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(54) Title: SUNSCREEN COMPOSITION

(57) Abstract: The present invention relates to sunscreen compositions containing bis-ethylhexyloxyphenol methoxyphenyl triazine (BEMT) and menthyl anthranilate. Said compositions exhibit a reduced fluorescence and an appealing skin feel and look.



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Sunscreen composition

The present invention relates to sunscreen compositions containing bis-ethylhexyloxyphenol methoxyphenyl triazine (BEMT) and menthyl anthranilate. Said compositions exhibit a reduced fluorescence and an appealing skin feel and look.

Sunscreens should be effective and safe. In this respect sunscreens contain different UVB and UVA filter. Some of them are lipophilic liquid substances which lead to a greasy residue on skin. Other UV filter are solid and need to be dissolved in emollients, also leading to a greasy residue on skin. The greasy residue on skin leads to a stronger stickiness of sand, an adverse effect consumers suffer from at the beach. To prevent this, consumers tend to use less sunscreen but at the same time they are less protected. The adverse effects of UV radiation on skin are well known. It is therefore important for the industry to provide solutions for such kind of issues to guarantee, that consumers apply sufficient sunscreen for appropriate protection.

Menthyl anthranilate (meradimate) is a UVA sunscreensing agent. It is one of the 17 ingredients approved by the Food and Drug Administration for use in over-the-counter sunscreen products in the US.

25

In sunscreen compositions, however, the addition of menthyl anthranilate leads to a fluorescence/phosphorescence of said sunscreen compositions which is not appreciated by some consumers as e.g. in disco visits cloth staining by the use of sunscreens suddenly gets visible in black light.

30

It was therefore the object of the present invention to remedy the disadvantages of the prior art and to develop sun care products comprising menthyl anthranilate which do not exhibit said fluorescence and in addition exhibit a reduced stickiness thus resulting in a more appealing skin feel and also a reduced affinity of sand to the skin.

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Surprisingly, it has now be found, that sunscreen compositions comprising bis-ethylhexyloxyphenol methoxyphenyl triazine (BEMT) and menthyl anthranilate as UV-filters overcome the disadvantages of the prior art.

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Thus, in a first embodiment, the present invention provides sunscreen compositions comprising bis-ethylhexyloxyphenol methoxyphenyl triazine (BEMT) and menthyl anthranilate.

10

Another subject matter of the invention is directed to a method of quenching the fluorescence of menthyl anthranilate in a sunscreen composition, said method comprising the step of incorporating bis-ethylhexyloxyphenol methoxyphenyl triazine into said compositions and optionally appreciating the effect. Preferred methods are outlined in the claims.

15

A further embodiment of the present invention relates to the use of bis-ethylhexyloxyphenol methoxyphenyl triazine to quench the fluorescence of menthyl anthranilate.

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By the phrase "quench the fluorescence" or like phrases means that no fluorescence is visually observed in response to exposure of the sunscreen composition to ultraviolet (UV) light at wavelengths of 254 nm and 365 nm.

25

Another subject matter of the invention is directed to a method of reducing the stickiness of sunscreen compositions comprising menthyl anthranilate, said method comprising the step of incorporating bis-ethylhexyloxyphenol methoxyphenyl triazine into said compositions and optionally appreciating the effect. Preferably, in all embodiments of the present invention the improvement is a reduced sand stickiness in particular to improve the skin feel and/ or to reduce the affinity of sand to skin.

30

In another embodiment the present invention also relates to the use of bis-ethylhexyloxyphenol methoxyphenyl triazine to reduce the stickiness of menthyl anthranilate in sunscreen compositions.

35

Preferably, in all embodiments of the present invention the fluorescence as well as the stickiness are concomitantly quenched/ reduced.

5 Bis-Ethylhexyloxyphenol methoxyphenyl triazine (also referred to herein as BEMT) is also known as 2,4-bis[[4-(2-ethylhexyloxy)-2-hydroxy]phenyl]-6-(4-methoxyphenyl)-1,3,5-triazine (chemical name) or bemotrizinol (INN) (CAS Number 187393-00-6). BEMT acts as a broad-spectrum UV filter absorbing UVB as well as UVA rays. It has two absorption peaks, 310 and 340 nm. BEMT is suggested for use in sun, day care,
10 alphabetic products such as BB cream and whitening products.

In all embodiments of the present invention, the amount of BEMT in the sunscreen compositions according to the present invention is advantageously selected in the range from 0.4 to 10 wt.-%, preferably in the range from 0.4 to 9 wt.-%, 0.4 to 8 wt.-%, 0.4 to
15 7 wt.-%, 0.4 to 6 wt.-%, 0.4 to 5 wt.-%, 0.4 to 4 wt.-%, 0.4 to 3 wt.-%, 0.5 to 3 wt.-%, 0.8 to 9 wt.-%, 0.8 to 8 wt.-%, 0.8 to 7 wt.-%, 0.8 to 6 wt.-%, 0.8 to 5 wt.-%, 0.8 to 4 wt.-%, 0.8 to 3 wt.-%, such as for instance in the range from 1 to 5 wt.-%, from 3 to 5 wt.-%, from 1 to 3 wt.-%, from 2 to 5 wt.-%, from 2 to 4 wt.-% or from 3 to 4 wt.-%, based on the total weight of the composition.

20

Menthyl anthranilate (CAS Number is 134-09-8), is also known as meradimate (INN). Menthyl anthranilate acts as a UV-A filter. It is e.g. commercially available as Neo Heliopan® MA from Symrise.

25 In all embodiments of the present invention, the amount of menthyl anthranilate in the sunscreen compositions according to the present invention is advantageously at least 0.1 wt.-% and at most 10 wt.-%. Preferably the amount is selected in the range from 0.4 to 10 wt.-%, more preferably in the range from 0.4 to 9 wt.-%, 0.4 to 8 wt.-%, 0.4 to 7 wt.-%, 0.4 to 6 wt.-%, 0.4 to 5 wt.-%, 0.4 to 4 wt.-%, 0.4 to 3 wt.-%, 0.5 to 3 wt.-%, 0.8 to
30 9 wt.-%, 0.8 to 8 wt.-%, 0.8 to 7 wt.-%, 0.8 to 6 wt.-%, 0.8 to 5 wt.-%, 0.8 to 4 wt.-%, 0.8 to 3 wt.-%, such as for instance in the range from 1 to 5 wt.-%, from 1 to 3 wt.-%, from 2 to 5 wt.-%, from 3 to 5 wt.-%, from 3 to 4 wt.-% or from 2 to 4 wt.-%, based on the total weight of the composition. Further suitable ranges are from 0.1 to 10 wt.-%, preferably from 0.25 to 5 wt.-%, most preferably from 0.5 to 5 wt.-%, based on the total weight of
35 the composition.

- 5 The ratio of the total amount of menthyl anthranilate to the total amount of BEMPT is preferably selected in the range from 0.1:5 to 5:0.1, preferably in the range from 0.5:2.5 to 2.5:0.5, most preferably in the range from 0.5:1 to 1:0.5.

10 As the sunscreen compositions according to the invention are intended for topical application, it is well understood that they comprise a physiologically acceptable medium, i.e. a medium compatible with keratinous substances, such as the skin, mucous membranes, and keratinous fibres. In particular, the physiologically acceptable medium is a cosmetically acceptable carrier.

- 15 The term 'cosmetically acceptable carrier' as used herein refers to all carriers and/or excipients and/ or diluents conventionally used in topical cosmetic compositions such as in particular in skin care preparations.

20 The exact amount of carrier will depend upon the actual level of the UV filters and any other optional ingredients that one of ordinary skill in the art would classify as distinct from the carrier (e.g., other active ingredients).

25 In an advantageous embodiment, the sunscreen compositions according to the present invention comprise from 50% to 99%, preferably from 60% to 98%, more preferably from 70% to 98%, such as in particular from 80% to 95% of a carrier, based on the total weight of the sunscreen composition.

30 In a particular advantageous embodiment, the carrier consists furthermore of at least 30 wt. %, more preferably of at least 40 wt.-%, most preferably of at least 45 wt.-% of water, such as in particular of 50 to 90 wt.-% of water.

35 In particular, the sunscreen compositions according to the present invention are cosmetic or pharmaceutical compositions, preferably cosmetic (non-therapeutic) compositions.

In one embodiment, the sunscreen compositions according to the present invention are applied to mammalian keratinous tissue such as in particular to human skin or the human scalp and hair.

5

The term "cosmetic composition" as used in the present application refers to cosmetic compositions as defined under the heading "Kosmetika" in Römpp Lexikon Chemie, 10th edition 1997, Georg Thieme Verlag Stuttgart, New York as well as to cosmetic compositions as disclosed in A. Domsch, "Cosmetic Compositions", Verlag für chemische Industrie (ed. H. Ziolkowsky), 4th edition, 1992.

Preferred sunscreen compositions according to the invention are skin care preparations, decorative preparations, and functional preparations.

15 Examples of skin care preparations are, in particular, light protective preparations, anti-ageing preparations, preparations for the treatment of photo-ageing, body oils, body lotions, body gels, treatment creams, skin protection ointments, skin powders, moisturizing gels, moisturizing sprays, face and/or body moisturizers, skin-tanning preparations (i.e. compositions for the artificial/sunless tanning and/or browning of human skin), for example self-tanning creams as well as skin lightening preparations.

Examples of decorative preparations are, in particular, lipsticks, eye shadows, mascaras, dry and moist make-up formulations, rouges and/or powders.

25 Examples of functional preparations are cosmetic or pharmaceutical compositions containing active ingredients such as hormone preparations, vitamin preparations, vegetable extract preparations, anti-ageing preparations, and/or antimicrobial (antibacterial or antifungal) preparations without being limited thereto.

30 In a particular embodiment, the sunscreen compositions according to the invention are light-protective preparations (sun care products, sunscreens), such as sun protection milks, sun protection lotions, sun protection creams, sun protection oils, sun blocks or tropical's or day care creams with a SPF (sun protection factor). Of particular interest are sun protection creams, sun protection lotions and sun protection milks.

35

The compositions of the invention (including the carrier) may comprise conventional adjuvants and additives, such as preservatives/antioxidants, fatty substances/oils, organic solvents, silicones, thickeners, softeners, emulsifiers, antifoaming agents,

5 aesthetic components such as fragrances, surfactants, fillers, anionic, cationic, nonionic or amphoteric polymers or mixtures thereof, propellants, acidifying or basifying agents, dyes, colorings/colorants, abrasives, absorbents, chelating agents and/ or sequestering agents, essential oils, skin sensates, astringents, pigments or any other ingredients usually formulated into such compositions.

10 In accordance with the present invention, the compositions according to the invention may comprise further ingredients such as ingredients for skin lightening; tanning prevention; treatment of hyperpigmentation; preventing or reducing acne, wrinkles, lines, atrophy and/or inflammation; chelators and/or sequestrants; anti-cellulites and slimming
15 (e.g. phytanic acid), firming, moisturizing and energizing, self-tanning, soothing agents, as well as agents to improve elasticity and skin barrier and carriers and/or excipients or diluents conventionally used in sunscreen compositions.

20 If nothing else is stated, the excipients, additives, diluents, etc. mentioned in the following are suitable for sunscreen compositions according to the present invention. The necessary amounts of the cosmetic and dermatological adjuvants and additives can, based on the desired product, easily be determined by the skilled person.

25 The additional ingredients can either be added to the oily phase, the aqueous phase or separately as deemed appropriate. The mode of addition can easily be adapted by a person skilled in the art.

30 Examples of cosmetic excipients, diluents, adjuvants, additives as well as active ingredients commonly used in the skin care industry which are suitable for use in the cosmetic compositions of the present invention are for example described in the International Cosmetic Ingredient Dictionary & Handbook by Personal Care Product Council (<http://www.personalcarecouncil.org/>), accessible by the online INFO BASE (<http://online.personalcarecouncil.org/jsp/Home.jsp>), without being limited thereto.

35 The cosmetically active ingredients useful herein can in some instances provide more than one benefit or operate via more than one mode of action.

5 Of course, one skilled in this art will take care to select the above mentioned optional additional ingredients, adjuvants, diluents and additives and/or their amounts such that the advantageous properties intrinsically associated with the combination in accordance with the invention are not, or not substantially, detrimentally affected by the envisaged addition or additions.

10 Preferred sunscreen compositions in all embodiments of the present invention are emulsions containing an oily phase and an aqueous phase such as in particular an O/W, W/O, Si/W, W/Si, O/W/O, W/O/W multiple or a pickering emulsions. The amount of the oily phase (i.e. the phase containing all oils and fats) present in such emulsions is
15 preferably at least 10 wt.-%, such as in the range from 10 to 60 wt.-%, preferably in the range from 15 to 50 wt.-%, most preferably in the range from 15 to 40 wt.-%, based on the total weight of the composition.

20 According to one even more preferred embodiment, the sunscreen compositions according to the present invention as outlined herein are O/W emulsions comprising an oily phase dispersed in an aqueous phase in the presence of an O/W emulsifier. The preparation of such O/W emulsions is well known to a person skilled in the art and illustrated in the examples.

25 In one advantageous embodiment, the O/W emulsifier is a phosphate ester emulsifier. Among the preferred phosphate ester emulsifier are C8-10 Alkyl Ethyl Phosphate, C9-15 Alkyl Phosphate, Cetareth-2 Phosphate, Cetareth-5 Phosphate, Ceteth-8 Phosphate, Ceteth-10 Phosphate, Cetyl Phosphate, C6-10 Pareth-4 Phosphate, C12-15 Pareth-2 Phosphate, C12-15 Pareth-3 Phosphate, DEA-Cetareth-2 Phosphate, DEA-Cetyl
30 Phosphate, DEA-Oleth-3 Phosphate, Potassium cetyl phosphate, Deceth-4 Phosphate, Deceth-6 Phosphate and Trilaureth-4 Phosphate. A particular phosphate ester emulsifier according to the invention is potassium cetyl phosphate e.g. commercially available as Amphisol® K at DSM Nutritional Products Ltd Kaiseraugst.

35 Further suitable O/W emulsifiers according to the present invention encompass PEG 30 Dipolyhydroxystearate, PEG-4 Dilaurate, PEG-8 Dioleate, PEG-40 Sorbitan Peroleate, PEG-7 Glyceryl Cocoate, PEG-20 Almond Glycerides, PEG-25 Hydrogenated Castor Oil, Glyceryl Stearate (and) PEG-100 Stearate, PEG-7 Olivatate, PEG-8 Oleate, PEG-8

5 Laurate, PEG-60 Almond Glycerides, PEG-20 Methyl Glucose Sesquistearate, PEG-40 Stearate, PEG-100 Stearate, PEG-80 Sorbitan Laurate, Steareth-2, Steareth-12, Oleth-2, Ceteth-2, Laureth-4, Oleth-10, Oleth-10/Polyoxyl 10 Oleyl Ether, Ceteth-10, Isosteareth-20, Ceteareth-20, Oleth-20, Steareth-20, Steareth-21, Ceteth-20, Isoceteth-20, Laureth-23, Steareth-100, glycerylstearate, glycerylstearate (self-emulsifying),
 10 stearic acid, salts of stearic acid, polyglyceryl-3-methylglycosedistearate. Further suitable emulsifiers are sorbitan oleate, sorbitan sesquioleate, sorbitan isostearate, sorbitan trioleate, Lauryl Glucoside, Decyl Glucoside, Sodium Stearoyl Glutamate, Sucrose Polystearate and Hydrated Polyisobuten. Furthermore, one or more synthetic polymers may be used as an emulsifier. For example, PVP eicosene copolymer,
 15 acrylates/C10-30 alkyl acrylate crosspolymer, acrylates/steareth-20 methacrylate copolymer, PEG-22/dodecyl glycol copolymer, PEG-45/dodecyl glycol copolymer, and mixtures thereof.

Another particular suitable class of O/W emulsifiers are non-ionic self-emulsifying
 20 system derived from olive oil e.g. known as (INCI Name) cetearyl olivate and sorbitan olivate (Chemical Composition: sorbitan ester and cetearyl ester of olive oil fatty acids) sold under the tradename OLIVEM 1000.

Further suitable are commercially available polymeric emulsifiers such as
 25 hydrophobically modified polyacrylic acid such as Acrylates/C10-30 Alkyl Acrylate Crosspolymers which are commercially available under the tradename Pemulen® TR-1 and TR-2 by Noveon.

Another class of particularly suitable emulsifiers are polyglycerol esters or diesters of
 30 fatty acids also called polyglyceryl ester/ diester (i.e. a polymer in which fatty acid(s) is/ are bound by esterification with polyglycerine), such as e.g. commercially available at Evonik as Isolan GPS [INCI Name Polyglyceryl-4 Diisostearate/Polyhydroxystearate/Sebacate (i.e. diester of a mixture of isostearic, polyhydroxystearic and sebacic acids with Polyglycerin-4)] or Dehymuls PGPH available
 35 at Cognis (INCI Polyglyceryl-2 Dipolyhydroxystearate).

Also suitable are polyalkylenglycolether such as Brij 72 (Polyoxyethylen(2)stearylether) or Brij 721 (Polyoxyethylene (21) Stearyl Ether e.g. available at Croda.

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Particularly advantageous O/W emulsifiers according to the present invention are one or more of Polyglyceryl-3 Methylglucose Distearate, Lauryl Glucoside (and) Polyglyceryl-2 Dipolyhydroxystearate, Glyceryl Sterate Citrate, Sodium Cetearyl Sulfate, Cetearyl Glucoside; Polyglyceryl-6 Stearate (and) Polyglyceryl-6 Behenate, Cetearyl Olivatate (and) Sorbitan Olivatate, Arachidyl Alcohol (and) Behenyl Alcohol (and) Arachidyl Glucosides, Cetearyl Alcohol (and) Coco-Glucoside, Coco-Glucoside (and) Coconut Alcohol, PEG-100 Stearate (and) Glyceryl Stearate, Sodium Stearoyl Glutamate, Steareth-20, Steareth-21, Steareth-25, Steareth-2, Cetareth-25 and Cetareth-6 (all listed by their INCI names).

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It is particularly preferred in accordance with the invention if the composition comprises potassium cetyl phosphate as emulsifier.

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The at least one O/W respectively Si/W emulsifier is preferably used in an amount of 0.5 to 10 wt. % such as in particular in the range of 0.5 to 5 wt.-% such as most in particular in the range of 0.5 to 4 wt.-%, based on the total weight of the composition.

25

Suitable W/O- or W/Si-emulsifiers according to the present invention are polyglyceryl-2-dipolyhydroxystearate, PEG-30 dipolyhydroxystearate, cetyl dimethicone copolyol, polyglyceryl-3 diisostearate polyglycerol esters of oleic/isostearic acid, polyglyceryl-6 hexaricinolate, polyglyceryl-4-oleate, hexadecane-4-oleate/PEG-8 propylene glycol cocoate, magnesium stearate, sodium stearate, potassium laurate, potassium ricinoleate, sodium cocoate, sodium tallowate, potassium castorate, sodium oleate, and mixtures thereof. Further suitable W/Si-emulsifiers are Lauryl Polyglyceryl-3 Polydimethylsiloxylethyl Dimethicone and/or PEG-9 Polydimethylsiloxylethyl Dimethicone and/or Cetyl PEG/PPG-10/1 Dimethicone and/or PEG-12 Dimethicone Crosspolymer and/or PEG/PPG-18/18 Dimethicone. The at least one W/O emulsifier is preferably used in an amount of about 0.001 to 10 wt.-%, more preferably in an amount of 0.2 to 7 wt.-% with respect to the total weight of the composition.

35

The sunscreen compositions according to the present invention furthermore advantageously contain at least one co-surfactant such as e.g. selected from the group of mono- and diglycerides and/ or fatty alcohols. The co-surfactant is generally used in

5 an amount selected in the range of 0.1 to 10 wt.-%, such as in particular in the range of 0.5 to 7 wt.-%, such as most in particular in the range of 1 to 5 wt.-%, based on the total weight of the composition. Particular suitable co-surfactants are selected from the list of alkyl alcohols such as cetyl alcohol (Lorol C16, Lanette 16), cetearyl alcohol (Lanette O), stearyl alcohol (Lanette 18), behenyl alcohol (Lanette 22), polyhydroxystearic acid,
10 glyceryl stearate, glyceryl myristate (Estol 3650), hydrogenated coco-glycerides (Lipocire Na10) as well as mixtures thereof.

In all embodiments of the present invention, it is particular advantageous if the composition also comprises cetyl alcohol, stearyl alcohol and/or glyceryl stearate,
15 preferably stearyl alcohol.

It is particular advantageous, if the topical compositions of the present invention further comprise polyhydroxystearic acid as well as mixtures thereof.

20 Please check the following part in particular also in view of adding other ingredients which should be covered and could be used to generate (i) market relevant novelty and/or inventive step.

Advantageous embodiments of the composition of the present invention also include
25 those wherein the composition comprises one or more oils selected from butylene glycol dicaprylate/dicaprate, phenethyl benzoate, C₁₂-C₁₅ alkyl benzoate, dibutyl adipate, diisopropyl sebacates, dicaprylyl carbonate, di-C₁₂₋₁₃ alkyl tartrates, diethylhexyl syringylidene malonates, hydrogenated castor oil dimerates, triheptanoin, C₁₂₋₁₃ alkyl lactates, C₁₆₋₁₇ alkyl benzoates, propylheptyl caprylates, caprylic/capric triglycerides,
30 diethylhexyl 2,6-naphthalates, octyldodecanol, ethylhexyl cocoates. Preferably, the composition according to the present invention comprises as oil(s) butylene glycol, dibutyl adipate, phenethyl benzoate, dicaprylyl carbonate, C₁₂-C₁₅ alkylbenzoate, caprylyl carbonate, capric/caprylic triglyceride as well as mixtures thereof, most preferably butylene glycol, phenethyl benzoate and C₁₂-C₁₅ alkylbenzoate.

35 In a still further advantageous aspect of the invention, the sunscreen compositions of the present invention further comprise a preservative and/or a preservative booster, preferably selected from the group consisting of ethanol, phenoxyethanol,

5 ethylhexylglycerin, hexylglycerin, glyceryl caprylate, 1,2-pentanediol, 1,2-hexanediol, 1,2-octanediol (caprylyl glycol), 1,2-decanediol and 2-methyl-1,3-propanediol as well as mixtures thereof, most preferably selected from the group of phenoxyethanol and ethylhexyl glycerine as well as mixtures thereof. When present, the preservative
10 respectively the preservative booster is preferably used in an amount of 0.01 to 2 wt. %, more preferably in an amount of 0.05 to 1.5 wt.-%, most preferably in an amount of 0.1 to 1.0 wt.-%, based on the total weight of the composition.

It is advantageous in accordance with the invention if the preparation comprises one or more alkanediols from the group 1,2-pentanediol, 1,2-hexanediol, 1,2-octanediol, 1,2-
15 decanediol and 2-methyl-1,3-propanediol. When present, the one or more alkanediols is preferably used in an amount of 0.1 to 7 wt. %, more preferably in an amount of 0.5 to 7 wt.-%, most preferably in an amount of 1.0 to 5.0 wt.-%, based on the total weight of the composition.

20 It is further advantageous in accordance with the invention if the composition of the invention comprises ethanol, phenoxyethanol and/or ethylhexylglycerin.

In another advantageous aspect, the sunscreen compositions according to the present invention are free of any parabenes, benzethoniumchlorid, piroctone olamine,
25 lauroylarginat, methylisothiazolinon, chlormethylisothiazolinon, bronopol, benzalkoniumchloride, formaldehyd releasing compounds, salicylic acid, triclosan, DMDM hydantoin, chlorphenesin and IPBC (Iodopropinylbutyl carbamate).

In another advantageous aspect, the sunscreen compositions according to the present
30 invention are free of octocrylene, methylbenzylidenechampher and/ or oxybenzone.

In another advantageous embodiment, the sunscreen composition further comprises at least one mineral UV filter such as a titanium dioxide and/ or a zinc oxide UV-filter.

35 The sunscreen compositions according to the invention may further contain one or more emollients which soothe and soften the skin. As an example, the emollient may be silicone (dimethicone, cyclomethicone), vegetable oils (grape seed, sesame seed,

5 jojoba, etc.), butters (cocoa butter, shea butter), and petrolatum derivatives (petroleum jelly, mineral oil).

In another aspect, the sunscreen composition of the invention may comprise one or more fragrances selected from limonene, citral, linalool, alpha-isomethylionone, geraniol,
10 citronellol, 2-isobutyl-4-hydroxy-4-methyltetrahydropyran, 2-tert-pentylcyclohexyl acetate, 3-methyl-5-phenyl-1-pentanol, 7-acetyl-1,1,3,4,4,6-hexamethyltetralin, adipic diester, cinnamal, amyl salicylate, alpha-amylcinnamaldehyde, alpha-methylionone, butylphenylmethylpropional, cinnamal, amylcinnamyl alcohol, anise alcohol, benzoin, benzyl alcohol, benzyl benzoate, benzyl cinnamate, benzyl salicylate, bergamot oil, bitter
15 orange oil, butylphenylmethylpropional, cardamom oil, cedrol, cinnamal, cinnamyl alcohol, citronellyl methylcrotonate, citrus oil, coumarin, diethyl succinate, ethyllinalool, eugenol, Evernia furfuracea extract, Evernia prunastri extract, farnesol, guaiacwood oil, hexylcinnamal, hexyl salicylate, hydroxycitronellal, lavender oil, lemon oil, linalyl acetate, mandarin oil, menthyl PCA, methyl hexadecan, nutmeg oil, rosemary oil, sweet orange
20 oil, terpeneol, tonkabean oil, triethyl citrate, vanillin.

The composition of the invention may advantageously comprise moisturizers. Moisturizers are compounds or mixtures of compounds which give cosmetic compositions the quality, after application to or distribution on the skin surface, of
25 reducing the loss of moisture of the stratum corneum (also called transepidermal water loss (TEWL)) and/or of positively influencing the hydration of the stratum corneum.

Non-limiting examples of advantageous moisturizers for use in the present invention include glycerol, lactic acid and/or lactates, especially sodium lactate, butylene glycol,
30 propylene glycol, biosaccharide gum-1, Glycine soya, ethylhexyloxyglycerol, pyrrolidonecarboxylic acid, and urea. Of further advantage, in particular, is the use of polymeric moisturizers from the group of the polysaccharides which are water-soluble and/or swellable in water and/or gellable with the aid of water. Especially advantageous, for example, are hyaluronic acid, chitosan and/or a fucose-rich polysaccharide which is
35 registered in Chemical Abstracts under the registry number 178463-23-5 and is available, for example, under the Fucogel®1000 name from the company SOLABIA S.A. Moisturizers may also be used advantageously as active antiwrinkle ingredients for protection from changes to the skin of the kind occurring in skin aging, for example.

5

The cosmetic compositions of the invention may further comprise advantageously, although not mandatorily, fillers which have the effect, for example, of further improving the sensorial and cosmetic properties of the formulations and evoking or intensifying a velvety or silky skin sensation, for example. Advantageous fillers in the sense of the present invention are starch and starch derivatives (such as tapioca starch, distarch phosphate, aluminum or sodium starch octenylsuccinate, and the like, for example), Valvance pigments which have neither primarily UV filter effect nor coloring effect (such as Valvance Touch 210 or 250 for example) and/or Aerosils® (CAS No. 7631-86-9) and/or talc and/or polyethylene, nylon, and silica dimethyl silylate.

15

The water phase of the compositions of the invention may advantageously comprise customary cosmetic auxiliaries, such as, for example, alcohols, particularly those of low C number, preferably ethanol and/or isopropanol, or polyols of low C number, and also ethers thereof, preferably propylene glycol, glycerol, electrolytes, self-tanning agents, and also, in particular, one or more thickeners, which may be advantageously selected from the group of silicon dioxide, aluminum silicates, polysaccharides and/or derivatives thereof, e.g., hyaluronic acid, xanthan gum, hydroxypropylmethylcellulose, particularly advantageously from the group of polyacrylates, preferably a polyacrylate from the group referred to as Carbopols, examples being carbopols of types 980, 981, 1382, 2984, and 5984, in each case individually or in combination. Further thickeners advantageous in accordance with the invention are those having the INCI designation Acrylates/C10-30 Alkyl Acrylate Crosspolymer (e.g., Pemulen TR 1, Pemulen TR 2, Carbopol 1328 from NOVEON) and also Aristoflex AVC (INCI: Ammonium Acryloyldimethyltaurate/VP Copolymer) as well as Simugel NS (INCI: Hydroxyethyl Acrylate/Sodium Acryloyldimethyl Taurate Copolymer & Squalane & Polysorbate 60).

25

It is preferred in accordance with the invention if the composition comprises xanthan gum, crosslinked acrylate/C10-C30 alkyl acrylate polymer, hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer, and/or vinylpyrrolidone/hexadecane copolymer, preferably xanthan gum and/ or hydroxyethyl acrylate/sodium acryloyldimethyl taurate.

35

The sunscreen compositions of the invention manage with a surprisingly small total amount of UV filters.

5

In another aspect, the composition may have an SPF of at least 20, preferably of at least 30.

10 Advantageously in accordance with the invention, the composition of the invention comprises film formers. Film formers in the sense of the present invention are substances of various constitutions, and are characterized by the following properties: When a film former is dissolved in water or other suitable solvents, and when the solution is then applied to the skin, the film former, following evaporation of the solvent,
15 forms a film which serves essentially to fix the UV-filters on the skin and thus to increase the water resistance of the product.

It is especially advantageous to select the film formers from the group of the polymers based on polyvinylpyrrolidone (PVP)

20

Particular preference is given to copolymers of vinylpyrrolidone, as for example the PVP hexadecane copolymer and the PVP eicosene copolymer, which are available under the trade names Antaron V216 and Antaron V220 from GAF Chemicals Corporation.

25 Likewise advantageous are further polymeric film formers, such as, for example, sodium polystyrene sulfonate, which is available under the trade name Flexan 130 from National Starch and Chemical Corp., and/or polyisobutene, available from Rewo under the trade name Rewopal PIB1000. Examples of further suitable polymers are polyacrylamides (Seppigel 305), polyvinyl alcohols, PVP, PVP/VA copolymers, polyglycols,
30 acrylate/octylacrylamide copolymer (Dermacryl 79) Likewise advantageous is the use of hydrogenated castor oil dimer dilinoleate (CAS 646054-62-8, INCI Hydrogenated Castor Oil Dimer Dilinoleate), which can be acquired from Kokyu Alcohol Kogyo under the name Risocast DA-H, or else PPG-3 benzyl ether myristate (CAS 403517-45-3), which can be acquired under trade name Crodamol STS from Croda Chemicals.

35

The sunscreen compositions according to the invention in general have a pH in the range of 3 to 10, preferably a pH in the range of 4 to 8 and most preferably a pH in the

- 5 range of 4 to 7. The pH can easily be adjusted as desired with suitable acids such as e.g. citric acid or bases such as NaOH according to standard methods in the art.

In accordance with the invention is the use of the composition of the invention for protection from skin aging (especially for protection from UV-induced skin aging) and
10 also as a sun protection composition.

Finally, a subject-matter of the invention is a method for the cosmetic treatment of keratinous substances such as in particular the skin, wherein a composition as defined herein is applied to the said keratinous substances such as in particular to the skin. The
15 method is in particular suitable to protect the skin against the adverse effects of UV-radiation such as in particular sun-burn and/ or photoageing while avoiding florescence stains on garment and/ or clothing.

Particular embodiments of the present invention further are

- 20 A.) A sunscreen composition comprising bis-ethylhexyloxyphenol methoxyphenyl triazine (BEMT) and menthyl anthranilate.

- B.) The sunscreen composition as outlined in A.), wherein the amount of bis-ethylhexyloxyphenol methoxyphenyl triazine is selected in the range from 0.4 to
25 10 wt.-%, preferably from 0.8 to 5 wt.-%, most preferably from 1 to 5 wt.-%, based on the total weight of the composition.

- C.) The sunscreen composition as defined in A.) or B.) wherein the amount of menthyl anthranilate selected in the range from 0.1 to 10 wt.-%, preferably from 0.25 to 5 wt.-
30 %, most preferably from 0.5 to 5 wt.-%, based on the total weight of the composition.

- D.) The sunscreen compositions as defined in A.) to C.), wherein the composition is an O/W emulsion comprising an oily phase dispersed in an aqueous phase in the presence of an O/W emulsifier, preferably in the presence of a cetyl phosphate
35 emulsifier, most preferably in the presence of potassium cetyl phosphate.

- E.) The sunscreen composition as defined in A.) to D.), wherein the composition further comprises one or more of butylene glycol, dicaprylate/dicaprate, phenethyl benzoate, C₁₂-C₁₅ alkyl benzoate, dibutyl adipate, diisopropyl sebacates, dicaprylyl carbonate,

5 di-C₁₂₋₁₃ alkyl tartrates, hydrogenated castor oil dimerates, triheptanoin, C₁₂₋₁₃ alkyl lactates, C₁₆₋₁₇ alkyl benzoates, propylheptyl caprylates, caprylic/capric triglycerides, diethylhexyl 2,6-naphthalate, octyldodecanol, ethylhexyl cocoatesdibutyl adipate, preferably of butylene glycol, dicaprylyl carbonate, phenethyl benzoate, C_{12-C15} alkylbenzoate, caprylyl carbonate, capric/caprylic triglyceride, most preferably of
10 butylene glycol, dicaprylyl carbonate, dibutyladipate and C_{12-C15} alkylbenzoate.

F.) The sunscreen composition as defined in A.) to E.), wherein the composition further comprises one or more of ethanol, phenoxyethanol and ethylhexylglycerin, preferably all of ethanol, phenoxyethanol and ethylhexylglycerin.

15 G.) The sunscreen composition as defined in A.) to F.), wherein the composition further comprises one or more of xanthan gum, crosslinked acrylate/C_{10-C30} alkyl acrylate polymer, hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer, preferably xanthan gum and hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer.

20 H.) The sunscreen composition as defined in A.) to G.), wherein the composition further comprises one or more of behenyl alcohol, cetyl alcohol, cetearyl alcohol, stearyl alcohol and glyceryl stearate, preferably of behenyl alcohol, stearyl alcohol and cetearyl alcohol, most preferably stearyl alcohol.

25 I.) A method of quenching the fluorescence of menthyl anthranilate in a sunscreen composition, said method comprising the step of incorporating bis-ethylhexyloxyphenol methoxyphenyl triazine into said compositions.

30 J.) Use of bis-ethylhexyloxyphenol methoxyphenyl triazine to quench the fluorescence of menthyl anthranilate.

K.) Use of bis-ethylhexyloxyphenol methoxyphenyl triazine to reduce the stickiness of sunscreen compositions comprising menthyl anthranilate.

35 The following examples are provided to further illustrate the compositions and effects of the present invention. These examples are illustrative only and are not intended to limit the scope of the invention in any way.

5 Experimental Part

Formulations

The formulations (O/W emulsions) as outlined in table 1 have been prepared according to standard methods in the art.

10 Method Fluorescence

The fluorescence has been tested according to the method as outlined below:

- apply a droplet of the formulation on a HD6 plate
- distribute the formulation in the middle of the plate in view circles
- put the sample into a "CAMAG UV Kabinett" equipped with two UV lamps (365
15 nm and 254 nm)
- switch on lamp with 365nm, take a picture
- switch on lamp with 254 nm, take a picture
- sample which appears bright under the defined UV light shows fluorescence.

20 Method Stickiness

The stickiness has been tested according to the method as outlined below:

- apply 2mg/cm² of the formulation on Schönberg plates 2mm (each formula on 6
plates)
- store the plates 15 minutes at 40°C
- 25 - weight the plate with dry film after cooling down to RT
- fill sand into a petri dish, place the plate with cream film side on sand.
- put a weight (500g) on plate, wait 5 minutes
- remove weight, take the plate out of the sand
- weight plate with the sand, which sticks to plate
- 30 - calculate sand residue weight

Table 1: Formulation

INCI	Inv	Ref
aqua;	Ad 100	Ad 100
xanthan gum;	0.25	0.25
butylene glycol;	3.00	3.00
disodium edta;	0.10	0.10
potassium cetyl phosphate;	2.50	2.50
stearyl alcohol;	2.50	2.50

c12-15 alkyl benzoate;	15.00	15.00
dicaprylyl carbonate;	10	13
dibutyl adipate;	3.00	3.00
bis-ethylhexyloxyphenol methoxyphenyl triazine;	3.00	0.00
phenoxyethanol; ethylhexylglycerin;	1.00	1.00
hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer;	0.50	0.50
menthyl anthranilate	4.00	4.00
alcohol	3.00	3.00
Fluorescence	No	Yes
Sand residue (average 6 plates) [mg]	461	589

5

As can be retrieved from table 1 and as depicted in figure 1, the combination according to the present invention results in a complete quenching of the fluorescence.

Furthermore, the sensorial properties (with regard stickiness) are significantly improved.

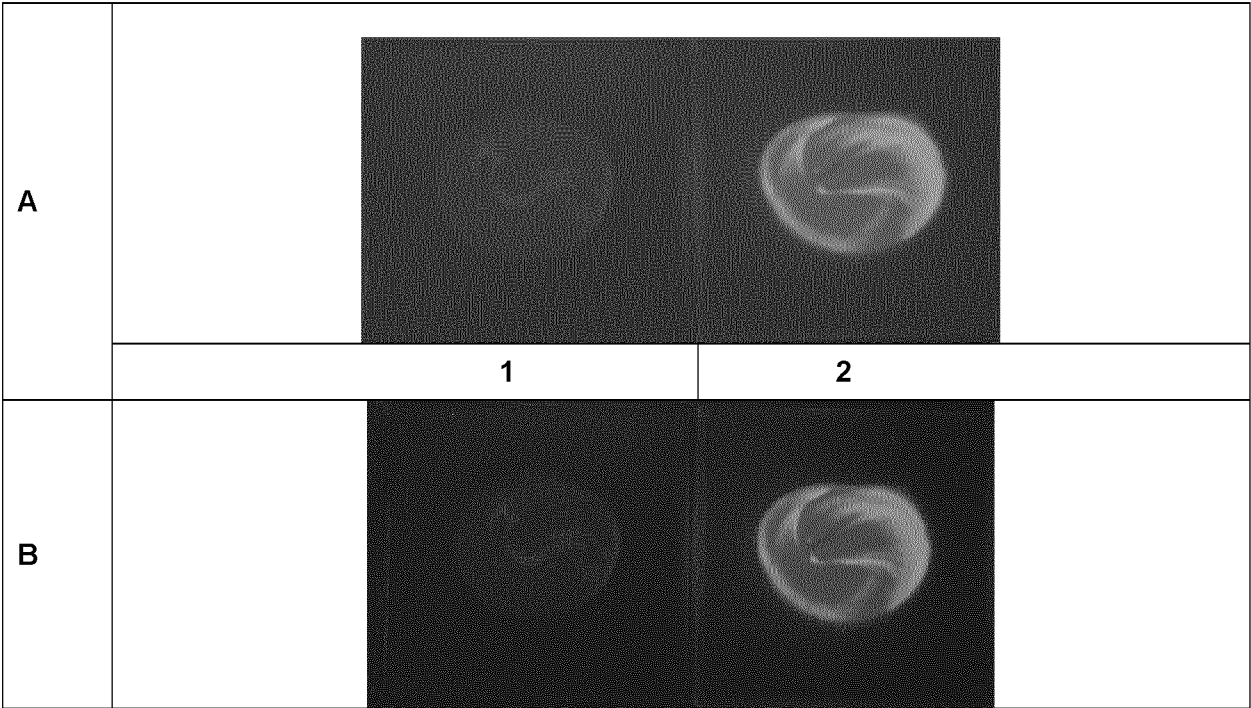
5

Claims

1. A method of quenching the fluorescence of menthyl anthranilate in a sunscreen composition, wherein the method comprises the steps of:
 - (a) providing an oil-in-water (O/W) sunscreen emulsion composition
10 comprising an oily phase dispersed in an aqueous phase in the presence of an O/W emulsifier and menthyl anthranilate in an amount capable of fluorescing the sunscreen composition when exposed to UV light at wavelengths of 254 nm and 365 nm; and
 - (b) incorporating bis-ethylhexyloxyphenol methoxyphenyl triazine (BEMT) in
15 a fluorescence quenching effective amount to quench the fluorescing capability of the menthyl anthranilate.
2. The method according to claim 1, wherein the BEMT is present in an amount of 1 to 5 wt.%, based on the total weight of the composition.
3. The method according to claim 1, wherein the menthyl anthranilate is present in
20 an amount of 0.5 to 5 wt.%, based on the total weight of the composition.
4. The method according to claim 1, wherein each of the BEMT and the menthyl anthranilate is present in an amount of about 3 to 5 wt.%, based on the total weight of the composition.
5. The method according to claim 1, wherein the O/W emulsifier is a cetyl
25 phosphate emulsifier.
6. The method according to claim 1, wherein the cetyl phosphate emulsifier is potassium cetyl phosphate.
7. The method according to claim 1, wherein the O/W emulsifier is present in an amount of 0.5 to 10 wt.%, based on the total weight of the composition.
- 30 8. The method according to claim 1, further comprising at least one oil component selected from the group consisting of butylene glycol, dicaprylate/dicaprate, phenethyl benzoate, C₁₂-C₁₅ alkyl benzoate, dibutyl adipate, diisopropyl sebacates, dicaprylyl carbonate, di-C₁₂₋₁₃ alkyl tartrates, hydrogenated castor oil dimerates, triheptanoin, C₁₂₋₁₃ alkyl lactates, C₁₆₋₁₇ alkyl benzoates, propylheptyl

- 5 caprylates, caprylic/capric triglycerides, diethylhexyl 2,6-naphthalate, octyldodecanol, ethylhexyl cocoatesdibutyl adipate, preferably of butylene glycol, dicaprylyl carbonate, phenethyl benzoate, C₁₂-C₁₅ alkylbenzoate, caprylyl carbonate, capric/caprylic triglyceride, most preferably of butylene glycol, dicaprylyl carbonate, dibutyladipate and C₁₂-C₁₅ alkylbenzoate.
- 10 9. The method according to claim 1, wherein the composition further comprises at least one preservative and/or preservative booster selected from the group consisting of ethanol, phenoxyethanol and ethylhexylglycerin.
10. The method according to claim 1, wherein the composition further comprises at least one thickener selected from the group consisting of xanthan
- 15 gum, crosslinked acrylate/C₁₀-C₃₀ alkyl acrylate polymer, hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer, preferably xanthan gum and hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer.
11. The method according to claim 1, wherein the composition further comprises at least one surfactant selected from the group consisting of behenyl alcohol, cetyl
- 20 alcohol, cetearyl alcohol, stearyl alcohol and glyceryl stearate, preferably of behenyl alcohol, stearyl alcohol and cetearyl alcohol.

Figure 1



A: Fluorescence UV lamp with 365 nm

B: Fluorescence UV lamp with 254 nm

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2022/055565

A. CLASSIFICATION OF SUBJECT MATTER INV. A61K8/44 A61K8/49 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) A61Q A61K		
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, 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 2007/135196 A2 (SYMRISE GMBH & CO KG [DE]; JOHNCOCK WILLIAM [DE]; CLAUS JUERGEN [DE]) 29 November 2007 (2007-11-29) pages 79-91 -----	1-3, 7-10
X	WO 2007/128840 A2 (SYMRISE GMBH & CO KG [DE]; JOHNCOCK WILLIAM [DE]; CLAUS JUERGEN [DE]) 15 November 2007 (2007-11-15) pages 71-81 ----- -/--	1-3, 7-10
☒ 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 "E" earlier application or patent but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "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 "&" document member of the same patent family		
Date of the actual completion of the international search 2 June 2022		Date of mailing of the international search report 13/06/2022
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 Donovan-Beermann, T

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2022/055565

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	"Disclosure of improved UV protection by the synergistic use of AHR inhibitors and UV filters", RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, UK, GB, vol. 549, no. 14, 1 January 2010 (2010-01-01), page 22, XP007139552, ISSN: 0374-4353 pages 19-27 -----	1-3, 7-10
A	US 2 170 185 A (SCOTT CARPENTER MARION) 22 August 1939 (1939-08-22) the whole document -----	1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2022/055565

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