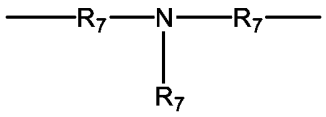
As trifunctional compound:



the following may be envisaged: tricarboxylic acids or derivatives thereof; triols; triamines,



and  (i.e. of formula (I)) may be a trivalent alkylene radical or a:



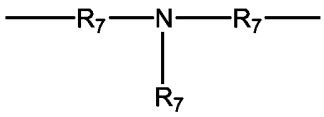
as defined above.

Tricarboxylic acids or derivatives that may be mentioned include monoalkyl ether or monoalkyl ester derivatives of citric acid; pentane-1,3,5-tricarboxylic acids; and 3-(carboxymethyl)heptanedioic acids.

Fatty acid trimers obtained by condensation not of two but of three unsaturated fatty acid molecules may also be used.

Triols that may be mentioned include: trimethylolpropane, glycerol, castor oil, the 1,2,3 or 1,2,6 isomers of hexanetriol, sorbitol monoesters, pentaerythritol monoesters, etc., the -OH equivalent triol trimers of fatty acid trimers, phytanetriol, etc.

Triethanolamine corresponds to the



particular case $N-(CH_2OH)_3$.

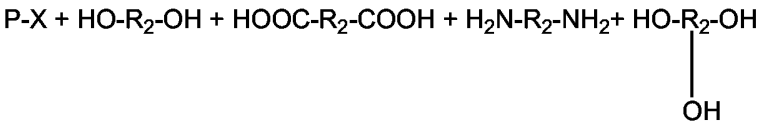
Triamines that may be mentioned include: melanine, diethylenetriamine, 3,3′-diaminodipropylamine, spermidine, 4,4′-diaminodibutylamine, 6,6′-diaminodihexylamine.

b) A pre-made graft with only one reactive end group, i.e. a macromonomer P-X, is used.

P represents a polyester or polyamide (at least one amide unit is needed in two grafts); and X represents -COOH, -OH or $-NH_2$.

This route can be used only if the macromonomer P-X is reacted with an already prepared polymer skeleton containing reactive functions that are complementary to X. For example, if X represents OH, the polymer skeleton will contain -COOH groups.

Specifically, if P-X is introduced into the polymerization medium of the skeleton, which must comprise at least one trifunctional reagent according to the scheme:



undesirable side reactions may take place during the reaction.

It is therefore necessary to prepare the polymer first, and then react it with the macromonomer P-X.

Polycondensation conditions and implementation examples

General procedure:

To synthesize the polyesteramides of structures (I) to (VII), the reagents are preferably used in proportions such that the COOH/(NH_2+OH) molar ratio is between 0.8 and 1.0.

The process may advantageously be performed in 2 steps so as to limit the side reactions:

1) the acid, anhydride or acid chloride reagents and the alcohols, comprising the hydroxylated polyesters, are first brought to the condensation temperature suited to the nature of the reagents present: the reactions involving acids will preferably be performed at a temperature of between 200 and 250°C, in the presence of catalyst, rather than in the absence of solvents; the reactions with acid chlorides generally being performed at temperatures of between 0°C and 60°C;
2) the amidation reaction is then performed by adding the amine at a temperature of between 150°C and 250°C for the reactions involving acids, and at temperatures of between 0°C and 60°C for the reactions involving acid chlorides.

The condensation is followed by measuring the acid numbers or amine numbers in order to obtain the desired molecular weights.

Vacuum pumping at the end of the reaction may be envisaged to remove the low molecular weight compounds.

Other additives

The composition according to the invention may, especially when the organic liquid phase is a fatty phase, be in the form of an optionally tinted care composition, for keratin materials such as the skin, the lips and/or the integuments, in the form of an antisun composition or a care composition, especially in the form of a makeup remover, in stick or dome form, or in cast form. It may especially be used as care base for the skin, the integuments or the lips (lip balms, for protecting the lips against the cold and/or sunlight and/or the wind, or care cream for the skin, the nails or the hair).

When it comprises an organic liquid phase that is a fatty phase, the composition of the invention may in particular be in the form of a transparent gel, especially a transparent anhydrous stick.

The composition of the invention may also in this case (first embodiment of the composition of the invention) be in the form of a makeup product or a skincare product, in particular a foundation, a blusher, a makeup rouge, an eyeshadow or a concealer product; an eyecare or eye makeup product, for instance an eyeliner; a bodycare or body makeup product; a lipcare or lip makeup product, for instance a lipstick, a lip gloss or a lip pencil; a product for making up or caring for keratin fibres such as the eyelashes, in particular in the form of a mascara (cake), the eyebrows and the hair, especially in pencil form.

In particular, the composition of the invention may be a cosmetic product containing at least

one cosmetic or dermatological active agent, for instance essential oils, vitamins, moisturizers, screening agents, cicatrizing agents or ceramides.

Needless to say, the composition of the invention should be cosmetically or dermatologically acceptable, i.e. it should contain a non-toxic physiologically acceptable medium that may be applied to human skin, integuments or lips. For the purposes of the invention, the term "cosmetically acceptable" means a composition of pleasant appearance, odour and feel.

The composition according to the invention may especially comprise at least one fatty substance that is solid at room temperature, chosen especially from waxes, pasty fatty substances and gums, and mixtures thereof. These fatty substances may be of animal, plant, mineral or synthetic origin.

Waxes

The composition according to the invention may comprise a wax or a mixture of waxes.

The wax under consideration in the context of the present invention is in general a lipophilic compound, which is solid at room temperature (25°C), with a reversible solid/liquid change of state, having a melting point of greater than or equal to 30°C which may be up to 200°C.

By bringing the wax to the liquid state (melting), it is possible to make it miscible with the oils and to form a microscopically homogeneous mixture, but on returning the temperature of the mixture to room

temperature, recrystallization of the wax in the oils of the mixture is obtained.

In particular, the waxes that are suitable for the invention may have a melting point of greater than about 30°C, preferably greater than 45°C and in particular greater than 55°C.

The melting point of the wax may be measured using a differential scanning calorimeter (DSC), for example the calorimeter sold under the name DSC 30 by the company Mettler.

The measuring protocol is as follows:

A 15 mg sample of product placed in a crucible is subjected to a first temperature rise ranging from 0°C to 120°C, at a heating rate of 10°C/minute, it is then cooled from 120°C to 0°C at a cooling rate of 10°C/minute and is finally subjected to a second temperature rise ranging from 0°C to 120°C at a heating rate of 5°C/minute. During the second temperature rise, the variation of the difference in power absorbed by the empty crucible and by the crucible containing the sample of product is measured as a function of the temperature. The melting point of the compound is the temperature value corresponding to the top of the peak of the curve representing the variation in the difference in powder absorbed as a function of the temperature.

The waxes that may be used in the compositions according to the invention are chosen from waxes that are solid and rigid at room temperature, of

animal, plant, mineral or synthetic origin, and mixtures thereof.

The wax may also have a hardness ranging from 0.05 MPa to 30 MPa and preferably ranging from 6 MPa to 15 MPa. The hardness is determined by measuring the compression force, measured at 20°C using the texturometer sold under the name TA-TX2i by the company Rheo, equipped with a stainless-steel cylinder 2 mm in diameter travelling at a measuring speed of 0.1 mm/s, and penetrating into the wax to a penetration depth of 0.3 mm.

The measuring protocol is as follows:

The wax is melted at a temperature equal to the melting point of the wax + 20°C. The molten wax is poured into a container 30 mm in diameter and 20 mm deep. The wax is recrystallized at room temeprature (25°C) for 24 hours and is then kept at 20°C for at least 1 hour before performing the hardness measurement. The hardness value is the maximum compression force measured divided by the surface area of the texturometer cylinder in contact with the wax.

Hydrocarbon-based waxes, for instance beeswax or lanolin wax; rice wax, Japan wax, carnauba wax, candelilla wax, microcrystalline waxes, paraffins and ozokerite; polyethylene waxes, the waxes obtained by Fisher-Tropsch synthesis and waxy copolymers, and also esters thereof, may especially be used.

Mention may also be made of waxes obtained by catalytic hydrogenation of animal or plant oils containing linear or branched C_8-C_{32} fatty chains.

Among these waxes that may especially be mentioned are hydrogenated jojoba oil, isomerized jojoba oil such as the trans-isomerized partially hydrogenated jojoba oil manufactured or sold by the company Desert Whale under the commercial reference Iso-Jojoba-50®, hydrogenated sunflower oil, hydrogenated castor oil, hydrogenated coconut oil, hydrogenated lanolin oil and bis(1,1,1-trimethylolpropane) tetrastearate sold under the name "Hest 2T-4S" by the company Heterene, bis(1,1,1-trimethylolpropane) tetrabehenate sold under the name Hest 2T-4B by the company Heterene.

Mention may also be made of silicone waxes, for instance alkyl or alkoxy dimethicones containing from 16 to 45 carbon atoms, and fluoro waxes.

The wax obtained by hydrogenation of olive oil esterified with stearyl alcohol, sold under the name "Phytowax Olive 18 L57" or else the waxes obtained by hydrogenation of castor oil esterified with cetyl alcohol sold under the names "Phytowax ricin 16L64 and 22L73" by the company Sophim may also be used. Such waxes are described in patent application FR-A-2 792 190.

According to one particular embodiment, the compositions according to the invention may comprise at least one "tacky" wax, i.e. a wax with a tack of greater than or equal to 0.7 N.s and a hardness of less than or equal to 3.5 MPa.

The tack of the wax is determined by measuring the change in force (compression force or stretching force) as a function of time, at 20°C, using

the texturometer sold under the name "TA-TX2i" by the company Rheo, equipped with a conical acrylic polymer spindle forming an angle of 45°.

The measuring protocol is as follows:

The wax is melted at a temperature equal to the melting point of the wax + 10°C. The molten wax is poured into a container 25 mm in diameter and 20 mm deep. The wax is recrystallized at room temperature (25°C) for 24 hours such that the surface of the wax is flat and smooth, and the wax is then stored for at least 1 hour at 20°C before measuring the tack.

The texturometer spindle is displaced at a speed of 0.5 mm/s then penetrates the wax to a penetration depth of 2 mm. When the spindle has penetrated the wax to a depth of 2 mm, the spindle is held still for 1 second (corresponding to the relaxation time) and is then withdrawn at a speed of 0.5 mm/s.

During the relaxation time, the force (compression force) decreases greatly until it becomes zero, and then, during the withdrawal of the spindle, the force (stretching force) becomes negative and then rises again to the value 0. The tack corresponds to the integral of the curve of the force as a function of time for the part of the curve corresponding to negative values of the force (stretching force). The tack value is expressed in N.s. The hardness is measured according to the protocol described above.

A C_{20}-C_{40} alkyl (hydroxystearyloxy) stearate (the alkyl group containing from 20 to 40 carbon atoms), for instance the waxes sold under the names

"Kester Wax K 82 P®" and "Kester Wax K 80 P®" by the company Koster Keunen may be used as tacky wax.

The microcrystalline wax sold under the reference SP18 by the company Strahl & Pitsch, which has a hardness of about 0.46 MPa and a tack value of about 1 N.s, may also be mentioned.

The waxes mentioned above generally have a starting melting point of less than 45°C.

The wax(es) may be present in the form of an aqueous wax microdispersion. The term "aqueous wax microdispersion" means an aqueous dispersion of wax particles, in which the size of the said wax particles is less than or equal to about 1 µm.

Wax microdispersions are stable dispersions of colloidal wax particles, and are described especially in "Microemulsions Theory and Practice", L.M. Prince Ed., Academic Press (1977) pages 21-32.

In particular, these wax microdispersions may be obtained by melting the wax in the presence of a surfactant, and optionally of a portion of water, followed by gradual addition of hot water with stirring. The intermediate formation of an emulsion of the water-in-oil type is observed, followed by a phase inversion, with final production of a microemulsion of the oil-in-water type. On cooling, a stable microdispersion of solid wax colloidal particles is obtained.

The wax microdispersions may also be obtained by stirring the mixture of wax, surfactant and water using stirring means such as ultrasound, a high-pressure homogenizer or turbomixers.

The particles of the wax microdispersion preferably have mean sizes of less than 1 µm (especially ranging from 0.02 µm to 0.99 µm) and preferably less than 0.5 µm (especially ranging from 0.06 µm to 0.5 µm).

These particles consist essentially of a wax or a mixture of waxes. However, they may comprise a small proportion of oily and/or pasty fatty additives, a surfactant and/or a common liposoluble additive/ active agent.

The wax(es) may be present in a content ranging from 0.1% to 50% by weight of waxes, better still from 1% to 40% and even better still from 5% to 20% by weight of waxes relative to the total weight of the composition.

Pasty fatty substance

The term "pasty product" means a viscous fatty substance containing a liquid fraction and a solid fraction. For the purposes of the present invention, the term "pasty" means a lipophilic fatty compound that has a reversible solid/liquid change of state, with an anisotropic crystal organization in the solid state, and comprising a liquid fraction and a solid fraction at a temperature of 23°C. For the purposes of the invention, the pasty compound advantageously has a hardness at 20°C ranging from 0.001 to 0.5 MPa and preferably from 0.002 to 0.4 MPa.

The hardness is measured according to a method for the penetration of a probe into a sample of compound and in particular using a texture analyser

(for example the TA-XT2i machine from Rheo) equipped with a stainless-steel cylinder 2 mm in diameter. The hardness measurement is performed at 20°C at the centre of 5 samples. The cylinder is introduced into each sample at a pre-speed of 1 mm/s and then at a measuring speed of 0.1 mm/s, the penetration depth being 0.3 mm. The hardness value recorded is that of the maximum peak.

The pasty compound is preferably chosen from synthetic compounds and compounds of plant origin. A pasty compound may be obtained by synthesis from starting materials of plant origin.

As examples of pasty products that may be used in the invention, mention may be made of lanolins and lanolin derivatives, for instance acetylated lanolins, oxypropylenated lanolins or isopropyl lanolate, and mixtures thereof. Esters of fatty acids or of fatty alcohols may also be used, especially those containing 20 to 65 carbon atoms, for instance triisostearyl citrate or cetyl citrate; arachidyl propionate; polyvinyl laurate; cholesterol esters, for instance triglycerides of plant origin such as hydrogenated plant oils, viscous polyesters, for instance poly(12-hydroxystearic acid), and mixtures thereof. Triglycerides of plant origin that may be used include hydrogenated castor oil derivatives, such as "Thixinr" from Rheox.

Mention may also be made of silicone-based pasty fatty substances such as polydimethylsiloxanes (PDMS) containing pendent chains of the alkyl or alkoxy type containing from 8 to 24 carbon atoms, for instance

stearyl dimethicones, especially those sold by the company Dow Corning under the trade names DC2503 and DC25514, and mixtures thereof.

The pasty fatty substance(s) may be present in a proportion of from 0.1 to 60% by weight, preferably in a proportion of 0.5-45% by weight and even more preferably in a proportion of 2-30% by weight relative to the total weight of the composition.

Additional film-forming polymer

The composition according to the invention in its first embodiment or in its second embodiment may also optionally comprise one or more other additional film-forming polymers different from the polyesteramide(s).

The additional film-forming polymer may be chosen from free-radical polymers, polycondensates and polymers of natural origin, and mixtures thereof.

Film-forming polymers that may be mentioned in particular include acrylic polymers, polyurethanes, polyesters, polyamides, polyureas and cellulose-based polymers.

The additional film-forming polymers may be soluble or dispersible in a liquid organic phase, which may be the liquid organic phase of the composition, and they may also be chosen from film-forming polymers that are water-soluble or dispersible in an aqueous phase (also known as latices).

The additional film-forming polymer may be present in a content ranging from 0.1% to 30% and

better still from 0.5% to 15% by weight of solids relative to the total weight of the composition.

When the composition, in particular in the form of a nail varnish, comprises an organic solvent medium, the additional film-forming polymer may be chosen especially from alkyd, acrylic and/or vinyl resins, polyurethanes and polyesters, celluloses and cellulose derivatives, such as nitrocellulose, cellulose esters, such as cellulose acetate, cellulose acetopropionate or cellulose acetobutyrate, and resins resulting from the condensation of formaldehyde with an arylsulfonamide, and mixtures thereof.

To improve the film-forming properties of the composition, especially of a nail varnish, in which the polyesteramide polymer is used, at least one auxiliary film-forming agent may also be provided.

Such an auxiliary film-forming agent may be chosen from any compound known to those skilled in the art as being capable of satisfying the desired function, and may be chosen especially from plasticizers.

In addition, when the base composition according to the invention comprises an additional film-forming polymer in the form of particles dispersed in an aqueous medium, the auxiliary film-forming agent may also be chosen from coalescers. The plasticizers and/or coalescers may be chosen from:

- glycols and derivatives thereof, such as diethylene glycol ethyl ether, diethylene glycol methyl ether, diethylene glycol butyl ether or diethylene glycol hexyl ether, ethylene glycol ethyl ether,

ethylene glycol butyl ether or ethylene glycol hexyl ether;

- glycol esters;
- propylene glycol derivatives, and in particular propylene glycol phenyl ether, propylene glycol diacetate, dipropylene glycol butyl ether, tripropylene glycol butyl ether, propylene glycol methyl ether, dipropylene glycol ethyl ether, tripropylene glycol methyl ether, diethylene glycol methyl ether or propylene glycol butyl ether;
- esters of acids, especially of carboxylic acids, such as citrates, phthalates, adipates, carbonates, tartrates, phosphates or sebacates;
- oxyethylenated derivatives, such as oxyethylenated oils, especially plant oils, such as castor oil;
- mixtures thereof.

The amount of plasticizer may be chosen by a person skilled in the art on the basis of his general knowledge, so as to obtain a composition that has cosmetically acceptable properties. The plasticizer content may range, for example, from 0.1% to 15% by weight and preferably from 0.5% to 10% by weight relative to the total weight of the composition.

Dyestuffs

The composition according to the invention may also comprise one or more dyestuffs chosen from water-soluble or liposoluble dyes, pulverulent dyestuffs, for instance pigments and nacres, and flakes

that are well known to those skilled in the art, and mixtures thereof. The dyestuffs may be present in the composition in a content ranging from 0.01% to 50% by weight, preferably from 0.01% to 30% by weight and better still from 1 to 25% by weight relative to the weight of the composition.

The term "pigments" should be understood as meaning white or coloured, mineral or organic particles of any form, which are insoluble in the physiological medium, intended to colour the composition.

The term "nacres" should be understood as meaning iridescent particles of any form, especially produced by certain molluscs in their shell or else synthesized.

The pigments may be white or coloured, and mineral and/or organic. Among the mineral pigments that may be mentioned are titanium dioxide, optionally surface-treated, zirconium oxide or cerium oxide, and also zinc oxide, iron oxide (black, yellow or red) or chromium oxide, manganese violet, ultramarine blue, chromium hydrate and ferric blue, and metal powders, for instance aluminium powder or copper powder.

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.

Mention may also be made of pigments with an effect such as particles comprising a natural or synthetic, organic or mineral substrate, for example glass, acrylic resins, polyester, polyurethane, polyethylene terephthalate, ceramics or aluminas, the

said substrate optionally being coated with metallic substances such as aluminium, gold, silver, platinum, copper or bronze, or with metal oxides, for instance titanium dioxide, iron oxide or chromium oxide, and mixtures thereof.

The nacreous pigments may be chosen from white nacreous pigments such as mica coated with titanium or with bismuth oxychloride, coloured nacreous pigments such as titanium mica coated with iron oxides, titanium mica coated especially with ferric blue or with chromium oxide, titanium mica coated with an organic pigment of the abovementioned type, and also nacreous pigments based on bismuth oxychloride. Interference pigments, especially liquid-crystal pigments or multilayer pigments, may also be used.

The liposoluble dyes are, for example, Sudan red, D&C Red 17, D&C Green 6, β-carotene, soybean oil, Sudan brown, D&C Yellow 11, D&C Violet 2, D&C Orange 5, quinoline yellow and annatto. The water-soluble dyes are, for example, beetroot juice, methylene blue, the disodium salt of ponceau, the disodium salt of alizarin green, quinoline yellow, the trisodium salt of amaranth, the disodium salt of tartrazine, the monosodium salt of rhodamine, the disodium salt of fuchsin, and xanthophyll.

Fillers

The composition according to the invention may comprise at least one filler, especially in a content ranging from 0.01% to 50% by weight and preferably ranging from 0.01% to 30% by weight relative

to the total weight of the composition. The term "fillers" should be understood as meaning colourless or white, mineral or synthetic particles of any form, which are insoluble in the medium of the composition irrespective of the temperature at which the composition is manufactured. These fillers serve especially to modify the rheology or the texture of the composition.

The fillers may be mineral or organic and of any form, platelet-shaped, spherical or oblong, irrespective of the crystallographic form (for example lamellar, cubic, hexagonal, orthorhombic, etc.). Mention may be made of talc, mica, silice, kaolin, polyamide (Nylon®) powder (Orgasol® from Atochem), poly-β-alanine powder and polyethylene powder, tetrafluoroethylene polymer (Teflon®) powders, lauroyllysine, starch, boron nitride, expanded hollow polymer microspheres such as those of polyvinylidene chloride/acrylonitrile, for instance Expancel® (Nobel Industrie), hollow microspheres of acrylic acid copolymers (Polytrap® from the company Dow Corning) and silicone resin microbeads (for example Tospearls® from Toshiba), elastomeric polyorganosiloxane particles, precipitated calcium carbonate, magnesium carbonate, magnesium hydrogen carbonate, hydroxyapatite, hollow silica microspheres (Silica Beads® from Maprecos), glass or ceramic microcapsules, and metal soaps derived from organic carboxylic acids containing from 8 to 22 carbon atoms and preferably from 12 to 18 carbon atoms,

for example zinc stearate, magnesium stearate, lithium stearate, zinc laurate or magnesium myristate.

The composition according to the invention may also comprise ingredients commonly used in cosmetics, such as vitamins, thickeners, additional gelling agents, trace elements, softeners, sequestering agents, fragrances, acidifying or basifying agents, preserving agents, sunscreens, surfactants, antioxidants, fibres, agents for preventing hair loss, eyelash care agents, antidandruff agents and propellants, or mixtures thereof.

These ingredients may be present in the composition usually in a proportion of from 0.01% to 30%, preferably from 0.05% to 20% and better still from 0.1% to 10% of the total weight of the composition.

Needless to say, a person skilled in the art will take care to select the optional additional ingredients and/or the amount thereof such that the advantageous properties of the composition according to the invention are not, or are not substantially, adversely affected by the envisaged addition.

When it comprises a liquid fatty phase, the composition of the invention may be in the form of a paste, a solid or a more or less viscous cream. It may be a simple or multiple emulsion, especially an oil-in-water, water-in-oil, water-in-oil-in-water or oil-in-water-in-oil emulsion, or a rigid or soft gel with an oily continuous phase. The simple or multiple emulsion may comprise an aqueous or oily continuous phase optionally containing dispersed lipid vesicles. In particular, it is in cast form as a stick or a dish, or

as a dome, and more especially in the form of an oily rigid gel, which is in particular anhydrous, and especially an anhydrous stick. More especially, it is in the form of a translucent or opaque rigid gel (depending on whether or not it contains pigments), the liquid fatty phase forming the continuous phase.

The structuring of the liquid fatty phase may be modified according to the nature of the structuring polymer and may be such that a rigid structure in the form of a wand, a stick or a dome, which has good mechanical strength and already having a glossy appearance, is obtained. These wands, especially when they are coloured, make it possible, after an easy application, to obtain a glossy deposit, especially a coloured deposit, of substantial mass, which does not migrate and which has good staying power, especially of the colour over time.

Advantageously, when the organic phase is a fatty phase, the composition of the invention is a composition for the lips and better still a lipstick composition, especially in stick form.

When the organic phase is a liquid organic solvent phase, the composition according to the invention may especially be a nail varnish, a nailcare product or a nail makeup remover (for nail varnishes).

The description that has just been given above relating to the various additives that may be incorporated into the composition of the invention has been made in general with reference to the first embodiment of the composition according to the invention in which it comprises at least one liquid

fatty phase; however, a person skilled in the art will readily recognize which particular additives are the ones most specifically used in the compositions according to the second embodiment of the invention that comprises at least one liquid organic solvent phase.

The composition of the invention may be in the form of a cake mascara, an eyeliner, a foundation, a lipstick, a blusher, a makeup-removing product, a body makeup product, an eyeshadow, a makeup rouge or a concealer product.

The invention also relates to a cosmetic process for making up or caring for human keratin materials, comprising the application to the keratin materials of a cosmetic composition in accordance with the invention.

The invention also relates to the use in a cosmetic composition for caring for and/or making up keratin materials or for the manufacture of a physiologically acceptable composition, containing an organic liquid phase, of at least one linear or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on the main chain:

- at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and
- at least two groups chosen from amide and/or sulfonamide groups, in which the polyesteramide polymer comprises at least one unit corresponding to formula (I) as defined above.

The invention also relates to the use of a sufficient amount of at least one linear or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on the main chain:

- at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and
- at least two groups chosen from amide and/or sulfonamide groups, in which the polyesteramide polymer comprises at least one unit corresponding to formula (I) as defined above ;

in a cosmetic composition for caring for and/or making up keratin materials or for the manufacture of a physiologically acceptable composition, containing an organic liquid phase, for structuring, gelling, thickening and/or giving film-forming properties to the said composition.

The invention also relates to the use of a sufficient amount of at least one linear and/or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on the main chain:

- at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and
- at least two groups chosen from amide and/or sulfonamide groups, in which the polyesteramide polymer comprises at least one unit corresponding to formula (I) as defined above ;

to obtain a cosmetic composition for caring for and/or making up keratin materials, or for the manufacture of a physiologically acceptable composition, containing an organic liquid phase, capable of forming on the keratin materials a film with good staying power and/or gloss.

Detailed description of the invention

The invention is illustrated in greater detail in the formulation examples that follow, which are given as non-limiting illustrations. The amounts are given as mass percentages. The chemical compounds are mainly given as the CTFA names ("International Cosmetic Ingredient Dictionary").

Example 1: Preparation of a polyesteramide of the invention:

1) Synthesis of the dihydroxylated polyester:

275 g of 2,2-dimethyl-1,3-propanediol, 276 g of premelted dimethyl sebacate and 1.6 g of zinc acetate are introduced into a 500 ml reactor equipped with a thermometer dipping into the reaction medium, a stirrer and a nitrogen flush, and on which is mounted a condenser.

The mixture is brought from room temperatrure to 200°C over 3 hours and the methanol formed is removed. After 3 hours at 200°C, the reaction medium is allowed to cool to 35°C and 300 ml of dichloromethane are added: the mixture is then taken up in dichloroethane and then washed with water. The

organic phase is dried over magnesium sulfate and then evaporated.

The acid number of the polyester obtained is between 190 and 195 mg KOH/g.

2) Synthesis of the dicarboxylic polyester:

100 g of the polyester, diluted in 30 g of dichloromethane, are added dropwise to a mixture, cooled to 0°C on an ice bath, of 34.4 g of terephthalyl chloride and 68.4 g of triethylamine dissolved in 200 ml of dichloromethane. After total addition of the polyester, the medium is maintained at 0°C for 1 hour and the temperature is then allowed to rise to room temperature.

3) Amidation:

After 3 hours at room temperature, the above reaction medium is cooled to 0°C, and 10.2 g of ethylenediamine dissolved in 20 g of dichloromethane are then added dropwise. The medium is maintained at 0°C for 1 hour and is then allowed to return to room temperature and is maintained at this temperature for 3 hours. The medium is then washed 3 times with water and the organic phase is dried over magnesium sulfate and evaporated under vacuum.

Example 2: Nail varnish

A solution of the polymer of Example 1 at a solids content of 50% in butyl acetate is prepared by heating the polymer + butyl acetate mixture at 80°C for 4 hours.

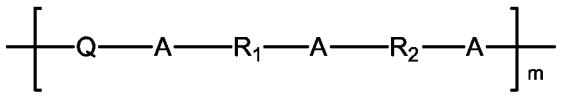
Nitrocellulose	9 – 14%
Plasticizer: -n-ethyl-o,p-toluenesulfonamide (Resimpol 8 from Pan-Americana)	4 – 6%
Alkyd resin	5 – 10%
Solution of polymer of Example 1 at a solids content of 50% in butyl acetate	5 – 18%
Pigment	0 – 2%
50/50 butyl acetate/ethyl acetate qs	100

CLAIMS

1. Cosmetic care and/or makeup composition comprising, in a cosmetically acceptable medium:

- an organic liquid phase; and
- at least one linear or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on its main chain:
  - at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and
  - at least two groups chosen from amide and/or sulfonamide groups ;

in which the polyesteramide polymer comprises at least one unit corresponding to formula (I) below:



(I)

in which:

1) the groups -Q-, which may be identical or different, represent a group chosen from:

a) saturated or unsaturated, linear, branched or cyclic, C_{2-50} divalent hydrocarbon-based groups ($-R_3-$), such as alkylene and arylene groups, which may contain one or more hetero atoms such as 0, N, S and/or Si, and which may be partially or totally substituted with fluorine atoms;

b) divalent aliphatic polyester groups (-POL-), which may contain in their main chain or in the form of side groups or grafts one or more hetero atoms chosen from O, N, S and/or Si, and which may be partially or totally substituted with fluorine atoms;

2) m is an integer ranging from 2 to 3000 and preferably ranging from 2 to 2000;

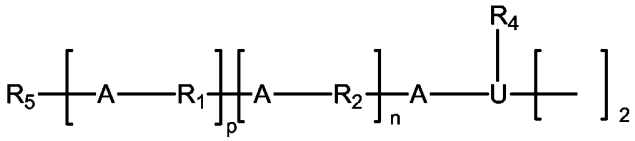
3) the groups -A-, which may be identical or different, represent divalent groups chosen from the following groups:

- ester Y corresponding to the formula: -(C=O)O- or -O-(C=O)-;
- amide Z corresponding to the formula: -(C=O)NH- or -NH-(C=O)-;
- sulfonamide: $-(HN)SO_2-$ or $-SO_2-(HN)-$; with the condition that at least two of the groups -A- are amide or sulfonamide groups; preferably, at least 50% of the groups -A- are ester groups ;

4) $-R_1-$ and $-R_2-$, which may be identical or different, represent a group chosen from:

a) linear, branched or cyclic divalent hydrocarbon-based groups such as saturated or unsaturated, C_{2-50} alkylene and arylene, preferably alkylene, groups, which may contain one or more hetero atoms such as 0, N, S and/or Si, and which may be totally or partially substituted with fluorine atoms,

b) divalent groups providing side branching, such that the polyesteramide polymer unit corresponds to the following formula:



in which:

- U is a C_{3-20} hydrocarbon-based tetravalent radical possibly containing one or more hetero atoms such as O, N, S and/or Si, and linked to a monovalent radical R_4 such as H or a C_1-C_4 alkyl group;

- or alternatively U is a trivalent nitrogen atom N bearing three C_2 to C_8 divalent alkylene groups, and possibly containing a hetero atom such as O; two of the divalent alkylene groups linking the nitrogen atom to the main chain of the polymer, the third linking the nitrogen atom to a side group or graft;

- -A-, $-R_1-$, and $-R_2-$ have the same meaning as above;

- p and n are integers ranging from 1 to 1000;

- $-R_5$ is a monovalent radical such as H or a C_{1-10} alkyl group

2. Composition according to Claim 1, characterized in that the polyesteramide polymer is linear and comprises in its main chain:

• at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and

• at least two groups chosen from amide and/or sulfonamide groups.

3. Composition according to Claim 1 or 2, characterized in that the polymer is solid at room temperature (25°C) and at atmospheric pressure (10^5 Pa).

4. Composition according to any one of Claims 1 to 3, in which the aliphatic divalent polyester groups (POL) of the grouops Q result either from the polyaddition of at least one C_{3-20} lactone optionally substituted with a C_{1-6} alkyl group, or from the polycondensation of at least one linear, branched or cyclic C_{4-50} aliphatic diacid and of at least one linear, branched or cyclic C_{4-50} aliphatic diol.

5. Composition according to Claim 4, in which the divalent hydrocarbon-based groups, for example the C_{2-50} alkylene groups of the groups $-R_1-$ and $-R_2-$ are:

- either linear or branched C_{1-20} groups also possibly comprising from 1 to 5 amide and/or sulfonamide groups;
- or branched C_{30-50} groups possibly comprising rings and non-conjugated unsaturations and derived from the polycondensation with: either a fatty acid dimer, or a diol dimer, or a diamine dimer;
- or C_5-C_6 cycloalkane groups.

6. Cosmetic composition according to any one of Claims 1 to 5, in which the polyester polymer corresponding to formula (I) may be obtained by reacting at least three reagents chosen from the groups

of reagents a), b), c), d), e), f), g), h), i) and j) below, at least three of these reagents each belonging to a different group of reagents:

a) aliphatic diols, $HO-R_3-OH$, in which R_3 represents a group chosen from saturated or unsaturated, C_{2-50} linear, branched or cyclic divalent hydrocarbon-based groups, such as alkylene groups, which may contain in their chain one or more hetero atoms such as O, N, S and/or Si and which may be partially or totally substituted with fluorine atoms;

b) aliphatic polyesterdiols HO-POL-OH, which may contain in their main chain or in the form of side groups or grafts one or more hetero atoms chosen from O, N, S and/or Si, the said divalent aliphatic polyester groups resulting either from the polyaddition of at least one C_{4-20} lactone, which may or may not be substituted with a C_{1-6} alkyl group, or from the polycondensation of at least one linear, branched or cyclic C_{4-50} aliphatic diacid and of at least one linear, branched or cyclic C_{4-50} aliphatic diol;

c) aliphatic dicarboxylic acids, $HOOC-R_2-COOH$, in which R_2 represents a group chosen from saturated or unsaturated, C_{2-50} linear, branched or cyclic divalent hydrocarbon-based groups, such as alkylene or arylene groups, preferably alkylene groups, which may contain in their chain one or more hetero atoms such as O, N, S and/or Si, and which may be partially or totally substituted with fluorine atoms, and the acid chloride and acid anhydride derivatives thereof;

d) primary aliphatic diamines, $H_2N-R_2-NH_2$, R_2 represents a group chosen from saturated or unsaturated, C_{2-50} linear, branched or cyclic divalent hydrocarbon-based groups, such as alkylene or arylene groups, preferably alkylene groups, which may contain in their chain one or more hetero atoms such as O, N, S and/or Si and which may be partially or totally substituted with fluorine atoms;

e) C_{3-20} lactones optionally substituted with one or more C_{1-6} alkyl groups possibly comprising rings, unsaturations or hetero atoms such as N, O, S, and/or Si;

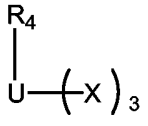
f) C_{3-20} lactams, optionally substituted with one or more C_{1-6} alkyl groups possibly comprising rings, unsaturations or hetero atoms such as N, O, S and/or Si;

g) hydroxy acids $HOOC-R_2-OH$, R_2 being defined as the $-R_2-$ of the dicarboxylic acids c);

h) amino alcohols H_2N-R_3-OH: R_3 being defined as the R_3 of the diols a);

i) amino acids H_2N-R_2-COOH: R_2 being defined as the $-R_2-$ of the dicarboxylic acids c);

j) trifunctional compounds that are co-reagents of the above, i.e. the compounds of formula:



in which:

- the groups X, which may identical or different, represent a group chosen from -COOH groups

and the COCl and anhydride derivatives thereof, and -OH and $-NH_2$ groups, and

$-R_4$ represents H or a C_{1-4} alkyl group;

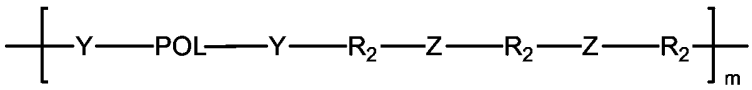
and in which

- U represents a C_{3-20} tetravalent hydrocarbon-based radical possibly containing in its chain one or more hetero atoms such as O, N, S and/or Si,

- or alternatively U represents a trivalent nitrogen atom linked to X via C_2 to C_8 alkylene groups $-R_6-$, which may be identical or different, these alkylene groups possibly comprising a hetero atom such as O,

on condition that, when U is trivalent, then $-R_4$ is absent.

7. Cosmetic composition according to any one of Claims 1 to 6, in which the polyesteramide polymer comprises at least one unit corresponding to formula (II) below:



(II) ,

in which:

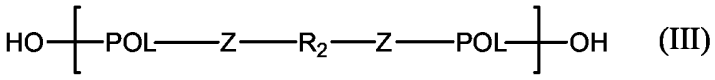
- $-R_2-$, m, and -POL- are as defined in Claim 1,

- -Y- represents an ester group -O-(C=O)- or -(C=O)-O-,

- -Z- represents an amide group -NH-(C=O)- or -(C=O=)-NH-.

8. Cosmetic composition according to Claim 7, in which the polyesteramide polymer of formula (II) may be obtained (is obtainable) by reaction of a polyester prepolymer HO-POL-OH, in which POL is as defined in Claim 1, a dicarboxylic acid HOOC-R_2-COOH or an acid chloride or anhydride derivative thereof, in which R_2 is as defined in Claim 1, and a diamine H_2N-R_2-NH_2, in which R_2 is identical to or different from the group R_2 of the diacid.

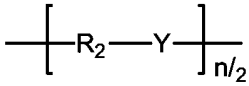
9. Cosmetic composition according to any one of Claims 1 to 6, in which the polyesteramide polymer comprises at least one unit corresponding to formula (III) below:



(III)

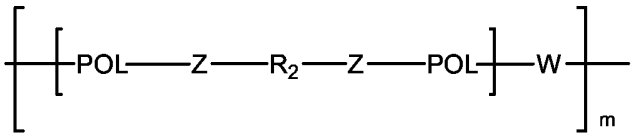
in which:

- -Z- represents an amide group of formula -(C=O)-NH or -NH-(C=O);

- and -POL- represents an aliphatic polyester divalent group of formula: 

in which R_2 and n are defined as in Claim 1 and Y is an ester group of formula -O-(C=O)- or (C=O)-O-.

10. Cosmetic composition according to any one of Claims 1 to 6, in which the polyesteramide polymer comprises at least one unit corresponding to formula (IIIa) below:



(Formula (IIIa))

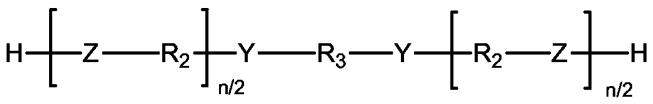
in which:

- W represents a group $-A-R_2-A-$ such as $-Y-R_2-Y-$, or a group $-Y-R_2-Y-R_2-Y-$ or $-Y-R_2-Z-R_2-Z-$,

- -A- represents an ester group -Y- or an amide group -Z- as defined in Claim 1;

and POL, m and R_2 are as defined in Claim 4.

11. Cosmetic composition according to any one of Claims 1 to 6, in which the polyesteramide polymer comprises at least one unit corresponding to formula (IV) below:

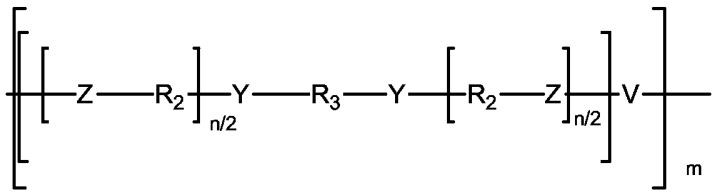


(IV)

in which Y, Z, R_2, R_3 and n have the meaning already given in Claim 1.

12. Cosmetic composition according to any one of Claims 1 to 6, in which the polyesteramide

polymer comprises at least one unit corresponding to formula (IV a) below:

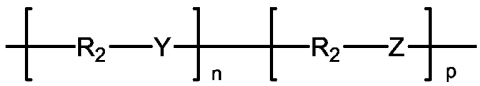


(Formula (IVa))

in which:

V represents a group $-Y-R_2-Y-$ such as $-OCO-R_2-COO-$, or a group $-OCO-R_2-COO-R_2-O-CO$, optionally further comprising a diamine coupler, and Y, R_2, Z, R_3, n and m are as defined in Claim 1.

13. Cosmetic composition according to any one of Claims 1 to 6, in which the polyesteramide polymer comprises at least one unit corresponding to formula (V) below:



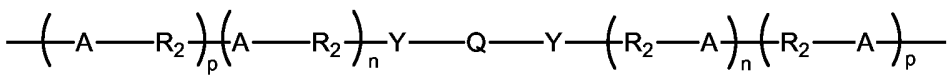
(V)

in which:

- $-R_2-$, which may be identical or different, are as defined in Claim 1,
- $-Y-$, $-Z-$, n and p are as defined in Claim 1.

14. Cosmetic composition according to any one of Claims 1 to 6, in which the polyesteramide

polymer comprises at least one unit corresponding to formula (VI) below:



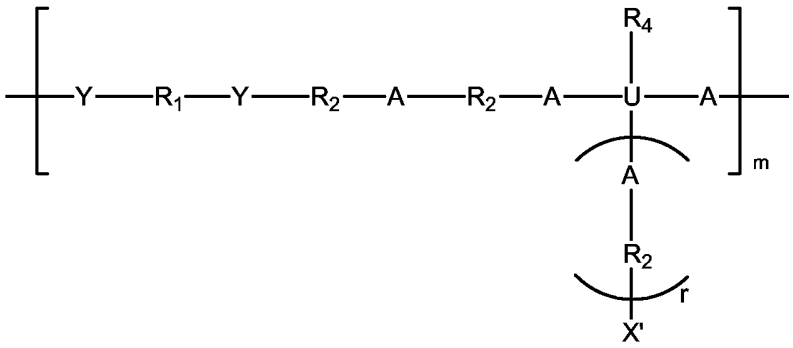
(VI)

in which:

- the group –A– represents an ester group Y or amide group Z, on condition that if the groups –A– of $-(R_2-A)_n$ are ester groups (–Y–), then the groups –A– of $-(R_2-A)_p-$ are amides (–Z–), and vice versa,

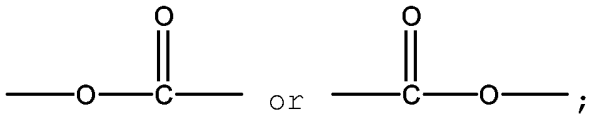
- Q represents a group $-R_3-$ or a group POL as defined in Claim 1 and n and p are as defined in Claim 1.

15. Cosmetic composition according to any one of Claims 1 to 6, in which the polyesteramide polymer comprises at least one unit corresponding to formula (VII) below:



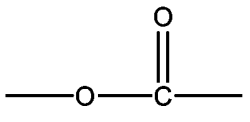
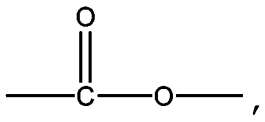
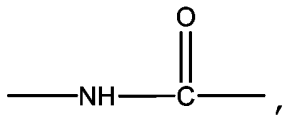
in which:

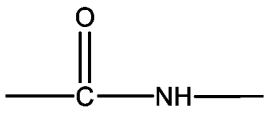
1) –Y– represents an ester group

 or ;

2) $-R_1-$ represents $-R_3-$ (derived from a diol) or –POL–, R_3 and POL being as defined in Claim 1;

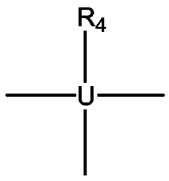
3) the groups –A–, which may be identical or different, represent an ester or amide group

, , ,

;

4) r represents an integer from 2 to 1000 and m is as defined in Claim 1;

5)



represents:

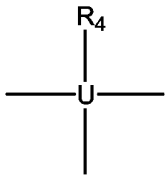
– either a C_{3-20} tetravalent hydrocarbon-based radical, which may contain in its chain one or more hetero atoms such as O, N, S and/or Si,

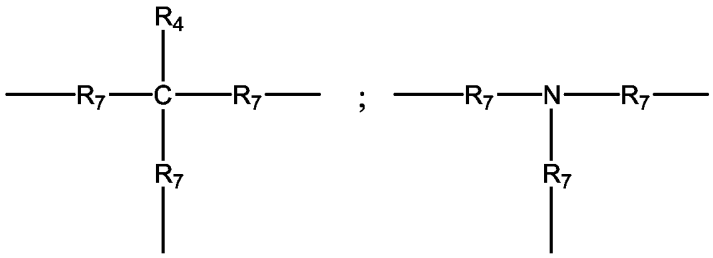
– or a trivalent nitrogen atom linked to –A– via identical or different C_2 to C_8 divalent alkylene groups $-R_6-$, these groups possibly containing one or more hetero atoms such as O, N, S and/or Si, on condition that if U is trivalent, then $-R_4$ is absent;

6) the groups X', which may be identical or different, represent a group $-A-R_8$ in which R_8 represents H, a linear, branched or cyclic C_{1-30} alkyl

group, or alternatively a linear or branched C_{1-30} divalent alkylene group $-R_9-$, or a divalent single bond linking another graft of another polymer chain; and

at least two grafts contain at least one amide group –Z– to satisfy formula (VII).

16. Composition according to Claim 15, in which the groups  are chosen from the groups having the following formulae:



in which the groups R_7, which may be identical or different, represent linear or branched C_{1-10} and preferably C_{2-8} divalent alkylene groups.

17. Composition according to any one of Claims 7 to 16, in which the organic liquid phase is a liquid fatty phase comprising at least one oil, and in which, in the polyesteramide polymer, at least one of the groups R_2 is derived either from a fatty diacid dimer or from a diamine dimer.

18. Composition according to any one of Claims 7 to 16, in which the liquid phase comprises at least one organic solvent, and in which, in the polyesteramide polymer, the groups R_2 represent a group derived from a C_4 to C_{10} diacid or from a mixture of a fatty diacid dimer and a short C_4 to C_{10} diacid such as adipic acid.

19. Composition according to any one of Claims 7 to 18, in which the polyesteramide polymer also comprises one or more other units, due to the introduction into the said polymer of compounds chosen from:

- prepolymers other than polyesters, such as polyethers and polysiloxanes, for instance polydialkylsiloxanes;
- aromatic diacids, diols and diamines;
- trifunctional reactive molecules that introduce branches or grafts, such as diols, triamines and tricarboxylic acids, on condition that the trifunctional reactive molecules are present in lower amounts than the difunctional reactive molecules.

20. Composition according to any one of the preceding claims, in which the polymer has a weight-average molecular mass ranging from 1000 to 500 000 and preferably from 5000 to 250 000.

21. Composition according to any one of the preceding claims, in which the polymer is a block copolymer or a grafted copolymer.

22. Composition according to any one of the preceding claims, in which the polyesteramide polymer represents from 0.1 to 50%, preferably from 0.5 to 45%, more preferably from 1% to 40% and better still from 4% to 30% solids relative to the total weight of the composition.

23. Composition according to any one of the preceding claims, in which the total organic liquid phase of the composition represents from 1% to 99%, preferably from 5% to 75% and more preferably from 10% to 60% of the total weight of the composition.

24. Composition according to any one of Claims 1 to 17 and 19 to 23 in which the said organic liquid phase is a liquid fatty phase comprising at least one hydrocarbon-based oil.

25. Composition according to Claim 24, in which the hydrocarbon-based oil is a volatile hydrocarbon-based oil.

26. Composition according to Claim 24 or 25, in which the hydrocarbon-based oil is chosen from hydrocarbon-based oils containing from 8 to 16 carbon atoms.

27. Composition according to any one of Claims 24 to 26, in which the liquid fatty phase represents from 5% to 99% of the total weight of the

composition and better still from 20% to 75% of the total weight of the composition.

28. Composition according to any one of Claims 1 to 17 and 19 to 24, characterized in that it is in the form of a makeup product or a skincare product, in particular a foundation, a blusher, a makeup rouge, an eyeshadow or a concealer product; an eyecare or eye makeup product, for instance an eyeliner; a bodycare or body makeup product; a lipcare or lip makeup product, for instance a lipstick, a lip gloss or a lip pencil; a product for making up or caring for keratin fibres such as the eyelashes, in particular in the form of a mascara, the eyebrows and the hair.

29. Composition according to any one of Claims 1 to 16 and 18 to 23, in which the said organic liquid phase is a liquid organic solvent phase comprising at least one organic solvent.

30. Composition according to Claim 29, in which the said organic solvent(s) is (are) chosen from:

- short-chain esters (containing from 3 to 8 carbon atoms in total), such as ethyl acetate, methyl acetate, propyl acetate, n-butyl acetate or isopentyl acetate;
- ketones that are liquid at room temperature, such as methyl ethyl ketone, methyl isobutyl ketone, diisobutyl ketone, isophorone, cyclohexanone or acetone;

- alcohols that are liquid at room temperature, such as ethanol, isopropanol, diacetone alcohol, 2-butoxyethanol or cyclohexanol;
- glycols that are liquid at room temperature, such as ethylene glycol, propylene glycol, pentylene glycol or glycerol;
- propylene glycol ethers that are liquid at room temperature, such as propylene glycol monomethyl ether, propylene glycol monomethyl ether acetate or dipropylene glycol mono-n-butyl ether;
- aldehydes that are liquid at room temperature, such as benzaldehyde or acetaldehyde;
- carbonates such as propylene carbonate or dimethyl carbonate;
- acetals such as methylal; and
- mixtures thereof.

31. Composition according to Claim 29 or 30, characterized in that the organic solvent is volatile.

32. Composition according to one of Claims 29 to 31, characterized in that the organic solvent is chosen from esters containing from 3 to 8 carbon atoms in total, such as ethyl acetate, methyl acetate, propyl acetate, n-butyl acetate or isopentyl acetate, and mixtures thereof.

33. Composition according to one of Claims 28 to 31, in which the organic solvent phase represents from 5% to 95% of the total weight of the composition

and preferably from 10% to 85% of the total weight of the composition.

34. Composition according to any one of Claims 1 to 16, 18 to 23 and 29 to 33, characterized in that it is in the form of a nail varnish, a nailcare product or a nail makeup remover.

35. Composition according to any one of the preceding claims, characterized in that it also comprises one or more dyestuffs chosen from water-soluble dyes, liposoluble dyes and pulverulent dyestuffs, for instance pigments, nacres and flakes, and mixtures thereof.

36. Composition according to any one of the preceding claims, characterized in that it also comprises at least one fatty substance that is solid at room temperature, especially chosen from waxes, pasty fatty substances and gums, and mixtures thereof.

37. Composition according to any one of the preceding claims, characterized in that it also comprises one or more other additional film-forming agents other than the polyesteramide(s).

38. Composition according to any one of the preceding claims, characterized in that it also comprises at least one auxiliary film-forming agent.

39. Composition according to any one of the preceding claims, characterized in that it also comprises at least one plasticizer and/or coalescer.

40. Composition according to any one of the preceding claims, characterized in that it also comprises ingredients commonly used in cosmetics, such as vitamins, thickeners, additional gelling agents, trace elements, softeners, sequestering agents, fragrances, acidifying or basifying agents, preserving agents, sunscreens, surfactants, antioxidants, fibres, agents for preventing hair loss, eyelash care agents, antidandruff agents and propellants, or mixtures thereof.

41. Cosmetic process for making up or caring for human keratin materials, comprising the application to the keratin materials of a cosmetic composition according to one of the preceding claims.

42. Use in a cosmetic composition for caring for and/or making up keratin materials or for the manufacture of a physiologically acceptable composition, containing an organic liquid phase, of at least one linear or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on the main chain:

- at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and

• at least two groups chosen from amide and/or sulfonamide groups, in which the polyesteramide polymer comprises at least one unit corresponding to formula (I) as defined in claim 1.

43. Use of a sufficient amount of at least one linear and/or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on the main chain:

• at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and

• at least two groups chosen from amide and/or sulfonamide groups, in which the polyesteramide polymer comprises at least one unit corresponding to formula (I) as defined in claim 1 ;

in a cosmetic composition for caring for and/or making up keratin materials or for the manufacture of a physiologically acceptable composition, containing an organic liquid phase, for structuring, gelling, thickening and/or giving film-forming properties to the said composition.

44. Use of a sufficient amount of at least one linear and/or branched polyesteramide polymer comprising in its main chain and/or in the form of one or more side grafts on the main chain, in which the polyesteramide polymer comprises at least one unit corresponding to formula (I) as defined in claim 1 :

- at least one aliphatic polyester group consisting of from 2 to 1000 aliphatic ester units, and
- at least two groups chosen from amide and/or sulfonamide groups;

to obtain a cosmetic composition for caring for and/or making up keratin materials, or for the manufacture of a physiologically acceptable composition, containing an organic liquid phase, capable of forming on the keratin materials a film with good staying power and/or gloss.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2005/053749

A. CLASSIFICATION OF SUBJECT MATTER
A61K8/85 A61K8/88 A61Q3/02 C08G63/91

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61K C08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/187170 A1 (PAVLIN MARK S) 12 December 2002 (2002-12-12) cited in the application paragraph '0079!	1-43
X	US 6 139 827 A (COHEN ET AL) 31 October 2000 (2000-10-31) the whole document	1-44
X	FR 2 831 432 A (L'OREAL) 2 May 2003 (2003-05-02) example 5	1-44
X	DE 42 24 761 A1 (BASF AG, 67063 LUDWIGSHAFEN, DE) 3 February 1994 (1994-02-03) example 4	1-44

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 November 2005	24/11/2005

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Werner, S

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2005/053749

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96/06878 A (INOLEX INVESTMENT CORPORATION) 7 March 1996 (1996-03-07) examples 1,2,13,22,29	1-44

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP2005/053749

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