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(54) Title: COSMETIC SUNSCREEN COMPOSITION AND ITS USE

(57) Abstract: The present invention is directed to cosmetic sunscreen compositions comprising (a) emulsified carnauba wax, (b) one or more UV filters, (c) one or more polymers, (d) one or more solvents, and (e) one or more fatty compounds. The present invention is also directed to the use of a cosmetic sunscreen composition

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COSMETIC SUNSCREEN COMPOSITION AND ITS USE

FIELD OF THE INVENTION

The present invention is directed to cosmetic sunscreen compositions
5 comprising (a) emulsified carnauba wax, (b) one or more UV filters, (c) one or more
polymers, (d) one or more solvents, and (e) one or more fatty compounds. The present
invention is also directed to the use of a cosmetic sunscreen composition.

BACKGROUND OF THE INVENTION

The photoprotection of keratinous materials, including both skin and hair,
10 is considered of great importance in order to protect from sun-damage, sunburn, photo-
aging, as well as to decrease the chances of skin cancer development caused by
exposure to ultraviolet ("UV") radiation. There are typically two types of UVA/UVB
sunscreen compositions used to accomplish photoprotection, namely, inorganic UV
filters and organic UV filters.

15 The degree of UV protection afforded by a sunscreen composition is
directly related to the amount and type of UV filters contained therein. The higher the
amount of UV filters, the greater the degree of UV protection (UVA/UVB).

Particularly, sunscreen compositions must provide good protection
against the sun, a measure of which is the Sun Protection Factor (SPF) value, yet have
20 satisfactory sensory perception, such as a smooth but not greasy feel upon application.
This combination of properties has usually been achieved with SPF boosters,
particularly using microscopic plastic particles.

The formulation of environmentally-friendly cosmetic products, which are
designed and developed considering environmental issues, is becoming a major goal
25 in an effort to meet global challenges.

It is therefore essential to propose more sustainable compositions,
preparation processes and ingredients to address these environmental concerns.

In this context, it is important to develop new cosmetic compositions with
a better carbon footprint, particularly by promoting the use of materials of natural origin
30 while reducing the use of compounds of petrochemical origin.

One of the commonly used ingredients for cosmetic sunscreen
compositions is styrene/acrylates copolymer, microscopic plastic particles which acts
as a SPF booster. However, there is a rising concern regarding the use of microplastics
in cosmetic composition due to their possible environmental impact. There are studies

which state that microplastics may be absorbed into cells, and they may also contaminate other animal tissues and water.

Furthermore, water-in-oil compositions are highly sought-after galenical forms, due to the ease with which they are applied to the skin and are commonly used
5 in cosmetics in the care field, particularly in cosmetic sunscreen compositions.

For said reasons, there is a need to develop new water-in-oil cosmetic sunscreen compositions that are stable, have good sensory properties and deliver high SPF without using microplastics.

The inventors of the present invention have surprisingly managed to
10 develop a water-in-oil cosmetic sunscreen composition with high SPF, with satisfactory balance between UVA and UVB protection, with good sensorial attributes and stability that is free of microplastics by incorporating emulsified carnauba wax.

SUMMARY OF THE INVENTION

The present invention is directed to cosmetic sunscreen compositions
15 comprising (a) emulsified carnauba wax, (b) one or more UV filters, (c) one or more polymers, (d) one or more solvents, and (e) one or more fatty compounds. The present invention is also directed to the use of a cosmetic sunscreen composition

Other features and advantages of the present invention will be apparent from the following more detailed description of the desirable embodiments which
20 illustrates, by way of example, the principles of the invention.

DETAILED DESCRIPTION OF THE INVENTION

In an embodiment, the cosmetic sunscreen composition of the present invention comprises:

- (a) emulsified carnauba wax;
- 25 (b) one or more UV filters;
- (c) one or more polymers selected from hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer and polyamide-8, and combinations thereof;
- (d) one or more solvents selected from glycerin, PEG-20, isododecane, caprylyl glycol, propanediol, and combinations thereof;
- 30 (e) one or more fatty compounds selected from diisopropyl adipate, isononyl isononanoate, dicaprylyl ether, diisopropyl sebacate, dicaprylyl carbonate, polyglyceryl-6 polyricinoleate, and combinations thereof.

In a preferred embodiment, the amount of emulsified carnauba wax in the cosmetic sunscreen composition of the present invention is from about 0.5 % to about

20.0 % by weight, preferably from about 1.0 % to about 5.0 % by weight, such as from 2.0 % to about 4.0 % by weight, including all ranges and sub-ranges there between, based on the total weight of the cosmetic sunscreen composition.

In one embodiment, the one or more polymers ranges from about 0.01 %
5 to about 10.0 % by weight, such as from about 0.1 % to about 0.5 % by weight, from about 1.5 % to about 3.0 % by weight, from about 1.75 % to about 2.5 % by weight, including all ranges and sub-ranges there between, based on the total weight of the cosmetic sunscreen composition.

In one embodiment, the one or more solvents ranges from 0.01 to 30.0 %
10 by weight, such as from about 10.0 % to about 20.0 % by weight, from about 4.0 % to about 5.0 % by weight, from about 5.0 to about 15.0 % by weight, including all ranges and sub-ranges there between, based on the total weight of the cosmetic sunscreen composition.

In one embodiment, the one or more fatty compounds ranges from about
15 0.1 % to about 40.0 % by weight, such as from about 21.0 % to 26.0 % by weight, from about 5.0 % to about 10.0 % by weight, including all ranges and sub-ranges there between, based on the total weight of the cosmetic sunscreen composition.

In a further embodiment, the cosmetic sunscreen composition of the
20 present invention further comprises cosmetically acceptable ingredients selected from perfume/fragrance, preserving agents, additional solvents, active compounds, vitamins, fillers, silicones, pigments, and combinations thereof. In a preferred embodiment, the cosmetic sunscreen composition of the present invention further comprises water as a solvent.

Preferably, the cosmetic sunscreen composition of the present invention
25 is a water-in-oil composition.

In a preferred embodiment, the cosmetic sunscreen composition of the present invention may present a Sun Protection Factor ranging from 30 to 99.

In various embodiments, the cosmetic sunscreen composition of the present invention may present a Sun Protection Factor of 30, 35, 40, 45, 50, 55, 60,
30 65, 70, 75, 80, 90 or 99.

In an embodiment, the cosmetic sunscreen composition of the present invention may present a Sun Protection Factor of 50.

In an embodiment, the cosmetic sunscreen composition of the present invention may present a Sun Protection Factor of 60.

In an embodiment, the cosmetic sunscreen composition of the present invention may present a Sun Protection Factor of 70.

In an embodiment, the cosmetic sunscreen composition of the present invention may present a Sun Protection Factor of 80.

5 In an embodiment, the cosmetic sunscreen composition of the present invention may present a Sun Protection Factor of 90.

In an embodiment, the cosmetic sunscreen composition of the present invention may present a Sun Protection Factor of 99.

10 The cosmetic sunscreen composition of the present invention can be used as a daily product for the skin.

The cosmetic sunscreen composition of the present invention is free of is styrene/acrylates copolymer.

In another embodiment, the present invention is related to the use of the cosmetic sunscreen composition for the manufacture of a product to be used as
15 sunscreen daily product.

Terms

As used herein, the expression “at least” means one or more and thus includes individual components as well as mixtures/combinations.

20 Other than in the operating examples, or where otherwise indicated, all numbers expressing quantities of ingredients and/or reaction conditions are to be understood as being modified in all instances by the term “about,” meaning within +/- 5% of the indicated number.

As used herein, all ranges provided are meant to include every specific range within, and combination of sub ranges between, the given ranges. Thus, a range
25 from 1-5, includes specifically 1, 2, 3, 4 and 5, as well as sub ranges such as 2-5, 3-5, 2-3, 2-4, 1-4, etc. All ranges and values disclosed herein are inclusive and combinable. For examples, any value or point described herein that falls within a range described herein can serve as a minimum or maximum value to derive a sub-range, etc.

Emulsified carnauba wax

30 As used herein, the “emulsified carnauba wax” relates to an emulsified and micronized carnauba wax, in a fine and homogeneous dispersion (micro-dispersion). Particularly, the emulsified carnauba wax is an oil-in-water-emulsion (O/W) that comprises solid carnauba wax, water and at least one surfactant, marketed under the trademark Hostapur CW by Clariant.

In a preferred embodiment, the amount of solid carnauba wax in the emulsified carnauba wax is at least about 30.0 % by weight, relative to the total weight of the emulsified carnauba wax, preferably from about 30.0 % by weight to about 50.0 % by weight, based on the total weight of the emulsified carnauba wax.

5 Solid carnauba wax is a hard wax scraped from the leaves and leaf stems of carnauba palms, *Copernicia cerifera*. The carnauba wax comprises esters of C₁₈-C₃₂ fatty acids, and C₂₈-C₃₄ alcohols, also containing high amounts of hydroxy acid esters and melting points around 80 and 86 °C.

10 Additionally, the solid carnauba wax usually comprises from about 80% by weight to about 85% by weight of fatty esters, from about 1% by weight to about 5% by weight of alcohols, from about 1% by weight to about 5% by weight of hydrocarbons, from about 1% by weight to about 5% by weight of free acids, from about 1% by weight to about 6% by weight of resins, from about 1% by weight to about 5% by weight of lactic components and from about 0.1% by weight to about 2% by weight of humidity.

15 In a preferred embodiment, the amount of water in the emulsified carnauba wax of the present invention is at least about 40% by weight, relative to the total weight of the emulsified carnauba wax, preferably from about 40% by weight to about 60% by weight, based on the total weight of the emulsified carnauba wax.

20 The at least one surfactant of the emulsified carnauba wax is selected from the group of anionic surfactants, non-ionic surfactants and combinations thereof.

Non-limiting examples of anionic surfactants for the embodiment of the present invention are selected from the group comprising alkyl sulfates, alkyl phosphates, alkyl ether sulfates, alkyl ether phosphates, alkylamido ether sulfates, alkylaryl polyether sulfates, monoglyceride sulfates, sulfonates, such as
25 alkylsulfonates, alkylamide sulfonates, alkylarylsulfonates, alpha-olefin sulfonates, paraffin sulfonates, sulfosuccinates, alkylsulfosuccinates, alkyl ether sulfosuccinates, alkylamide sulfosuccinates, alkyl sulfoacetates, acylsarcosinates, acylglutamates, alkylsulfosuccinamates, taurates and N-acyl N-methyltaurates, isethionates, N-acylisethionates, N-acyltaurates, phosphates and alkyl phosphates, salts of alkyl
30 monoesters and polyglycoside-polycarboxylic acids, acyllactylates, salts of D-galactoside uronic acids, salts of alkyl ether carboxylic acids, salts of alkyl aryl ether carboxylic acids, and salts of alkylamido ether carboxylic acids; or the non-salified forms of all of these compounds, the alkyl and acyl groups of all of these compounds containing from 6 to 24 carbon atoms and the aryl group denoting a phenyl group.

Some of these compounds may be oxyethylenated and then preferably comprise from 1 to 50 ethylene oxide units.

Non limiting examples of non-ionic surfactants for the embodiment of the present invention include, for example, alkyl- and polyalkyl- esters of glycerol, such as polyglyceryl-3 dicitrate/stearate, mixtures of alkyl- and polyalkyl- esters of glycerol with polyglyceryl, such as polyglyceryl-3 methylglucose distearate, oxyalkylenated (more particularly polyoxyethylenated) fatty acid esters of glycerol; oxyalkylenated fatty acid esters of sorbitan; oxyalkylenated (oxyethylenated and/or oxypropylenated) fatty acid esters; oxyalkylenated (oxyethylenated and/or oxypropylenated) fatty alcohol ethers; sugar esters, for instance sucrose stearate; fatty alcohol ethers of sugars, especially alkyl polyglucosides (APGs) such as decyl glucoside, lauryl glucoside, cetostearyl glucoside, optionally as a mixture with cetostearyl alcohol, and also arachidyl glucoside, for example in the form of a mixture of arachidyl alcohol, behenyl alcohol and arachidyl glucoside. According to one particular embodiment of the invention, the mixture of the alkyl polyglucoside as defined above with the corresponding fatty alcohol may be in the form of a self-emulsifying composition. Mention may also be made of lecithins and derivatives (e.g. Biophilic), sugar esters and sodium stearyl lactylate.

In a preferred embodiment, the surfactants used in the emulsified carnauba wax are isotridecyl phosphate and laureth-23.

The emulsified carnauba wax of the present invention may also comprise additional ingredients such as preserving agents and solvents. Non-limiting example of preserving agent which can be used in accordance with the invention includes phenoxyethanol. Non-limiting example of solvent which can be used in accordance with the invention includes glycerin.

UV Filter

The cosmetic sunscreen composition of the present invention comprises one or more UV filters. Preferably, the one or more UV filters of the cosmetic sunscreen composition of the present invention is selected from organic UV filters, inorganic UV filters, and combinations thereof.

Non-limiting suitable UV filters of the present invention could be as follows:

Oil-soluble organic sunscreen ingredient

The "oil-soluble organic sunscreen ingredient" means any organic compound for screening out UV radiation, which can be fully dissolved in molecular

form or miscible in an oil phase or which can be dissolved in colloidal form (for example in micellar form) in an oil fatty phase.

Non-limiting examples of oil-soluble organic sunscreen ingredients useful in the invention include, for example, cinnamic derivatives; anthranilates; salicylic derivatives; dibenzoylmethane derivatives; camphor derivatives; benzophenone derivatives; diphenylacrylate derivatives; triazine derivatives; benzotriazole derivatives; benzalmalonate derivatives, especially those cited in patent US5624663; benzimidazole derivatives; imidazolines; bis-benzoazolyl derivatives as described in patents EP669323 and US2463264; p-aminobenzoic acid (PABA) derivatives; methylene bis(hydroxyphenylbenzotriazole) derivatives as described in applications US5237071, US5166355, GB2303549, DE19726184 and EP893119; benzoxazole derivatives as described in patent applications EP0832642, EP1027883, EP1300137 and DE10162844; screening polymers and screening silicones such as those described especially in patent application WO 93/04665; dimers derived from alkylstyrene such as those described in patent application DE 19855649; 4,4-diarylbutadienes such as those described in patent applications EP0967200, DE19746654, DE19755649, EP-A-1008586, EP1133980 and EP1133981, merocyanine derivatives such as those described in patent applications WO 04/006878, WO 05/058269 and WO 06/032741; and combinations thereof, the entire contents of the patents and patent applications being incorporated by reference in their entirety.

As examples of other suitable oil-soluble organic sunscreen ingredients, mention may be made of those denoted herein below under their INCI name:

Cinnamic derivatives:

Examples of suitable cinnamic derivatives include, but are not limited to, ethylhexyl methoxycinnamate, isopropyl methoxycinnamate, isoamyl methoxycinnamate, DEA methoxycinnamate, diisopropyl methylcinnamate, glyceryl ethylhexanoate dimethoxycinnamate.

Dibenzoylmethane derivatives:

Examples of suitable dibenzoylmethane derivatives include, but are not limited to, butyl methoxydibenzoylmethane and isopropyl dibenzoylmethane.

Salicylic derivatives:

Examples of suitable salicylic derivatives include, but are not limited to, homosalate, ethylhexyl salicylate, dipropylene glycol salicylate and TEA salicylate.

Beta, beta -Diphenylacrylate derivatives:

Examples of suitable beta, beta -diphenylacrylate derivatives include, but are not limited to, octocrylene and etocrylene.

Benzophenone derivatives:

5 Examples of suitable benzophenone derivatives include, but are not limited to, benzophenone-1, benzophenone-2, benzophenone-3 or oxybenzone, benzophenone-4, benzophenone-5, benzophenone-6, benzophenone-8, benzophenone-9, benzophenone-12, n-hexyl 2-(4-diethylamino-2-hydroxybenzoyl)benzoate +” or as a mixture with octyl methoxycinnamate.

10 Benzylidenecamphor derivatives:

Examples of suitable benzylidenecamphor derivatives include, but are not limited to, 3-benzylidene camphor manufactured, 4-methylbenzylidene camphor, polyacrylamidomethyl benzylidene camphor manufactured.

Phenylbenzotriazole derivatives:

15 Examples of suitable phenylbenzotriazole derivatives include, but are not limited to, drometizole trisiloxane, methylene bis-benzotriazolyl tetramethylbutylphenol, or in micronized form as an aqueous dispersion.

Triazine derivatives:

20 Examples of suitable triazine derivatives include, but are not limited to, bis-ethylhexyloxyphenol methoxyphenyl triazine, ethylhexyl triazone, diethylhexyl butamido triazone, 2,4,6-tris(dineopentyl 4'-aminobenzalmalonate)-s-triazine, 2,4,6-tris(diisobutyl 4'-aminobenzalmalonate)-s triazine, 2,4-bis(dineopentyl 4'-aminobenzalmalonate)-6-(n-butyl 4'-aminobenzoate)-s-triazine, symmetrical triazine screening agents described in patent US 6,225,467, patent application WO
25 2004/085412 (see compounds 6 and 9) or the document "Symmetrical Triazine Derivatives" IP.COM Journal, IP.COM Inc., West Henrietta, NY, US (20 September 2004), especially 2,4,6-tris(biphenyl)-1,3,5-triazines (in particular 2,4,6-tris(biphenyl-4-yl)-1,3,5-triazine and 2,4,6-tris(terphenyl)-1,3,5-triazine, which is included in patent applications WO 06/035000, WO 06/034982, WO 06/034991, WO 06/035007, WO
30 2006/034992 and WO 2006/034985).

Anthranilic derivatives:

An example of a suitable anthranilic derivative includes, but is not limited to, methyl anthranilate.

Imidazoline derivatives:

An example of a suitable imidazoline derivative includes, but is not limited to, ethylhexyl dimethoxybenzylidene dioxoimidazoline propionate.

Benzalmalonate derivatives:

5 An example of a suitable benzalmalonate derivative includes, but is not limited to, polyorganosiloxane containing benzalmalonate functions, for instance polysilicone-15.

4,4-Diarylbutadiene derivatives:

An example of a suitable 4,4-diarylbutadiene derivative includes, but is not limited to, 1-Dicarboxy(2,2'-dimethylpropyl)-4,4-diphenyl-butadiene.

10 Benzoxazole derivatives:

An example of suitable benzoxazole derivative includes, but is not limited to, 2,4-bis[5-(1-dimethylpropyl)benzoxazol-2-yl-(4-phenyl)imino]-6-(2-ethylhexyl) imino-1,3,5-triazine, and combinations thereof.

15 Preferably, the oil-soluble organic sunscreen ingredient will be chosen from butyl methoxydibenzoylmethane, ethylhexyl salicylate, ethylhexyl triazone, octocrylene, drometrizole trisiloxane, bis-ethylhexyloxyphenol methoxyphenyl triazine, and combinations thereof.

The oil-soluble organic sunscreen ingredient is preferably present in the composition according to the invention in an amount of from about 3% to about 25%
20 by weight, preferably in an amount of from about 5% to about 20% by weight, and most preferably about 7% to about 18% by weight, based on the total weight of the composition.

Water-soluble organic sunscreen ingredient

25 The "water-soluble organic sunscreen ingredient" means any organic compound for screening out UV radiation, which can be fully dissolved in molecular form or miscible in a liquid aqueous phase or which can be dissolved in colloidal form (for example in micellar form) in a liquid aqueous phase.

30 Non-limiting examples of water-soluble organic sunscreen ingredients useful in the invention include, for example, terephthalylidene dicamphor sulfonic acid, phenylbenzimidazole sulfonic acid, benzophenone-4, aminobenzoic acid (PABA), 4-Bis(polyethoxy)-para-aminobenzoic acid polyethoxyethyl ester (PEG-25 PABA), camphor benzalkonium methosulfate, methylene bis-benzotriazolyl tetramethylbutylphenol (Bisoctrizole), disodium phenyl dibenzimidazole tetrasulfonate (Bisdisulizole disodium), and tris-biphenyl triazine; their derivatives and corresponding

salts; naphthalene bisimide derivatives such as those described in European patent application EP1990372 A2, the entire contents of which is hereby incorporated by reference; and cinnamido amine cationic quaternary salts and derivatives such as those described in United States Patent 5,601,811, the entire contents of which is hereby incorporated by reference, and combinations thereof.

The salts of the compounds that may be used according to the invention are chosen in particular from salts of alkali metals, for example sodium or potassium; salts of alkaline-earth metals, for example calcium, magnesium or strontium; metal salts, for example zinc, aluminum, manganese or copper; salts of ammonium of formula NH_4^+ ; quaternary ammonium salts; salts of organic amines, for instance salts of methylamine, dimethylamine, trimethylamine, triethylamine, ethylamine, 2-hydroxyethylamine, bis(2-hydroxyethyl)amine or tris(2-hydroxyethyl)amine; lysine or arginine salts. Salts chosen from sodium, potassium, magnesium, strontium, copper, manganese or zinc salts are preferably used. The sodium salt is preferably used.

Preferably, the water-soluble organic sunscreen ingredient will be chosen from terephthalylidene dicamphor sulfonic acid, methylene bis-benzotriazolyl tetramethylbutylphenol, and combinations thereof.

The water-soluble organic sunscreen ingredient is preferably present in the composition according to the invention in an amount of from about 0.1% to about 10% by weight, preferably in an amount of from about 0.5% to about 8% by weight, and most preferably about 1% to about 7% by weight, based on the total weight of the composition.

Preferably, the one or more UV filters of the cosmetic sunscreen composition of the present invention is selected from drometrizole trisiloxane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl methoxydibenzoylmethane, diethylamino hydroxybenzoyl hexyl benzoate, phenylbenzimidazole sulfonic acid, titanium dioxide, terephthalylidene dicamphor sulfonic acid, octocrylene, and combinations thereof.

In a more preferred embodiment, the one or more UV filter of the cosmetic sunscreen composition of the present invention selected from drometrizole trisiloxane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl methoxydibenzoylmethane, diethylamino hydroxybenzoyl hexyl benzoate, and combinations thereof.

In another more preferred embodiment, the one or more UV filter of the

cosmetic sunscreen composition of the present invention is selected from phenylbenzimidazole sulfonic acid, butyl methoxydibenzoylmethane, ethylhexyl salicylate, titanium dioxide, ethylhexyl triazone, terephthalylidene dicamphor sulfonic acid, octocrylene, homosalate, bis-ethylhexyloxyphenol methoxyphenyl triazine, and combinations thereof. In a further preferred embodiment, the one or more UV filter of the cosmetic sunscreen composition of the present invention is a combination of phenylbenzimidazole sulfonic acid, butyl methoxydibenzoylmethane, ethylhexyl salicylate, titanium dioxide, ethylhexyl triazone, terephthalylidene dicamphor sulfonic acid, octocrylene, homosalate, and bis-ethylhexyloxyphenol methoxyphenyl triazine.

In another additional preferred embodiment, the one or more UV filter of the cosmetic sunscreen composition of the present invention is a combination of butyl methoxydibenzoylmethane, ethylhexyl salicylate, ethylhexyl triazone, homosalate and octocrylene.

In one embodiment, the one or more UV filters of the cosmetic sunscreen composition of the present invention ranges from about 20.0 % to about 35.0 % by weight, from about 25.0 % to about 30.5 % by weight, from about 20.0 % to about 30.0 % by weight, from about 22.0 % to about 26.0 % by weight, including all ranges and sub-ranges there between, based on the total weight of the cosmetic sunscreen composition.

Additional Polymers

Further to the polymers hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer and/or polyamide-8, the cosmetic sunscreen composition of the present invention may further comprise one or more polymers.

Possible additional polymers may be selected from rheology modifier polymers and anionic polymers which may be water-soluble or water-dispersible at a pH of 7 and at room temperature (25°C). According to the present invention, the suitable polymers of the present invention could be as follows.

The rheology modifier polymers are pre-neutralized and preferably selected from taurate polymers. Such polymers comprise an ionic monomer portion, 2-acrylamido-2-methylpropane sulfonic acid (AMPS), as well as a further, less polar monomer portion (vinylpyrrolidone or beheneth-25 methacrylate). These polymers are used as thickener and as stabilizer for oil-in-water emulsions and form extremely stable emulsions already at low concentrations. In particular, these polymers can be used in conjunction with almost any oil phase, comprising silicone oils, hydrocarbons/waxes

and ester oils.

Examples of taurate polymers are Acrylates/Vinyl Isodecanoate Crosspolymer (Stabylen 30 from 3V), Acrylates/C10-30 Alkyl Acrylate Crosspolymer (Pemulen TR1 and TR2), Carbomers (Aqua SF-1), Ammonium Acryloyldimethyltaurate/VP Copolymer (Aristoflex AVC from Clariant), Ammonium Acryloyldimethyltaurate/Beheneth-25 Methacrylate Crosspolymer (Aristoflex HMB from Clariant), Acrylates/Ceteth-20 Itaconate Copolymer (Structure 3001 from National Starch), Polyacrylamide (Sepigel 305 from SEPPIC), Non-ionic thickener, (Aculyn 46 from Rohm and Haas), or combinations thereof.

Anionic polymers may be polymers with anionic groups distributed along the polymer backbone. Anionic groups, which may include carboxylate, sulfonate, sulphate, phosphate, nitrate, or other negatively charged or ionizable groupings, may be disposed upon groups pendant from the backbone or may be incorporated in the backbone itself.

The anionic polymers may comprise at least one hydrophilic unit of olefinic unsaturated carboxylic acid type, and at least one hydrophobic unit exclusively of (C₁₀-C₃₀)alkyl ester of unsaturated carboxylic acid type.

In certain exemplary and non-limiting embodiments, the copolymers are chosen from the copolymers resulting from the polymerization of:

(1) at least one monomer of formula (I):



wherein R₁ is chosen from H or CH₃ or C₂H₅, providing acrylic acid, methacrylic acid, or ethacrylic acid monomers, and

(2) at least one monomer of (C₁₀-C₃₀)alkyl ester of unsaturated carboxylic acid type corresponding to the monomer of formula (II):



Non-limiting examples of (C₁₀-C₃₀)alkyl esters of unsaturated carboxylic acids are for example chosen from lauryl acrylate, stearyl acrylate, decyl acrylate, isodecyl acrylate, dodecyl acrylate and the corresponding methacrylates, such as lauryl methacrylate, stearyl methacrylate, decyl methacrylate, isodecyl methacrylate and dodecyl methacrylate, and combinations thereof.

Additionally, crosslinked polymers may be chosen according to further exemplary embodiments. For example, such polymers may be chosen from polymers

resulting from the polymerization of a mixture of monomers comprising:

(1) acrylic acid,

(2) an ester of formula (II) described above, in which R2 is chosen from H or CH3, R3 denoting an alkyl radical having from 12 to 22 carbon atoms, and

5 (3) a crosslinking agent, which is a well-known copolymerizable polyethylenic unsaturated monomer, such as diallyl phthalate, allyl (meth)acrylate, divinylbenzene, (poly)ethylene glycol dimethacrylate and methylenebisacrylamide.

For example, acrylate/C₁₀-C₃₀ alkyl acrylate copolymers (INCI name: Acrylates/C₁₀₋₃₀ Alkyl Acrylate Crosspolymer), such as the products sold by Lubrizol
10 under the trade names PEMULEN TR1, PEMULEN TR2, CARBOPOL 1382 and CARBOPOL EDT 2020 may be chosen.

Anionic polymers useful herein include, for example: Polyacrylic acid; Polymethacrylic acid; Carboxyvinylpolymer; acrylate copolymers such as Acrylate/C
10-30 alkyl acrylate crosspolymer, Acrylic acid/vinyl ester copolymer/AcrylatesNinyl
15 Isodecanoate crosspolymer, Acrylates/Palmeth-25 Acrylate copolymer, Acrylate/Steareth-20 Itaconate copolymer, and Acrylate/Celeth-20 Itaconate copolymer; sulfonate polymers such as Polysulfonic acid, Sodium Polystyrene Sulfonate supplied from Akzo Nobel under the tradename FLEXAN II, copolymers of
20 methacrylic acid and acrylamidomethylpropane sulfonic acid, and copolymers of acrylic acid and acrylamidomethylpropane sulfonic acid; carboxymethylcellulose; carboxy guar gum; copolymers of ethylene and maleic acid; and acrylate silicone polymer. In some instances, the anionic polymers include, for example, Carbomer
supplied from Noveon under the tradename CARBOPOL 981 and CARBOPOL 980; Acrylates/C₁₀₋₃₀ Alkyl Acrylate Crosspolymer having tradenames Pemulen TR-1,
25 PEMULEN TR-2, CARBOPOL 1342, CARBOPOL 1382, and CARBOPOL ETD 2020, all available from Noveon; sodium carboxymethylcellulose supplied from Hercules as CMC series; and Acrylate copolymer having a tradename Capigel supplied from Seppic; acrylates copolymer having the tradename CARBOPOL Aqua SF-1 and
30 available from Lubrizol as an aqueous dispersion, and acrylates crosspolymer-4 having the tradename CARBOPOL Aqua SF-2 and available from Lubrizol as an aqueous dispersion.

In an embodiment, the anionic polymer of the invention is carbomer which may be commercially available from the supplier Lubrizol under the tradename of CARBOPOL 980. Exemplary of non-ionic polymers could be as follows:

(i) hydroxyethylcellulose, for instance the product NATROSOL 250 HHR PC or NATROSOL 250 HHR CS sold by the company Ashland;

(ii) celluloses modified with groups comprising at least one fatty chain; examples that may be mentioned include:

5 - hydroxyethylcelluloses modified with groups comprising at least one fatty chain, such as alkyl, arylalkyl or alkylaryl groups, or combinations thereof, and in which the alkyl groups are preferably C₈-C₂₂, for instance the product NATROSOL Plus Grade 330 CS (C₁₆ alkyls) sold by the company Ashland, or the product BERMOCOLL EHM 100 sold by the company AkzoNobel; methyl
10 hydroxyethylcellulose; methyl ethyl hydroxyethylcellulose, known as the product STRUCTURE CEL 8000 M sold by the company AkzoNobel; or hydroxypropyl cellulose, known as the product KLUCEL MF PHARM HYDROXYPROPYLCELLULOSE sold by the company Ashland;

15 - hydroxyethylcelluloses modified with alkylphenyl polyalkylene glycol ether groups, such as the product Amercell Polymer HM-1500 (nonylphenyl polyethylene glycol (15) ether) sold by the company Amerchol; or

(iii) hydroxypropyl guar such as hydroxypropyl guar sold by as the product JAGUAR HP 105 by the company Rhodia and hydroxypropyl guar modified with groups comprising at least one fatty chain, such as the product Esaflor HM 22 (C₂₂
20 alkyl chain) sold by the company Lamberti, and the products RE210-18 (C₁₄ alkyl chain) and RE205-1 (C₂₀ alkyl chain) sold by the company Rhodia.

Surfactants

The cosmetic sunscreen of the present invention may comprise one or more suitable surfactants.

25 Non-limiting examples of surfactants suitable for the present invention are as follows.

Anionic surfactants useful in the invention include, for example, carboxylates (sodium 2-(2-hydroxyalkyloxy)acetate), amino acid derivatives (N-acylglutamates, N-acylglycinates or acylsarcosinates), alkyl sulfates, alkyl ether
30 sulfates and oxyethylenated derivatives thereof, sulfonates, isethionates and N-acylisethionates, taurates and N-acyl N-methyltaurates, sulfosuccinates, alkyl sulfoacetates, phosphates and alkyl phosphates, anionic derivatives of alkyl polyglycoside (acyl-D-galactoside uronate), and combinations thereof.

Non-limiting examples of non-ionic surfactants useful in the invention

include, for example, oxyalkylenated (more particularly polyoxyethylenated) fatty acid esters of glycerol; inulin lauryl carbamate; oxyalkylenated fatty acid esters of sorbitan; oxyalkylenated (oxyethylenated and/or oxypropylenated) fatty acid esters; polyglyceryl-6 distearate (and) jojoba esters (and) cetyl alcohol (and) polyglyceryl-3 beeswax; oxyalkylenated (oxyethylenated and/or oxypropylenated) fatty alcohol ethers; sugar esters, for instance sucrose stearate; fatty alcohol ethers of sugars, especially alkyl polyglucosides (APGs) such as decyl glucoside and lauryl glucoside, cetostearyl glucoside optionally as a mixture with cetostearyl alcohol, and also arachidyl glucoside, for example in the form of a mixture of arachidyl alcohol, behenyl alcohol and arachidyl glucoside. According to one particular embodiment of the invention, the mixture of the alkyl polyglucoside as defined above with the corresponding fatty alcohol may be in the form of a self-emulsifying composition. Mention may also be made of lecithins and derivatives (e.g. Biophilic), sugar esters and sodium stearyl lactylate.

Non-limiting examples of fatty acids chosen from C₁₂-C₂₂ higher fatty acids, such as myristic acid, oleic acid, linoleic acid, linolenic acid, lauric acid, palmitic acid, and combinations thereof.

Non-limiting examples of cationic surfactant are the ones that may be positively charged. This surfactant may bear one or more positive permanent charges or may contain one or more functional groups that are cationizable in the composition according to the disclosure. The cationic surfactant(s) may also be chosen from optionally polyoxyalkylenated, primary, secondary or tertiary fatty amines, or salts thereof, and quaternary ammonium salts, and combinations thereof. The fatty amines generally comprise at least one C₈-C₃₀ hydrocarbon-based chain.

Preferred surfactants may be selected from isotridecyl phosphate, laureth-23, octyldodecanol, octyldodecyl xyloside, PEG-30, dipolyhydroxystearate, PEG-8 laurate, sodium dodecylbenzenesulfonate, and combinations thereof.

Additional Ingredients

In addition to the essential components described hereinbefore, the composition of the invention may further comprise any usual cosmetically acceptable ingredient, which may be chosen especially from such as perfume/fragrance, preserving agents, additional solvents, active ingredients, additional fatty compounds, vitamins, fillers, silicones, pigments and combinations thereof.

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.

5 Non-limiting example of preserving agent which can be used in accordance with the invention include phenoxyethanol.

Suitable fillers of the invention could be as examples of oil-absorbing fillers: mica, silica, zea may (corn) starch, magnesium oxide, nylon-12, nylon-66, cellulose, polyethylene, talc, talc (and) methicone, talc (and) dimethicone, perlite, sodium silicate, pumice, PTFE, polymethyl methacrylate, oryza sativa (rice) starch, 10 aluminum starch octenylsuccinate, potato starch modified, alumina, silica silylate, calcium sodium borosilicate, magnesium carbonate, hydrated silica, dimethicone/vinyl dimethicone crosspolymer, sodium carboxymethyl starch.

The cosmetic sunscreen composition of the present invention may further comprise water as a solvent, present in a concentration from about from about 30.0 % 15 to about 70.0 % by weight, or from about 35.0 % to about 75.0 % by weight, or preferably from about 40.0 % to about 70.0 % by weight, and more preferably from about 45.0 % to about 65.0 % by weight, including ranges and sub-ranges there between, based on the total weight of the combinations and/or compositions of the present disclosure.

20 Suitable additional active ingredients include, but are not limited to, disodium EDTA, triethanolamine, and combinations thereof.

Exemplary of fat or oil materials include, but are not limited to, esters, fatty acids, synthetic oils, and hydrocarbons/paraffins, such as stearyl alcohol, myristic acid, palmitic acid. silicones mineral oil, plant/vegetable oils, and combinations thereof.

25 Non-limiting example of vitamins suitable for the composition of the present invention includes tocopherol.

Examples of silicones used in the composition of the present invention but not limited to are dimethicone, caprylyl methicone and cyclohexasiloxane.

The additional ingredients may represent from about 60.0 % to about 30 85.0 % by weight, such as from about 60.0 % to about 82.0 % by weight, or such as from about 65.0 to about 80.0 % by weight, based on the total weight of the composition of the invention.

EMBODIMENTS

Non-limitative embodiments of the sunscreen cosmetic composition of

the present invention may be as follows.

In a first embodiment, the cosmetic sunscreen composition may comprise:

5 (a) from about 1.0 % to about 5.0 % by weight, relative to the total weight of the composition, of emulsified carnauba wax;

(b) from about 25.0 % to about 30.5 % by weight, relative to the total weight of the composition, of bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl methoxydibenzoylmethane, diethylamino hydroxybenzoyl hexyl benzoate, drometrizole trisiloxane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, and
10 combinations thereof;

(c) from about 0.1 % to about 0.5 % by weight, relative to the total weight of the composition, of poly C₁₀₋₃₀ alkyl acrylate;

(d) from about 4.0 % to about 5.0 % by weight, relative to the total weight of the composition, of caprylyl glycol, glycerin, PEG-20, propanediol, and combinations
15 thereof;

(e) from about 21.0 % to about 26.0 % by weight, relative to the total weight of the composition, of dicaprylyl carbonate, dicaprylyl ether, diisopropyl sebacate, polyglyceryl-6 polyricinoleate, and combinations thereof.

In another embodiment, the cosmetic sunscreen composition may
20 comprise:

(a) from about 1.0 % to about 5.0 % by weight, relative to the total weight of the composition, of emulsified carnauba wax;

(b) from about 20.0 % to about 30.0 % by weight, relative to the total weight of the composition, of bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl
25 methoxydibenzoylmethane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, octocrylene, phenylbenzimidazole sulfonic acid, terephthalylidene dicamphor sulfonic acid, titanium dioxide, and combinations thereof;

(c) from about 1.5 % to about 3.0 % by weight, relative to the total weight of the composition, of hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer,
30 polyamide-8, and a combination thereof;

(d) from about 10.0 % to about 20.0 % by weight, relative to the total weight of the composition, of caprylyl glycol, glycerin, isododecane, and combinations thereof;

(e) from about 5.0 % to about 10.0 % by weight, relative to the total weight

of the composition, of diisopropyl adipate, isononyl isononanoate, stearic acid, and combinations thereof.

PROCESS OF MANUFACTURING THE SUNSCREEN COMPOSITION

An illustrative and non-limitative process of manufacturing the cosmetic
5 sunscreen composition according to the present invention may comprise the following steps:

a) Heating the oily phase containing fatty compounds, emollients and oily UV filters until 75°C;

a1) when present in the cosmetic composition, adding and heating the
10 polymers in a);

b) Heating the water phase containing until 70°C;

b1) when present in the composition, adding and heating polymers in
step b);

c) Adding the step (b) into step (a) homogenizing the mixture;

15 d) Adding the fillers, antioxidants, fragrance, and other possible solvents below 45°C homogenizing the mixture.

EXAMPLES

By way of non-limiting illustration, the invention will now be described with
reference to the following examples.

Examples 1 to 4

20 A suitable composition according to the state-of-the-art is as Example 1, and suitable compositions according to the present invention are as Examples 2 to 4, as follows:

Table 1 – Compositions of the state-of-the-art and of the present invention

Function	Ingredient	Ex. 1	Ex. 2	Ex. 3	Ex. 4
Active Compound	citric acid	0.01 - 1	0.01 - 1	0.01 - 1	0.01 - 1
Active Compound	p-anisic acid	0.01 - 1	0.01 - 1	0.01 - 1	0.01 - 1
Active Compound	sodium chloride	0.01-3	0.01-3	0.01-3	0.01-3
Active Compound	trisodium ethylenediamine disuccinate	0.1-2	0.1-2	0.1-2	0.1-2
Fatty	dicaprylyl carbonate	0.5-40	0.5-40	0.5-40	0.5-40

Function	Ingredient	Ex. 1	Ex. 2	Ex. 3	Ex. 4
Compound					
Fatty Compound	dicaprylyl ether	0.5-40	0.5-40	0.5-40	0.5-40
Fatty Compound	diisopropyl sebacate	0.5-40	0.5-40	0.5-40	0.5-40
Fatty Compound	polyglyceryl-6 polyricinoleate	0.1 - 10	0.1 - 10	0.1 - 10	0.1 - 10
Polymer	poly C ₁₀₋₃₀ alkyl acrylate	0.01- 10	0.01- 10	0.01- 10	0.01- 10
Preservative	phenoxyethanol			0.01 - 1	0.01 - 1
Silicon	dimethicone	0.1-20	0.1-20	0.1-20	0.1-20
Solvent	caprylyl glycol	0.1-1	0.1-1	0.1-1	0.1-1
Solvent	glycerin			0.01- 30	0.01- 30
Solvent	PEG-20	0.01- 10	0.01- 10	0.01- 10	0.01- 10
Solvent	propanediol	0.1-20	0.1-20	0.1-20	0.1-20
Solvent	water	Q.S	Q.S	Q.S	Q.S
Surfactant	isotridecyl phosphate	-		0.1 - 1	0.1 - 1
Surfactant	laureth-23	-		0.05-3	0.05-3
Surfactant	PEG-8 laurate	-	0.01-1		
Surfactant	sodium dodecylbenzenesulfonate	-	0.01-1		
UV Booster	<i>Copernicia cerifera</i> (Carnauba) wax	-		0.5-10	0.5-10
UV Booster	styrene/acrylates copolymer	-	0.5-10		
UV Filter	bis-ethylhexyloxyphenol methoxyphenyl triazine	0.1 - 10	0.1 - 10	0.1 - 10	0.1 - 10
UV Filter	butyl methoxydibenzoylmethane	0.1-5	0.1-5	0.1-5	0.1-5
UV Filter	diethylamino hydroxybenzoyl	0.1-10	0.1-10	0.1-10	0.1-10

Function	Ingredient	Ex. 1	Ex. 2	Ex. 3	Ex. 4
	hexyl benzoate				
UV Filter	drometrizole trisiloxane	0.1-15	0.1-15	0.1-15	0.1-15
UV Filter	ethylhexyl salicylate	0.1-5	0.1-5	0.1-5	0.1-5
UV Filter	ethylhexyl triazone	0.1-5	0.1-5	0.1-5	0.1-5
UV Filter	homosalate	0.1-15	0.1-15	0.1-15	0.1-15
Vitamin	tocopherol	0.05 - 2	0.05 - 2	0.05 - 2	0.05 - 2

Examples 5 to 8

Suitable compositions according to the state-of-the-art are as Examples 5 and 6, and suitable compositions according to the present invention are as Examples 7 to 8, as follows:

5 **Table 2 – Compositions of the state-of-the-art and of the present invention**

Function	Ingredient	Ex. 5	Ex. 6	Ex. 7	Ex. 8
Active Compound	disodium EDTA	0.01- 1	-	-	-
Active Compound	triethanolamine	0.01- 2.5	0.01- 2.5	-	0.01- 2.5
Active Compound	trisodium ethylenediamine disuccinate	-	0.1- 2	0.1- 2	0.1- 2
Antioxidant	pentaerythrityl tetra-di-t-butyl hydroxyhydrocinnamate	0.01-5	0.01-5	0.01-5	0.01-5
Emulsifier	polysorbate 60	0.05- 8	0.05- 8	0.05- 8	0.05- 8
Emulsifier	sorbitan isostearate	0.05-6	0.05-6	0.05-6	0.05-6
Fatty Compound	diisopropyl adipate	-	0.5-20	-	0.5-20
Fatty Compound	isononyl isononanoate	0.5-40	0.5-40	0.5-40	0.5-40
Fatty Compound	stearic acid	-	0.1-10	-	0.1-10
Filler	aluminum hydroxide	-	0.01-2	-	0.01-2
Filler	kaolin	0.01- 10	-	-	-

Function	Ingredient	Ex. 5	Ex. 6	Ex. 7	Ex. 8
Filler	silica	0.1-10	0.1-10	0.1-10	0.1-10
Filler	silica silylate	0.01- 5	0.01- 5	0.01- 5	0.01- 5
Fragrance	fragrance	0.01-2	-	-	-
Polymer	hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer	0.1-10	0.1-10	0.1-10	0.1-10
Polymer	polyamide-8	0.1-10	0.1-10	0.1-10	0.1-10
Preservative	phenoxyethanol	0.01-1	0.01-1	0.01-1	0.01-1
Solvent	caprylyl glycol	0.01 - 2	0.01 - 2	0.01 - 2	0.01 - 2
Solvent	glycerin	1-30	1-30	1-30	1-30
Solvent	isododecane	1-30	1-30	1-30	1-30
Solvent	water	Q.S.	Q.S.	Q.S.	Q.S.
Surfactant	isotridecyl phosphate	-	-	0.1-1	0.1-1
Surfactant	laureth-23	-	-	0.05-3	0.05-3
Surfactant	octyldodecanol	0.1-10	0.1-10	0.1-10	0.1-10
Surfactant	octyldodecyl xyloside	0.1-10	0.1-10	0.1-10	0.1-10
Surfactant	PEG-30 dipolyhydroxystearate	0.1-10	0.1-10	0.1-10	0.1-10
UV Booster	<i>Copernicia cerifera</i> (carnauba) wax	0.1-20	0.1-20	0.1-20	0.1-20
UV Filter	bis-ethylhexyloxyphenol methoxyphenyl triazine	-	0.1-10	-	0.1-10
UV Filter	butyl methoxydibenzoylmethane	0.1-5	0.1-5	0.1-5	0.1-5
UV Filter	ethylhexyl salicylate	0.1-5	0.1-5	0.1-5	0.1-5
UV Filter	ethylhexyl triazone	-	0.1-5	-	0.1-5
UV Filter	homosalate	0.1-15	0.1-15	0.1-15	0.1-15
UV Filter	octocrylene	0.1-10	-	0.1-10	-
UV Filter	phenylbenzimidazole sulfonic acid	-	0.1-8	-	0.1-8
UV Filter	terephthalylidene dicamphor	-	0.1-10	-	0.1-10

Function	Ingredient	Ex. 5	Ex. 6	Ex. 7	Ex. 8
	sulfonic acid				
UV Filter	titanium dioxide	-	0.5-25	-	0.5-25
Vitamin	tocopherol	-	0.05-2	-	0.05-2

TESTS

Test 1 – In Vivo

A composition according to the state-of-the-art, comprising styrene/acrylates copolymer, was compared with inventive compositions according to Ex. 2 to 4.

The state-of-the-art composition according to Ex. 2 demonstrated an SPF of 29.8, whereas the inventive compositions of the present invention demonstrated an SPF of 52.6 (inventive composition of Ex. 2), 48.6 (inventive composition of Ex. 3) and 39.4 (inventive composition of Ex. 4). The inventive compositions demonstrated an SPF boosting effect, when compared to Ex. 1, of 22.8 (inventive composition of Ex. 2), 18.8 (inventive composition of Ex. 3) and 9.6 (inventive composition of Ex. 4).

Test 2 – In Vitro

The state-of-the-art composition according to Ex. 5 was compared with the inventive composition of Ex. 7. The composition of Ex. 5 demonstrated an *in-vitro* SPF of 20.3, whereas the inventive composition of Ex. 7 presented an SPT of 73.3.

The state-of-the-art composition according to Ex. 6 was compared with the inventive composition of Ex. 8. The composition of Ex. 6 demonstrated an *in-vitro* SPF of 51, whereas the inventive composition of Ex. 8 presented an SPT of 97.3.

SET OF CLAIMS

1. A cosmetic sunscreen composition comprising:

(a) emulsified carnauba wax;

(b) one or more UV filters;

5 (c) one or more polymers selected from hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer, polyamide-8, poly C₁₀₋₃₀ alkyl acrylate and combinations thereof;

(d) one or more solvents selected from glycerin, PEG-20, isododecane, caprylyl glycol, propanediol, and combinations thereof;

10 (e) one or more fatty compounds selected from diisopropyl adipate, isononyl isononanoate, dicaprylyl ether, diisopropyl sebacate, dicaprylyl carbonate, polyglyceryl-6 polyricinoleate and combinations thereof.

2. The cosmetic sunscreen composition, according to claim 1, wherein the emulsified carnauba wax ranges from 0.5 to 20.0 % by weight, relative to
15 the total weight of the composition.

3. The cosmetic sunscreen composition, according to claim 1, wherein the one or more UV filters is selected from organic UV filters, inorganic UV filters, and combinations thereof.

4. The cosmetic sunscreen composition, according to claim 3,
20 wherein the UV filter is selected from drometrizole trisiloxane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl methoxydibenzoylmethane, diethylamino hydroxybenzoyl hexyl benzoate, phenylbenzimidazole sulfonic acid, titanium dioxide, terephthalylidene dicamphor sulfonic acid, octocrylene, and combinations thereof.

5. The cosmetic sunscreen composition, according to claim 4,
25 wherein the one or more UV filter is selected from drometrizole trisiloxane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl methoxydibenzoylmethane, diethylamino hydroxybenzoyl hexyl benzoate, and combinations thereof.

6. The cosmetic sunscreen composition, according to claim 4,
30 wherein the one or more UV filter is selected from phenylbenzimidazole sulfonic acid, butyl methoxydibenzoylmethane, ethylhexyl salicylate, titanium dioxide, ethylhexyl triazone, terephthalylidene dicamphor sulfonic acid, octocrylene, homosalate, bis-ethylhexyloxyphenol methoxyphenyl triazine, and combinations thereof.

7. The cosmetic sunscreen composition, according to claim 1, wherein the one or more UV filters ranges from 0.01 to 35.0 % by weight, relative to the total weight of the composition.

8. The cosmetic sunscreen composition, according to claim 1,
5 wherein the one or more polymers ranges from 0.01 to 10.0 % by weight, relative to the total weight of the composition.

9. The cosmetic sunscreen composition, according to claim 1, wherein the one or more solvents ranges from 0.01 to 30.0 % by weight, relative to the total weight of the composition.

10 10. The cosmetic sunscreen composition, according to claim 1, wherein the one or more fatty compounds ranges from 0.1 to 40.0 % by weight, relative to the total weight of the composition.

11. The cosmetic sunscreen composition, according to claim 1, wherein it further comprises cosmetically acceptable ingredients selected from
15 perfume/fragrance, preserving agents, additional solvents, active compounds, vitamins, fillers, silicones, pigments and combinations thereof.

12. The cosmetic sunscreen composition, according to claim 1, wherein it is a water-in-oil composition.

13. The cosmetic sunscreen composition, according to claim 1,
20 comprising:

(a) from 1.0 to 5.0 % by weight, relative to the total weight of the composition, of emulsified carnauba wax;

(b) from 25.0 to 30.5 % by weight, relative to the total weight of the composition, of bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl
25 methoxydibenzoylmethane, diethylamino hydroxybenzoyl hexyl benzoate, drometrizole trisiloxane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, and combinations thereof;

(c) from 0.1 to 0.5 % by weight, relative to the total weight of the composition, of poly C₁₀₋₃₀ alkyl acrylate;

30 (d) from 4.0 to 5.0 % by weight, relative to the total weight of the composition, of caprylyl glycol, glycerin, PEG-20, propanediol, and combinations thereof;

(e) from 21.0 to 26.0 % by weight, relative to the total weight of the composition, of dicaprylyl carbonate, dicaprylyl ether, diisopropyl sebacate,

polyglyceryl-6 polyricinoleate, and combinations thereof.

14. The cosmetic sunscreen composition, according to claim 1, comprising:

(a) from 1.0 to 5.0 % by weight, relative to the total weight of the composition, of emulsified carnauba wax;

(b) from 20.0 to 30.0 % by weight, relative to the total weight of the composition, of bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl methoxydibenzoylmethane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, octocrylene, phenylbenzimidazole sulfonic acid, terephthalylidene dicamphor sulfonic acid, titanium dioxide, and combinations thereof;

(c) from 1.5 to 3.0 % by weight, relative to the total weight of the composition, of hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer, polyamide-8, and a combination thereof;

(d) from 10.0 to 20.0 % by weight, relative to the total weight of the composition, of caprylyl glycol, glycerin, isododecane, and combinations thereof;

(e) from 5.0 to 10.0 % by weight, relative to the total weight of the composition, of diisopropyl adipate, isononyl isononanoate, stearic acid, and combinations thereof.

15. Use of a cosmetic sunscreen composition, comprising:

(a) emulsified carnauba wax;

(b) one or more UV filters;

(c) one or more polymers selected from hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer and polyamide-8, and combinations thereof;

(d) one or more solvents selected from glycerin, PEG-20, isododecane, caprylyl glycol, propanediol, and combinations thereof;

(e) one or more fatty compounds selected from diisopropyl adipate, isononyl isononanoate, dicaprylyl ether, diisopropyl sebacate, dicaprylyl carbonate, polyglyceryl-6 polyricinoleate, and combinations thereof;

wherein it is for the manufacture of a product to be used as sunscreen daily product.

AMENDED CLAIMS

received by the International Bureau on 10 April 2024 (10.04.2024)

1. A cosmetic sunscreen composition comprising:
 - (a) from 1.0 to 5.0 % by weight, relative to the total weight of the composition, of emulsified carnauba wax;
 - (b) from 25.0 to 30.5 % by weight, relative to the total weight of the composition, of bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl methoxydibenzoylmethane, diethylamino hydroxybenzoyl hexyl benzoate, drometrizole trisiloxane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, and combinations thereof;
 - (c) from 0.1 to 0.5 % by weight, relative to the total weight of the composition, of poly C₁₀₋₃₀ alkyl acrylate;
 - (d) from 4.0 to 5.0 % by weight, relative to the total weight of the composition, of glycerin, PEG-20, caprylyl glycol, propanediol, and combinations thereof;
 - (e) from 21.0 to 26.0 % by weight, relative to the total weight of the composition, of dicaprylyl ether, diisopropyl sebacate, dicaprylyl carbonate, polyglyceryl-6 polyricinoleate and combinations thereof.
2. The cosmetic sunscreen composition, according to claim 1, wherein the emulsified carnauba wax ranges from 0.5 to 20.0 % by weight, relative to the total weight of the composition.
3. The cosmetic sunscreen composition, according to claim 1, wherein it further comprises cosmetically acceptable ingredients selected from perfume/fragrance, preserving agents, additional solvents, active compounds, vitamins, fillers, silicones, pigments and combinations thereof.
4. The cosmetic sunscreen composition, according to claim 1, wherein it is a water-in-oil composition.
5. Use of a cosmetic sunscreen composition, comprising:
 - (a) from 1.0 to 5.0 % by weight, relative to the total weight of the composition, of emulsified carnauba wax;
 - (b) from 25.0 to 30.5 % by weight, relative to the total weight of the composition, of bis-ethylhexyloxyphenol methoxyphenyl triazine, butyl methoxydibenzoylmethane, diethylamino hydroxybenzoyl hexyl benzoate, drometrizole trisiloxane, ethylhexyl salicylate, ethylhexyl triazone, homosalate, and combinations thereof;

(c) from 0.1 to 0.5 % by weight, relative to the total weight of the composition, of poly C₁₀₋₃₀ alkyl acrylate;

(d) from 4.0 to 5.0 % by weight, relative to the total weight of the composition, of glycerin, PEG-20, caprylyl glycol, propanediol, and combinations thereof;

(e) from 21.0 to 26.0 % by weight, relative to the total weight of the composition, of dicaprylyl ether, diisopropyl sebacate, dicaprylyl carbonate, polyglyceryl-6 polyricinoleate and combinations thereof;

wherein it is for the manufacture of a product to be used as sunscreen daily product.

INTERNATIONAL SEARCH REPORT

International application No
PCT/BR2022/050491

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K8/06 A61K8/31 A61K8/33 A61K8/34 A61K8/37
A61K8/81 A61K8/85 A61K8/86 A61Q17/04
ADD.
 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 A61Q

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 practicable, search terms used)
EPO-Internal, BIOSIS, EMBASE, FSTA, INSPEC, 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	WO 2022/160019 A1 (OREAL [FR]; NEVES PITTA PAULA [BR]) 4 August 2022 (2022-08-04)	1-11, 15
Y	table 1 page 13, line 9 - page 14, line 18 -----	1-15
X	WO 2020/172725 A1 (OREAL [FR]; PEREIRA WAGNER GOMES [BR]) 3 September 2020 (2020-09-03)	1-9, 11, 12, 15
Y	table 1 page 16, line 30 - line 31 page 4, line 16 - line 17 -----	1-15
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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 5 July 2023	Date of mailing of the international search report 13/07/2023
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Baurand, Petra
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INTERNATIONAL SEARCH REPORT

International application No

PCT/BR2022/050491

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE GNPD [Online] MINTEL; 24 February 2017 (2017-02-24), Anonymous: "Sun Cream SPF 50", XP093060209, Database accession no. 4644699	1-6, 11, 15
Y	the whole document -----	1-15
X	DATABASE GNPD [Online] MINTEL; 21 October 2022 (2022-10-21), Anonymous: "Daily Waterfull Sun Serum SPF 50+ PA++++", XP093060182, Database accession no. 9996310	1-6, 11, 15
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Y	the whole document -----	1-15
Y	WO 2016/173927 A1 (DSM IP ASSETS BV [NL]) 3 November 2016 (2016-11-03) page 8, line 6 - page 9, line 33 -----	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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