Abstract:

Title: COSMETIC COMPOSITION INCLUDING A COMBINATION OF A GELIFIABLE WATER-SOLUBLE POLYSACCHARIDE, STARCH AND FILLERS

This invention relates to a composite material comprising and preferably composed of at least one destructured gel of a gelifiable water-soluble polysaccharide, at least one starch gel, and one or several inorganic or organic fillers. The invention also relates to a cosmetic composition comprising this material, and a care method including application of this composition, particularly to mattify the skin, without fluffing.
Cosmetic composition including a combination of a gelifiable water-soluble polysaccharide, starch and fillers.

This invention relates to the field of cosmetics, and particularly compositions for matifying and/or optically smoothing micro-relief of the skin. In particular, this invention relates to a composite material comprising, and preferably composed of, at least one destructured gel of a polymer of gelifiable water-soluble polysaccharides, at least one starch gel and one or several inorganic and/or organic fillers. The invention also relates to a cosmetic composition comprising this material, and a care method comprising application of this composition.

At the present time, the use of inorganic or organic filler particles to matify the skin and/or optically smooth micro-relief by a so-called "soft-focus" effect, in other words flouting minor imperfections of the skin and small wrinkles, is known to a skilled person in the art.

Unfortunately, compositions containing inorganic or organic fillers are accompanied by an unacceptable dry feel. This problem can be solved by the use of cross-linked silicones. This type of raw material can combine a matte and soft-focus effect, but it has the disadvantage of being characterized by an uncomfortable greasy and warm feel.

Therefore, there is a need to prepare cosmetic compositions solving the technical problem of matifying and/or optically smoothing micro-relief of the skin, while providing a pleasant feel, particularly during application.

Application US201 0021 5700 discloses the use of a destructured agar gel as a substitute for cross-linked silicones. Therefore, this type of gel is apparently capable of solving the technical problem.

The inventors have discovered that compositions comprising a water-soluble polymer gel like agar, that would be suitable from a matifying point of view, are not satisfactory because they tend to cause fluffing on the skin during application. Fluffing consists of the appearance of macroscopic agglomerated particles on the skin during application, thus making the composition heterogeneous resulting in an unpleasant feeling on the skin.

Patent application EP-0355908 discloses the formation and the use of fluid solutions containing polysaccharide gels in cosmetic and food compositions. The polymers described are polysaccharides forming thermoreversible physical gels.
Patent EP-0432835 discloses the formation and the use of fluid solutions containing polysaccharide gels in cleaning and food compositions. The polymers described are exclusively polysaccharides forming gels obtained by cross-linking.

Document WO-9951 193 discloses fluid cleaning and conditioning compositions for hair containing a) natural polymer dispersions called shear gels and b) a suspended phase.

Document WO-9951 716 discloses cleaning and conditioning compositions for hair containing natural polymer dispersions called shear gels.

Patent application EP 1158021 discloses compositions for external use containing microgels. These microgels are obtained by grinding a macroscopic gel at ambient temperature, and are then incorporated into cosmetic compositions. The procedure described in document EP 1158021 is incapable of providing compositions with polymer concentrations providing a comfortable feel.

Application US2009087464 discloses the use of food quality gel particles and emulsifiers to stabilize emulsions.

Finally, application US2003072805A discloses cosmetic compositions containing microgels with high contents of skin whitening active ingredients.

None of documents mentioned above discloses how to provide a solution to the technical problems that arise with the invention, in other words particularly to provide a cosmetic composition to matify and/or optically smooth micro-relief of the skin while procuring a pleasant feel particularly during application, and to prevent fluffing of such a composition.

The purpose of this invention is to disclose a material suitable for preparation of cosmetic compositions, capable of procuring a matifying and/or soft-focus effect without producing any fluffing on the skin.

Thus, the purpose of the invention is also to provide a cosmetic composition providing a pleasant feel (fresh and moisturizing) during application, particularly preventing a dry or greasy feel or a fluffing effect during application.

Surprisingly, it was possible to achieve this objective by adding a particular composite material (also referred to herein below as "solvated pseudo resin") into cosmetic compositions.

Therefore, this invention relates to a composite material comprising, and preferably composed of, at least one destructured gel of a gelifiable water-soluble polysaccharide, at least one starch gel and one or several inorganic and/or organic fillers.
Any solvent can be used for the preparation of gels provided that it is capable of solubilizing the gelifiable water-soluble polysaccharide or starch (depending on the gel considered) and forming a gel in the presence of polysaccharide or starch.

Typically, a protic polar solvent will be used. The following solvents may be used: water, ethanol, sorbitol, hydroxypropyl sorbitol, glycerine, ethoxylated glycerol, propoxylated glycerol, a polyalkylene glycol such as polyethylene glycol and polypropylene glycol, diethylene glycol, dipropylene glycol, triethylene glycol, 2-ethoxyethanol, hexylene glycol, butylene glycol, hexamatriol, and any mix of them. In particular, these solvents may be mixed with water.

Gels according to the invention are preferably hydrogels (water-based gels).

Gelifiable water-soluble polysaccharides used in this invention are capable of forming hydrogels, either of the thermoreversible type or the cross-linked type. Preferably, gelifiable water-soluble polysaccharides will be used capable of forming thermoreversible hydrogels. Thermoreversible means that the gel state of these polymer solutions is obtained reversibly when the solution is cooled below the gelification temperature characteristic of the polymer used.

One of the polymer families that can be used in this invention is the carrageenan family, and particularly Kappa carrageenan and Iota carrageenan. These are linear polysaccharides present in some red alga. This family of polysaccharide is described in chapter 3 in the "Food Gels" book published by Peter Harris, Elsevier 1989.

Another family of polymers that may be used is the set of polymers described with the term: Agar or agar agar. These are polymers extracted from red alga that are composed of alternating layers of 1.4-L-galactose and 1.3-D-galactose residues. They are described in chapter 1 in the "Food Gels" book mentioned above. Purified agar agar, without any of its inorganic elements, is called agarose.
Another polymer of bacterial origin that can be used is gellane. This is a polysaccharide composed of alternating layers of glucose, glucuronic acid and rhamnose residues. Polymers belonging to the gellane family are described in chapter 6 in the "Food Gels" book mentioned above.

Another type of polymers that may be used is the set of polymers from cellulose origin. If polymers forming cross-linked type gels induced by the addition of salts are used, then polysaccharides belonging to the alginate or pectin families may be used.

Any water-soluble polymer forming a gel as described above may be used.

According to one embodiment, gelifiable water-soluble polysaccharide is chosen from among agar agar, agarose, a carrageenan, a gellane, a pectin, an alginate, a furcellarane, and any mixture thereof. According to one particular embodiment, the gelifiable water-soluble polysaccharide is agar agar or agarose.

The destructured gels are obtained using a particular destructuring method by shearing.

**Use of destructured gelifiable water-soluble polysaccharide gels:**

Typically for the purposes of this invention, destructuring by shearing is obtained when a gelifiable water-soluble polysaccharide solution is cooled. A destructured gel may be prepared as follows:

1. A liquid solution is obtained by addition of the required quantity of gelifiable water-soluble polysaccharide in a protic polar solvent and preferably in water.
2. The solution is then kept under gentle agitation at about 200 rpm with a dispersing rod, at a temperature higher than the polymer solubilization temperature to guarantee complete solubilization (T = 85°C). The temperature is generally maintained for a long enough period to obtain a homogeneous mix.
3. The solution is then subject to severe shearing, about 2000 rpm with rotor/stator and scraper blade at 200 rpm, while the temperature of the solution drops to the polysaccharide gelification temperature, and preferably to ambient temperature.
4. Finally, the solution is then stirred gently at about 200 rpm with the dispersing rod under blades for about 1 hour at ambient temperature (20 to 25°C).
These conditions are mentioned for guidance, the shear rate may need to be adjusted depending on the agar grades used. For example, preparation of such gels is disclosed in application US 2010/0215700.

Agar agar gels may be obtained using an OLSA® pilot mixer or dual screw extrusion / mixing. In the case of polymers forming cross-linked type gels, the method described above may be used provided that the cross-linking agent is injected when the polymer solution is extruded. According to one particular embodiment, the cross-linking agent is introduced at the beginning of manufacturing after solvating of the polymer.

Contents by mass of gelifiable water-soluble polysaccharide in the destructured gel generally vary from 0.5 to 15%, preferably from 3 to 15%, preferably 3 to 10% and even more preferably from 4% to 8%

Gelifiable water-soluble polysaccharides according to the invention may be prepared in a mix with a synthetic thickener such as alkyled polyvinylpyrrolidones, polyester terephthalates such as propylene terephthalate, ammonium acryloyldimethyltaurate/VP copolymer, both marketed by Clariant AG as the Aristoflex range, salts of mono-alkylesters of poly(methylvinyl/maleic acid ether), and (3-dimethylaminopropyl)-methacrylamide/3-methacryloylamidopropyl)-lauryl-dimethyl-ammonium chloride. Other thickeners are included in the class of polymers of acrylic acid/ethyl acrylate and carboxyvinyl polymers such as Carbopol.

Starch(es) that can be used in this invention are particularly macromolecules in the form of polymers composed of elementary patterns that are anhydroglucose units. The number of these patterns and their assembly provide a means of distinguishing amylose (linear polymer) and amylopectin (ramified polymer).

The starch molecules used in this invention may originate from a plant source such as cereals, tubercles, roots, vegetables and fruits. Thus, the starch(es) may originate from a plant source chosen from among maize, peas, potatoes, sweet potatoes, banana, barley, wheat, rice, oat, sago, tapioca and sorghum. The starch is preferably derived from potatoes.

Hydrolysates from starches mentioned above may also be used.

Starches are usually in the form of a white powder, insoluble in cold water, with an elementary particle size varying from 3 to 100 microns.

The starches used in the composition according to the invention may be chemically modified by one or several of the following reactions: pregelatinisation, oxidation, cross-linking, esterification, heat treatments.

In particular, these reactions may be performed as follows:
- pregelatinisation by splitting starch granules (for example drying and baking in a dryer drum);
- oxidation by strong oxidants leading to the introduction of carboxyl groups in the starch molecule and depolymerization of the starch molecule (for example by treating an aqueous solution of starch by sodium hypochlorite);
- cross-linking by functional agents capable of reacting with hydroxyl groups of starch molecules that will thus be bonded to each other (for example with glycercyl and/or phosphate groups);
- esterification in an alkaline medium for grafting of functional groups, particularly acyl in C1-C6 (acetyl), hydroxyalkylated in C1-C6 (hydroxyethyl, hydroxypropyl), carboxyalkyl (in particular carboxymethyl), octenylsuccinic. For example, starches modified by sodium carboxymethyl.

In particular, monostarch phosphates (of the Am-0-PO-(OX) ₂ type), distarch phosphates (of the Am-0-PO-(OX)-0-Am type) or even tristarch phosphates (of the Am-0-PO-(0-Am) ₂ type) or mixtures thereof may be obtained by crosslinking with phosphorated compounds.

In particular, X denotes alkaline metals (for example sodium or potassium), alkaline earth metals (for example calcium, magnesium), ammonia salts, amine salts like monoethanolamine, diethanolamine, triethanolamine, amino-3 propanediol-1,2 salts, ammonium salts derived from basic aminoacids like as lysine, arginine, sarcosine, ornithine, citrulline.

The phosphorated compounds may for example be sodium tripolyphosphate, sodium orthophosphate, phosphorus oxichloride or sodium trimetaphosphate.

Starch phosphates will be used in preference, particularly hydroxypropylated, or compounds rich in starch phosphate, particularly hydroxypropylated, such as products marketed under references PREJEL VA-70-T AGGL (gelatinised hydroxypropylated manioc distarch phosphate) or PREJEL TK1 (gelatinised manioc distarch phosphate) or PREJEL 200 (gelatinized acetylated manioc distarch phosphate) by the AVEBE Company or STRUCTURE ZEA by the NATIONAL STARCH Company (gelatinised hydroxypropylated maize distarch phosphate).

When starches are chemically modified by an esterification reaction, carboxyalkylstarches can be obtained as mentioned above.

Carboxyalkylstarches are preferably carboxyalkyl (C₁-C₄) starch and more particularly carboxymethylstarches.

Salts are particularly alkali or alkali earth metal salts such as Na, K, Li, NH₄⁺, a quaternary ammonium or an organic amine such as mono, di or triethanolamine.
Carboxyalkylstarches are obtained by grafting carboxyalkyl groups on one or several alcohol functions of starch, particularly by reaction of starch and sodium monochloroacetate in alkaline medium.

Carboxyalkyl groups are usually fixed by means of an ether function, more particularly on carbon 1.

The degree of substitution preferably varies from 0.1 to 1 and more particularly from 0.15 to 0.5. The degree of substitution is defined according to this invention as being the average number of hydroxyl groups substituted by an ester or ether group (in fact ether for carboxymethylstarches) by monosaccharidic unit of polysaccharide.

Carboxyalkylstarches preferably comprise patterns with the following formula:

\[
\text{X} \quad \text{CH}_2\text{OCH}_2\text{COOX} \quad \text{X} \quad \text{CH}_2\text{OCH}_2\text{COOX}
\]

X denotes a hydrogen atom, an alkali or alkali earth metal such as Na, K 1/2, Li, NH₄, a quaternary ammonium or an organic amine. Preferably X denotes an Na+ ion.

Carboxyalkylstarches that can be used in this invention are preferably non-pregelatinized carboxyalkylstarches.

Carboxyalkylstarches that can be used in this invention are preferably partially or totally cross-linked carboxyalkylstarches.

Carboxyalkyl starches that can be used in this invention are preferably sodium salts of carboxyalkylstarch, particularly a sodium salt of carboxymethylstarch from potatoes, sold particularly under the name PRIMOJEL by the DMV International Company. The diameter of more than 95% of particles of this starch is less than 100 microns and more particularly less than 65 microns.

According to one particular embodiment of the invention, the starches present in the composition are chosen from among carboxyalkylstarches. For example, there are Glycolys and Glycolys LV from the Roquette Company.

Amphoteric starches can also be used in the invention, these amphoteric starches contain one or several anionic groups and one or several cationic groups. The anionic and cationic groups may be related to the same reactive site of the starch molecule or to different reactive sites, but they are preferably related to the same reactive site. The anionic groups may be of the carboxylic, phosphate or sulphate type, and preferably
Carboxylic. Cationic groups may be of the primary, secondary, tertiary or quaternary amine type.

Amphoteric starches are chosen particularly from among compounds with the following formulas:

\[
\text{R'} \quad \text{R} \\
\text{St} - 0 - (\text{CH}_2)_n \text{N} \\
\text{CH} - \text{CH} - \text{COOM} \\
\text{St} - O - (\text{CH}_2)_n \text{N} \\
\text{R''} \\
\text{(I)} \\
\text{COOM} \quad \text{R} \\
\text{CH} - \text{CH} - \text{COOM} \\
\text{St} - O - (\text{CH}_2)_n \text{N} \\
\text{R''} \\
\text{(II)} \\
\text{R'} \quad \text{R''} \\
\text{St} - \text{O} - \text{CH}_2 \quad \text{CH} - \text{COOM} \\
\text{M} \\
\text{(III)} \\
\text{R'} \quad \text{R''} \\
\text{St} - \text{O} - \text{CH} - \text{CH}_2 \quad \text{COOM} \\
\text{M} \\
\text{(IV)}
\]

Formulas in which:
- St-O represents a starch molecule,
- \( R \), identical or different, represents a hydrogen atom or a methyl radical,
- \( R' \), identical or different, represents a hydrogen atom, a methyl radical or a COOH group,
- \( n \) is an integer equal to 2 or 3,
- \( M \), identical or different, denotes a hydrogen atom, an alkali metal or alkali earth metal such as Na, K, Li, NH\(_4\), a quaternary ammonium or an organic amine.
- \( \text{R''} \) represents a hydrogen atom or an alkyl radical having from 1 to 18 carbon atoms.

These compounds are described particularly in patents US 5,455,340 and US 4,017,460.
Starches with formulas (I) or (II) are used particularly as amphoteric starches. More particularly, starches modified by 2-chloroethyl aminodipropionic acid are used, in other words starches with formula (I) or (II) in which R, R', R" and M represent a hydrogen atom and n is equal to 2. In particular, potato starch modified by 2-chloroethyl aminodipropionic acid neutralized with soda can be used as marketed by the NATIONAL STARCH Company under reference STRUCTURE SOLANACE.

Preferably, the starch(es) used in the invention are chemically modified.

Even more preferably, starches used will be starch phosphates, possibly hydroxypropylated starch phosphates.

Starches and derivatives particularly suitable for the invention include particularly:

- modified starch (amylopectine/amylose cross linked by epichlorhydrine) sold under the trade name "Amidon de riz insoluble non mucilagineux" (non mucilaginous insoluble rice starch) by the REMY Company,
- native waxy corn starch (essentially amylopectine) sold under the trade name "WAXY MAIS" by BLATTMANN,
- pre-baked modified wheat starch sold under the trade name "MIDSOL KRISP" by MIDWEST GRAIN PRODUCTS,
- refined modified wheat starch sold under the trade name "MIDSOL ADHERE" by MIDWEST GRAIN PRODUCTS,
- modified wheat starch powder sold under the trade name "MIDSOL 35" by MIDWEST GRAIN PRODUCTS,
- modified potato starch sold under the trade name "PERFECTAGEL MPT" by AVEBE,
- the "corn starch B" product sold by ROQUETTE FRERES, the "corn starch" product sold by NATIONAL STARCH.

According to one embodiment, a non-modified starch; an acid-treated starch; a base-treated starch; an oxidized starch, an enzyme-treated starch; and also preferably chosen from among a mono starch phosphate; a glycerol starch; a distarch phosphate esterified with sodium trimetaphosphate; a phosphated distarch phosphate, an acetyled distarch phosphate; a starch acetate esterified with acetic anhydride; a starch acetate esterified with vinyl acetate; an acetyled distarch adipate; an acetyled distarch glycerol; a hydroxypropylic starch; a hydroxypropylic distarch phosphate; a hydroxypropylic distarch glycerol; a sodium starch succinate octenyl, and any mixture thereof can be used.

Preferred starches are sodium starch carboxymethyl, starch acetate, hydroxypropyl corn distarch phosphate and any mixture thereof.
Concentrations by mass of starch in the starch gel generally vary from 3 to 20% and preferably from 5% to 10%.

Preparation of starch gels

Typically, the following procedure can be used to prepare starch gels:

- Disperse starch in a protic polar solvent and preferably in water, possibly in the presence of one or several preservatives. The temperature for this step is usually ambient temperature. Agitation for dispersion is gentle, about 200 rpm with a dispersing rod. A Rayneri type mixer is usually used.

- Temperature rise until gelification (usually within the 70-75°C range).

- Maintain this temperature until gelification, in other words usually 5 minutes under strong agitation, about 1000 rpm with dispersing rod;

- return to ambient temperature under gentle agitation at about 200 rpm with dispersing rod.

Inorganic and/or organic fillers are preferably chosen from among diffusing fillers.

"Fillers" means divided solid particles, in other words in powder form. These fillers usually have a median diameter by volume of less than 15 µm.

According to the invention, "diffusing filler" means a particle that may or may not be spherical, may or may not be porous, with a refraction index of less than or equal to 2, particularly less than or equal to 1.8 and preferably varying from 1.3 to 1.6. The refraction index of the particles may be evaluated using the so-called contrast erasure method. By choosing two completely miscible solvents with relatively different refraction indexes (ethanol: 1.36 and phenylethyl alcohol: 1.529), mixtures with intermediate refraction indexes can be obtained. The particles in question are put in suspension in these different solvent mixtures and the transparency of these solutions is then evaluated using a Hach 2100P® turbidimeter marketed by the HACH Company. The refraction index of the particle is equal to the refraction index of the mixture of solvents for which the least cloudy solution is obtained, in other words the solution with the lowest cloudiness corresponding to the minimum difference in the refraction index between the particles and the solvent mixture.

"Diffusing fillers" according to the invention usually have a median diameter by volume of less than 15 µm.

In one preferred embodiment of the invention, the "diffusing fillers" are spherical.

In one preferred embodiment of the invention, the "diffusing fillers" are porous. In this case, the specific surface area of the particles that can be related to the porosity is more than 10 m²/g, and is preferably more than 50 m²/g.
The specific area per unit mass may be determined using the nitrogen absorption method called the BET (BRUNAUER - EMMET - TELLER) method described in "The journal of the American Chemical Society", vol. 60, page 309, February 1938 and corresponding to international standard ISO 5794/1 (Appendix D). The BET specific surface area is the total specific area of the particles considered.

In one preferred embodiment of the invention, the "diffusing fillers" are matifying or said to be "soft-focus''.

Matifying or "soft-focus" filler means a filler that makes the complexion more transparent and creates a blur effect.

In the special case in which the fillers considered according to the invention are matifying or "soft-focus" fillers, the matifying power of the compositions containing them may be characterized using the following protocol.

The composition to be tested is spread at 2 mg/cm² on a contrast card (PRUFKARTE type 24/5-250 cm² marketed by the ERICHSEN Company) using a mechanical film spreader. The composition is then dried overnight at a temperature of 37°C before its reflection is measured using a gonioreflectometer marketed by the MICROMODULE Company. The specular reflection intensity at 30° (R) and the diffuse reflection intensity at 90° (D) are successively measured. The result obtained is the ratio R between the specular reflection and the diffuse reflection. The value R is all the more low since the matifying effect created by the filler is considerable.

In the context of this invention, a value R less than or equal to 2 generally reflects a matifying effect. Matifying fillers according to the invention are fillers that preferably give a value R less than 1.5 and even more preferably less than 1, with a content of 5% in a cosmetic composition.

More particularly, these matifying fillers may for example be chosen from among:
- porous microparticles of silica, for example Silica beads SB150 and SB700 from Miyoshi with an average size of 5 microns; Sunsheres Series-H from Asahi Glass for example such as Sunsphere H33, H51, and H53 with sizes of 3, 5 and 5 µm respectively;
- polytetrafluoroethylene powders such as PTFE Ceridust 9205F from Clariant with average size of 8 microns;
- silicone resin powders such as Tospearl 145A Silicone resin from GE Silicone with average size of 4.5 microns;
- hollow hemispherical silicone particles such as NLK 500, NLK 506 and NLK 510 from Takemoto Oil and Fat.
- acrylic copolymer powders, particularly methyl poly(meth)acrylate such as PMMA Jurymer MBI particles from Nihon Junyoki with average size 8 microns, hollow PMMA
beads sold under the name Covabead LH85 by the Wackher Company and expanded vinylidene / acrylonitrile / methylene methacrylate chloride microspheres sold under the name Expancel;

- wax powders like microease 114S Paraffin wax particles by Micro Powders with average size 7 microns;
- polyethylene powders, particularly including at least one ethylene/Acrylic acid copolymer, and particularly composed of ethylene/acrylic acid copolymers such as Flobeads EA 209 particles from Sumitomo with average size 10 microns;
- cross-linked elastomeric organopolysiloxane powders coated with silicone resin, particularly silsesquioxane resin as disclosed for example in patent US 5 538 793. Such elastomer powders are sold under the names "KSP-100", "KSP-101", "KSP-102", "KSP-103", "KSP-104", "KSP-105" by the SHIN ETSU Company;
- polyamide powders (Nylon®), for example like Nylon 12 particles of the Orgasol type from Atofina with average size 10 microns;
- polymethyl methacrylate (PMMA) type powders;
- talc;
- silica/Ti02 or silica/zinc oxide composites;
- styrene/acrylic copolymer powders;
- and mixture thereof.

This list is not exhaustive.

The mass concentration of inorganic and/or organic fillers is usually between 0.5% and 20% and preferably between 0.5% and 10% of the total mass of the solvated pseudo resin.

The solvated pseudo resin according to the invention may also comprise at least one moisturizing agent and preferably a moisturizing polyol. The moisturizing polyol may be a propylene glycol and preferably glycerin.

In general, the solvated pseudo resin according to the invention comprises a percentage by mass of its total mass: from 0.5 to 10% of a gelifiable water-soluble polysaccharide, 0.5 to 20% of starch and 0.5 to 20% of inorganic and/or organic fillers. The balance is made up by the solvent(s) used particularly for the preparation of gels (preferably water) and possibly other ingredients.

More precisely, the preferred solvated pseudo resins comprise the following proportions by mass, in which the polysaccharide and starch solvent (preferably water) is included in the mass of the gel;

- destructured gel of gelifiable water-soluble polysaccharide: 20% - 79.5%;
- starch gel 20% - 79.5%;
• Fillers: 0.5% - 10%;

According to one embodiment, the solvated pseudo resins comprise the following proportions by mass, in which the polysaccharide and starch solvent (preferably water) is included in the mass of the gel;

- destructured gel of gelifiable water-soluble polysaccharide: 25% - 65%;
- starch gel 25% - 65%;
- Fillers: 0.5% - 5%;

As mentioned above, in such a solvated pseudo resin, the destructured gel of gelifiable water-soluble polysaccharide may comprise from 3 to 10% of gelifiable water-soluble polysaccharide and the starch gel may contain from 5 to 10% of starch.

The solvated pseudo resins are usually in the form of a quasi solid and opalescent gel.

The solvated pseudo resin according to the invention is obtained for example by mixing the different constituent phases at ambient temperature.

The invention also relates to a cosmetic composition including at least one composite material as defined above, physiologically acceptable excipients and possibly one or several active ingredients.

This invention applies to a cosmetic composition that mattifies the skin and optically smooths the microrelief. This cosmetic composition does not produce any fluff during application.

"Matify" means make the skin visibly more matte and less shiny.

For the purposes of the invention, "soft-focus effect" means an effect of transparent complexion, mattleness and blur. In particular, a composition that leads to a soft-focus effect can optically attenuate the skin microrelief, and in particular skin defects such as spots or wrinkles.

Preferably, the composition of the invention creates a feeling of freshness and / or moisturization during application. The compositions according to the invention create a pleasant feel on the skin, particularly during application.

The composition according to the invention is adapted to topical application on the skin and it comprises a topically acceptable medium, in other words compatible with the skin.

Preferably, the cosmetic composition comprises 0.1 to 50%, and more preferably from 0.5% to 30%, by total weight of the composition of at least one composite material as defined previously.

Cosmetic compositions according to the invention may contain additives normally used in cosmetics: biological active ingredients (anti-age, anti-greasy skin, brightening,
whitening, anti-perspiration, anti-oxidants, etc.), solar filters, film forming polymers, oils and fats, moisturizers, emollients and other cosmetic excipients.

Compositions according to the invention may be in the form of gel, serum, direct, inverse or multiple emulsions, sticks, hot-poured products, loose or compact powders.

The invention also relates to a method for preparation of a composite material as defined above, said method comprising the preparation firstly of at least one destructured gel of gelifiable water-soluble polysaccharide and also at least one starch gel, and the mix of these gels with one or several inorganic and/or organic fillers.

The invention also relates to a cosmetic care method including topical application of a composition according to the invention on a keratinous material, and preferably on the skin.

Advantageously, this method reduces visible skin wrinkles, particularly on the face, and especially around the eyes and on the eyelids.

The invention relates particularly to a method of matifying the skin in the zone on which the composition according to the invention is applied, without fluffing on the skin.

According to one variant, the cosmetic care method combines an effect to reduce visible skin wrinkles or to matify the skin, and a feeling of freshness during application of said composition.

This freshness effect may be similar to a moisturizing feeling.

We will now give concrete examples illustrating the invention, but that are in no way limitative.

Note that all percentages given in the examples are given by weight, unless specified otherwise, and the temperature is expressed in degrees Celsius unless specified otherwise, and the pressure is atmospheric pressure, unless specified otherwise. In the examples, quantities of the ingredients of the compositions are given as a % by weight with respect to the total weight of the composition.

**EXAMPLES:**

1- **DEMONSTRATING MATIFYING PROPERTIES OF AQUEOUS PSEUDO RESINS**

The following 15 compositions were prepared and then evaluated for their matifying and fluffing property during application on the skin (visual observation and marking for these two parameters). The samples are obtained by simple mixing with a mixer blade at ambient temperature.
Table V.

<table>
<thead>
<tr>
<th>Example No.</th>
<th>starch gel 1 (10%)</th>
<th>starch gel 2 (10%)</th>
<th>Agar Agar gel (4%)</th>
<th>Perlite</th>
<th>Tospearl</th>
<th>Orgasol</th>
<th>Silica SB 700</th>
<th>Glycerine</th>
<th>Matteness</th>
<th>Fluffing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>92.2</td>
<td>-</td>
<td>-</td>
<td>6.8</td>
<td>-</td>
<td>-</td>
<td>1.0</td>
<td>++</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
<td>91.8</td>
<td>-</td>
<td>-</td>
<td>7.2</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>3</td>
<td>88.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5.2</td>
<td>6.5</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>86.5</td>
<td>2.7</td>
<td>4.1</td>
<td>-</td>
<td>-</td>
<td>6.8</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>5</td>
<td>34.4</td>
<td>-</td>
<td>58.3</td>
<td>-</td>
<td>6.4</td>
<td>-</td>
<td>-</td>
<td>0.9</td>
<td>+++</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>96.0</td>
<td>-</td>
<td>-</td>
<td>1.4</td>
<td>-</td>
<td>-</td>
<td>2.5</td>
<td>9.3</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>7</td>
<td>45.2</td>
<td>45.2</td>
<td>-</td>
<td>-</td>
<td>8.4</td>
<td>-</td>
<td>1.2</td>
<td>6.7</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>58.6</td>
<td>38.9</td>
<td>-</td>
<td>1.5</td>
<td>-</td>
<td>-</td>
<td>1.0</td>
<td>1.0</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
<td>-</td>
<td>91.8</td>
<td>-</td>
<td>2.9</td>
<td>-</td>
<td>4.3</td>
<td>1.0</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>-</td>
<td>-</td>
<td>91.8</td>
<td>-</td>
<td>4.3</td>
<td>-</td>
<td>2.9</td>
<td>1.0</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>90.6</td>
<td>-</td>
<td>-</td>
<td>1.3</td>
<td>1.3</td>
<td>-</td>
<td>6.7</td>
<td>4.2</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>12</td>
<td>93.5</td>
<td>-</td>
<td>2.8</td>
<td>-</td>
<td>-</td>
<td>2.8</td>
<td>1.0</td>
<td>4.2</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>13</td>
<td>41.5</td>
<td>41.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.6</td>
<td>4.6</td>
<td>7.7</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>14</td>
<td>31.3</td>
<td>31.3</td>
<td>31.3</td>
<td>1.2</td>
<td>-</td>
<td>1.2</td>
<td>1.2</td>
<td>2.6</td>
<td>+++</td>
<td>-</td>
</tr>
</tbody>
</table>

For matteness:
+ means satin matte appearance on the hand
++ means matte appearance on the hand
+++ means matte and soft-focus appearance on the hand

For fluffing:
+ means slight fluff during application
++ means fluff during application
+++ means a lot of fluff during application
- means no fluff during application

Agar agar gels may be obtained using an OLSA® pilot mixer.
The chosen agar agar grade is the AGAR AGAR FOOD GRADE marketed by the SETALG Company. Agar agar gels were made using 4% of agar agar in water.
Starch gels were made using 10% starch in water.

Starch 1: SODIUM CARBOXYMETHYL STARCH (Primojel DMV)
Starch 2: STARCH ACETATE (Perfectamyl Avebe)
The gels are made using the methods described above.
The solvated pseudo resins in examples 5 and 14 that include a gelifiable water-soluble polysaccharide gel (Agar agar), a starch gel and inorganic and/or organic fillers
are in the form of gels that are characterized by a matte (or soft-focus) deposit without any fluff on the skin.

Solvated pseudo-resins that do not include a combination of a gelifiable water-soluble polysaccharide gel and a starch gel cannot obtain the required properties in terms of matteness and lack of fluff.

2- EXAMPLES OF FORMULATIONS

The following cosmetic composition was produced:

Anti-age cream No. 1

<table>
<thead>
<tr>
<th>Phase</th>
<th>INCI name</th>
<th>Formula for 100g</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ARLACEL 165 FL</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td>STEARYLIC ALCOHOL</td>
<td>1.00</td>
</tr>
<tr>
<td>B</td>
<td>WATER</td>
<td>64.90</td>
</tr>
<tr>
<td></td>
<td>METHYLPARABEN</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>PHENOXYETHANOL</td>
<td>0.70</td>
</tr>
<tr>
<td>C</td>
<td>DIMETHICONE</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>CARBOPOL 981</td>
<td>0.30</td>
</tr>
<tr>
<td>D</td>
<td>TEA</td>
<td>0.30</td>
</tr>
<tr>
<td>E</td>
<td>EXAMPLE No. 5</td>
<td>20.00</td>
</tr>
</tbody>
</table>

Procedure
- heat phase B to about 70°C.
- heat phase A to about 70°C.
- make the emulsion by incorporating phase A into phase B.
- at 30°C, incorporate the remaining phases and continue agitating until complete cooling.

Evaluation of the formulation in vivo:

Randomized applications of the formulation on ½ face on 6 Caucasian women with wrinkles and little wrinkles.

The formulation is characterized by a reduction in visible dehydration lines around the eyes and on the face and wrinkles in the lower eyelid. No fluff appeared during application.
During application, women perceived a feeling of freshness similar to a skin moisturizing effect.
CLAIMS

1.- A composite material comprising, and preferably composed of, at least one destructured gel of a gelifiable water-soluble polysaccharide, at least one starch gel, and one or several inorganic and/or organic diffusing fillers, and comprising in percentage by mass of its total mass: 20% to 79.5% of destructured gel of gelifiable water-soluble polysaccharide, 20% to 79.5% of starch gel, and 0.5% to 10% of diffusing fillers.

2.- The composite material according to claim 1, characterized in that the gelifiable water-soluble polysaccharide is chosen from among agar agar, agarose, a carrageenan, a gellan, a pectin, an alginate, a furcellarane, and any mixture thereof.

3.- The composite material according to claim 2, characterized in that the gelifiable water-soluble polysaccharide is agar agar or agarose.

4.- The composite material according to any one of claims 1 to 3, characterized in that the starch gel is chosen from among a non-modified starch; an acid-treated starch; a base-treated starch; an oxidized starch, an enzyme-treated starch; and also preferably chosen from among a monostarch phosphate; a glycerol starch; a distarch phosphate esterified with sodium trimetaphosphate; a phosphated distarch phosphate; an acetylated distarch phosphate; a starch acetate esterified with acetic anhydride; a starch acetate esterified with vinyl acetate; an acetylated distarch adipate; an acetylated distarch glycerol; a hydroxypropylic starch; a hydroxypropylic distarch phosphate; a hydroxypropylic distarch glycerol; a sodium starch succinate octenyl, and any mixture thereof.

5.- The composite material according to any one of claims 1 to 4, characterized in that the inorganic and/or organic diffusing fillers are chosen from matifying fillers, and are for example chosen from among porous microparticles of silica; polytetrafluoroethylene powders; silicone resin powders; hollow hemispherical silicone particles; acrylic copolymer powders; wax powders; polyethylene powders; cross-linked elastomeric organopolysiloxane powders coated with silicone resin; polyamide powders; and mixtures thereof.

6.- The composite material according to any one of claims 1 to 5, characterized in that it comprises in percentage by mass of its total mass: from 0.5 to 10% of gelifiable water-soluble polysaccharide, 0.5 to 20% of starch and 0.5 to 20% of inorganic and/or organic fillers.

7.- A cosmetic composition comprising at least one composite material such as defined in any one of claims 1 to 6, physiologically acceptable excipients and possibly one or several active ingredients.
8.- The cosmetic composition according to claim 7, characterized in that it comprises 0.1 to 50% of at least one composite material as defined in any one of claims 1 to 6.

9.- The cosmetic composition according to claim 7 or 9, characterized in that it is in the form of gel, serum, direct, inverse or multiple emulsions, sticks, hot-poured products, loose or compact powders.

10.- A method for preparing a composite material as defined in any one of claims 1 to 6, characterized in that it comprises the preparation on one hand of at least one destructured gel of gelifiable water-soluble polysaccharide and on the other hand of at least one starch gel, and the mix of these gels with one or several inorganic and/or organic fillers.

11.- The method according to claim 10, wherein said destructured gel of gelifiable water-soluble polysaccharide is prepared by destructuring by shearing while cooling a gelifiable water-soluble polysaccharide solution.

12.- A method of cosmetic care including topical application of a composition according to any one of claims 7 to 9 on a keratinous material.

13.- The method according to claim 12, characterized in that it reduces visible skin wrinkles and little wrinkles, particularly on the face, and especially around the eyes and on the eyelids.

14.- A method of cosmetic care for matifying the skin in the zone on which a cosmetic composition is applied, without fluffing on the skin, said method including topical application on a keratinous material of a cosmetic composition comprising at least one composite material comprising, and preferably composed of, at least one destructured gel of a gelifiable water-soluble polysaccharide, at least one starch gel, and one or several inorganic and/or organic fillers, and preferably of a composite material according to any one of claims 1 to 6, said cosmetic composition further comprising physiologically acceptable excipients and possibly one or several active ingredients.

15.- The method according to any one of claims 12 to 14, characterized in that it combines an effect to reduce visible skin wrinkles or to matify the skin, and a feeling of freshness during application of said composition.