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(54) Title: COSMETIC COMPOSITION CONTAINING A DIBENZOYL METHANE DERIVATIVE AND A PHENOL OR BISPHENOL COMPOUND; PROCESS FOR PHOTOSTABILIZATION OF THE DIBENZOYL METHANE DERIVATIVE

(57) Abstract: The present invention relates to a cosmetic composition containing the combination of a dibenzoylmethane derivative and of a specific phenol or bisphenol compound of formula (I) or (II). It also relates to a process for the photostabilization, against radiation, of at least one dibenzoylmethane derivative with at least one phenol or bisphenol derivative of formula (I) or (II). The present invention also relates to the use of said phenol or bisphenol derivative of formula (I) or (II) in a composition comprising, in a cosmetically acceptable support, at least one UV-A-screening agent of the dibenzoylmethane derivative type, with the aim of improving the effectiveness of said composition against UV-A rays.
COSMETIC COMPOSITION CONTAINING A DIBENZOYL METHANE DERIVATIVE AND A PHENOL OR BISPHENOL COMPOUND; PROCESS FOR PHOTOSTABILIZATION OF THE DIBENZOYL METHANE DERIVATIVE

The present invention relates to a cosmetic composition containing the combination of a dibenzoylmethane derivative and a specific phenol or bisphenol compound of formula (I) or (II), the definitions of which will be given hereinafter.

It also relates to a process for the photostabilization, against radiation, of at least one dibenzoylmethane derivative with at least one specific phenol or bisphenol compound of formula (I) or (II).

The present invention also relates to the use of said phenol or bisphenol compound in a composition comprising, in a cosmetically acceptable support, at least one UV-A-screening agent of the dibenzoylmethane derivative type with the aim of improving the effectiveness of said composition against UV-A rays.

Light radiation with wavelengths in the range 280 nm to 400 nm is known to brown the human epidermis; more particularly, rays with a wavelength in the range 280 to 320 nm, known as UV-B, are known to cause erythema and skin burns that may be deleterious to the development of a natural tan. For these reasons and for aesthetic reasons, there exists a constant demand for means for controlling this natural tanning which can thereby control the colour of the skin; it is therefore advisable to screen out said UV-B radiation.

It is also known that UV-A rays with wavelengths in the range 320 to 400 nm, which cause the skin to brown, are capable of inducing alterations in said skin, in particular in the case of sensitive skin or of skin continually exposed to solar radiation. UV-A rays in
particular cause a loss of elasticity of the skin and the appearance of wrinkles, resulting in premature ageing of the skin. They promote triggering of the erythematous reaction or amplify this reaction in certain individuals and may even be the cause of phototoxic or photo-allergic reactions. Thus, for aesthetic and cosmetic reasons, such as preserving the natural elasticity of the skin, for example, more and more people would like to control the effect of UV-A rays on their skin. Thus, it is also desirable to screen out UV-A radiation.

With the aim of providing protection for the skin and keratin materials against UV radiation, sunscreen compositions comprising organic screening agents, which are active in the UV-A range and active in the UV-B range, are generally used. The majority of these screening agents are liposoluble.

In this regard, a particularly advantageous family of UV-A screening agents currently consists of dibenzoylmethane derivatives, and in particular 4-tert-butyl-4'-methoxydibenzoylmethane, which in fact have an extremely good intrinsic absorbing capacity. These dibenzoylmethane derivatives, which are now products that are well known per se as screening agents that are active in the UV-A range, are in particular described in French patent applications FR-A-2326405 and FR-A-2440933, and also European patent application EP-A-0114607; 4-tert-butyl-4'-methoxydibenzoylmethane is, moreover, currently marketed under the trade name “PARSOL 1789” by the company Roche Vitamins.

Unfortunately, it has been discovered that dibenzoylmethane derivatives are relatively sensitive to ultraviolet radiation (especially UV-A), i.e., more specifically, they have an annoying tendency to degrade more or less rapidly under the action of said radiation. Thus, this substantial lack of photochemical
stability of dibenzoylmethane derivatives in the face of the ultraviolet radiation to which they are, by nature, intended to be subjected cannot guarantee constant protection during prolonged exposure to the sun, and means that repeated applications at regular, close intervals have to be made by the user in order to effectively protect the skin against UV rays.

It has been sought to solve this technical problem in patent application EP 1291008 using a specific phenolic compound 1,1,3-tri-(2-methyl-4-hydroxy-5-tert-butyl-phenyl)butane (RN = 1843-03-4), such as the product sold under the trade name Mixxim AO-30 by the company Fairmount Chemical. However, the photostability of the dibenzoylmethane derivatives obtained is not yet entirely satisfactory.

However, the applicant has now just discovered, surprisingly, that, by combining with the dibenzoylmethane derivatives mentioned above an effective amount of a specific phenol or bisphenol compound of formula (I) or (II), which will be defined further on in detail, it is possible to substantially and notably further improve the photochemical stability (or photostability) of the same dibenzoylmethane derivatives and their effectiveness in the UV-A range. The compositions containing such a combination also produce, after application, a more homogeneous distribution of the UV-screening agent.

These discoveries form the basis of the present invention.

Thus, in accordance with one of the subjects of the present invention, a composition is now proposed, which is a composition comprising, in a cosmetically-acceptable support, at least one UV-screening system, characterized in that it comprises:
(a) at least one UV-A screening agent of the
dibenzoylmethane derivative type, and
(b) at least one specific phenol or bisphenol
compound of formula (I) or (II), the definitions of
which will be given hereinafter.

Another subject of the invention also concerns a
process for improving the chemical stability, against
UV radiation, of at least one UV-A-screening agent of
the dibenzoylmethane derivative type, consisting in
combining with said dibenzoylmethane derivative at
least one specific phenol or bisphenol compound of
formula (I) or (II), the definitions of which will be
given hereinafter.

Finally, a subject of the present invention is also the
use of a specific phenol or bisphenol compound of
formula (I) or (II), in a composition comprising, in a
cosmetically acceptable support, at least one
dibenzoylmethane derivative with the aim of improving
the effectiveness of said composition against UV-A
rays.

Other characteristics, aspects and advantages of the
invention will emerge on reading the detailed
description that follows.

The term “cosmetically acceptable” is intended to mean
compatible with the skin and/or its integuments, which
has a pleasant colour, odour and feel and which does
not generate any unacceptable discomfort (stinging,
tautness, red blotches), liable to discourage consumers
from using this composition.

Among the dibenzoylmethane derivatives, mention may in
particular be made, in a non-limiting manner, of:
- 2-methyldibenzoylmethane,
- 4-methyldibenzoylmethane,
- 4-isopropylidibenzoylmethane,
- 4-tert-butyldibenzoylmethane,
- 2,4-dimethyldibenzoylmethane,
- 2,5-dimethyldibenzoylmethane,
- 4,4'-diisopropylidibenzoylmethane,
- 4,4'-dimethoxydibenzoylmethane,
- 4-tert-butyl-4'-methoxydibenzoylmethane,
- 2-methyl-5-isopropyl-4'-methoxydibenzoylmethane,
- 2-methyl-5-tert-butyl-4'-methoxydibenzoylmethane,
- 2,4-dimethyl-4'-methoxydibenzoylmethane,
- 2,6-dimethyl-4-tert-butyl-4'-methoxydibenzoylmethane.

Among the dibenzoylmethane derivatives mentioned above, use will in particular be made of 4-isopropyl-dibenzoylmethane, sold under the name “EUSOLEX 8020” by the company MERCK, and corresponding to the formula below:

![Dibenzoylmethane Derivative](image1)

The use of 4-(tert-butyl)-4'-methoxydibenzoylmethane or butyl methoxy dibenzoylmethane, marketed under the trade name “PARSOL 1789” by the company Roche Vitamins, is most particularly preferred; this screening agent corresponds to the following formula:

![Dibenzoylmethane Derivative](image2)

The dibenzoylmethane derivative(s) may be present in the compositions in accordance with the invention at contents that preferably range from 0.01% to 20% by weight, and more preferably from 0.1% to 10% by weight, and even more preferably from 0.1% to 6% by weight, relative to the total weight of the composition.

The specific phenol or bisphenol compounds in
accordance with the invention are chosen from those corresponding to the following general formula (I) or (II):

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

in which:

R₁, which may be identical or different, denote hydrogen or a C₁-C₄ alkyl radical, or else two adjacent radicals R₁ can together form a C₅-C₇ ring,

R₂ denotes:

- a hydrogen atom,
- a linear or branched C₁-C₂₀ alkyl radical that may contain at least one substituent chosen from a C₅-C₇ carbon-based ring and an oxygen, nitrogen, sulphur or silicon atom;
- a C₁-C₂₀ alkenyl radical;
- a C₁-C₂₀ alkylaryl radical,

R₃, which may be identical or different, represent

- a C₁-C₃₀ alkoxy radical that may be substituted with at least one oxygen or silicon;
- a linear or branched C₁-C₂₀ alkyl or hydroxyalkyl that may contain at least one substituent chosen from a C₅-C₇ carbon-based ring and an oxygen, nitrogen, sulphur or silicon atom;
- a C₁-C₂₀ alkenyl radical;
- a C₅-C₂₀ alkylaryl radical optionally substituted on the aryl component with at least one hydroxyl or C₁-C₄ alkoxy,

two adjacent radicals R₃ can together form a C₅-C₇ ring
optionally substituted with at least one oxygen atom, 
m is 0, 1 or 2, 
n is 0, 1, 2 or 3, 
p is 0 or 1, 
A is the linker arm between the two aromatic rings and 
may be a direct bond, a methylene group mono- or 
disubstituted with a C₁-C₄ alkyl radical, a sulphur atom 
or an oxygen atom; 

with the proviso that, when p = 1, R₁ and R₂ are other 
than hydrogen and R₃ is in the ortho-position with 
respect to the OH function, then R₃ is other than a 
tert-alkyl radical (for example, tert-butyl).

In formulae (I) and (II), among alkyl groups, mention 
may in particular be made of methyl, ethyl, n-propyl, 
isopropyl, n-butyl, isobutyl, tert-butyl, 2-ethylhexyl, 
dodecyl or hexadecyl groups.

Among the compounds of formula (I), use will more 
particularly be made of the following products (a) to 
(l):

(a) [diagram]

(BHA, RN = 121-00-6)

(b) [diagram]

(RN = 4979-46-8)

(c) [diagram]

(RN = 18403-57-1)
(Eugenol, RN = 97-53-0)

(RN = 96-76-4)

(RN = 2772-45-4)
Among the compounds of formula (II), use will more particularly be made of the following products (m) to (ab):

![Chemical Structure](image)
RN = 1806-29-7

Magnolol, RN = 528-43-8

Honokiol, RN = 35364-74-6

Dehydrodigenol, RN = 4433-08-3

Magnolignan, RN = 20601-85-8

RN = 85355-00-2
The compounds of formulae (I) and (II) in accordance with the invention are preferably present in the compositions in accordance with the invention at contents of from 0.01% to 20% by weight, and more
preferably from 0.1% to 10%, and even more preferably from 0.1% to 5% by weight, relative to the total weight of the composition.

According to the present invention, the compound(s) of formulae (I) and (II) will be used in an amount sufficient to obtain a notable and significant improvement in the photostability of the dibenzoylmethane derivative in a given composition. This minimal amount of photostabilizing agent to be used may vary according to the amount of dibenzoylmethane present at the start in the composition and according to the nature of the cosmetically acceptable support selected for the composition. It may be determined without any difficulty by means of a conventional test for measuring photostability.

The compositions in accordance with the invention may also contain other additional organic or inorganic UV-screening agents active in the UV-A range and/or in the UV-B range, that are water-soluble or liposoluble or else insoluble in the cosmetic solvents commonly used.

The additional organic photoprotective agents are in particular chosen from anthranilates; cinnamic derivatives; salicylic derivatives, camphor derivatives; benzophenone derivatives; β,β-diphenyl acrylate derivatives; triazine derivatives; benzotriazole derivatives; benzalmalonate derivatives, in particular those mentioned in patent US 5624663; benzimidazole derivatives; imidazolines; bisbenzoazolyl derivatives, as described in patents EP669323 and US 2,463,264; p-aminobenzoic acid (PABA) derivatives; methylenebis(hydroxyphenylbenzotriazole) derivatives as described in applications US 5,237,071, US 5,166,355, GB2303549, DE 197 26 184 and EP893119; benzoaxazole derivatives as described in patent applications EP0832642, EP1027883, EP1300137 and DE10162844;
screening polymers and screening silicones such as those described in particular in application WO 93/04665; α-alkylstyrene-derived dimers such as those described in patent application DE19855649; 4,4-diarylbutadienes as described in applications EP0967200, DE19746654, DE19755649, EP-A-1008586, EP1133980 and EP133981, and mixtures thereof.

As examples of additional organic photoprotective agents, mention may be made of those denoted below under their INCI name:

para-Aminobenzoic acid derivatives:
- PABA,
- Ethyl PABA,
- Ethyl dihydroxypropyl PABA,
- Ethylhexyl dimethyl PABA, sold in particular under the name “ESCALOL 507” by ISP,
- Glyceryl PABA,
- PEG-25 PABA, sold under the name “UVINUL P25” by BASF,

Salicylic derivatives:
- Homosalate sold under the name “Eusolex HMS” by Rona/EM Industries,
- Ethylhexyl salicylate sold under the name “NEO HELIOPAN OS” by HAARMANN and REIMER,
- Dipropylene glycol salicylate sold under the name “DIPSAL” by SCHER,
- TEA salicylate sold under the name “NEO HELIOPAN TS” by HAARMANN and REIMER,

Cinnamic derivatives:
- Ethylhexyl methoxycinnamate sold in particular under the trade name “PARSOL MCX” by Hoffmann La Roche,
- Isopropyl methoxy cinnamate,
- Isoamyl methoxy cinnamate sold under the trade name “NEO HELIOPAN E 1000” by HAARMANN and REIMER,
- Cinoxate,
- DEA methoxycinnamate,
Diisopropyl methylcinnamate,
Glyceryl ethylhexanoate dimethoxyccinnamate,

β,β-Diphenyl acrylate derivatives:
Octocrylene sold in particular under the trade name
"UVINUL N539" by BASF,
Etocrylene sold in particular under the trade name
"UVINUL N35" by BASF,

Benzophenone derivatives:
Benzophenone-1 sold under the trade name "UVINUL 400"
by BASF,
Benzophenone-2 sold under the trade name "UVINUL D50"
by BASF,
Benzophenone-3 or oxybenzone, sold under the trade name
"UVINUL M40" by BASF,
Benzophenone-4 sold under the trade name "UVINUL MS40"
by BASF,
Benzophenone-5,
Benzophenone-6 sold under the trade name "Helisorb 11"
by Norquay,
Benzophenone-8 sold under the trade name "Spectra-Sorb
UV-24" by American Cyanamid,
Benzophenone-9 sold under the trade name "UVINUL DS-49"
by BASF,
Benzophenone-12,
n-Hexyl 2-(4-diethylamino-2-hydroxybenzoyl)benzoate

Benzylidene camphor derivatives:
3-Benzylidene camphor manufactured under the name
"MEXORYL SD" by CHIMEX,
4-Methylbenzylidene camphor sold under the name
"EUSOLEX 6300" by MERCK,
Benzyllidene camphor sulphonyc acid manufactured under
the name "MEXORYL SL" by CHIMEX,
Camphor benzalkonium methosulphate manufactured under
the name "MEXORYL SO" by CHIMEX,
Terephthalyldene dicamphor sulphonyc acid manufactured
under the name "MEXORYL SX" by CHIMEX,
Polyacrylamidomethyl benzylidene camphor manufactured under the name “MEXORYL SW” by CHIMEX,

Phenylbenzimidazole derivatives:
Phenylbenzimidazole sulphonic acid sold in particular under the trade name “EUSOLEX 232” by MERCK,
Disodium phenyl dibenzimidazole tetrasulphonate sold under the trade name “NEO HELIOPAN AP” by HAARMANN and REIMER,

Phenylbenzotriazole derivatives:
Drometrizole trisiloxane sold under the name “Silatrizole” by RHODIA CHIMIE,
Methylenebis(benzotriazolyltetramethylbutylphenol),
sold in solid form under the trade name “MIXIM BB/100” by FAIRMOUNT CHEMICAL or in micronized form in aqueous dispersion under the trade name “TINOSORB M” by Ciba Specialty Chemicals,

Triazine derivatives:
Bisethylhexyloxyphenol methoxyphenyl triazine sold under the trade name “TINOSORB S” by CIBA GEIGY,
Ethylhexyl triazone sold in particular under the trade name “UVINUL T150” by BASF,
Diethylhexyl butamido triazone sold under the trade name “UVASORB HEB” by SIGMA 3V,
2,4,6-tris(Dineopentyl 4’-aminobenzalmalonate)-s-triazine,
2,4,6-tris(Diisobutyl 4’-aminobenzalmalonate)-s-triazine,

Anthranilic derivatives:
Menthyl anthranilate sold under the trade name “NEO HELIOPAN MA” by HAARMANN and REIMER,

Imidazoline derivatives:
Ethylhexyl dimethoxybenzylidene dioxoimidazoline propionate,
Benzalmalonate derivatives:
Dineopentyl 4′-methoxybenzalmalonate,
Polyorganosiloxane comprising benzalmalonate functions,
such as polysilicone-15 sold under the trade name
"PARSOL SLX" by Hoffmann La Roche,

4,4-Diarylbutadiene derivatives:
- 1,1-Dicarboxy(2,2′-dimethylpropyl)-4,4-diphenyl-
butadiene,

Benzoxazole derivatives:
2,4-bis[5-1-(Dimethylpropyl)benzoxazol-2-yl-
(4-phenyl)imino]-6-(2-ethylhexyl)imino-1,3,5-triazine
sold under the name Uvasorb K2A by Sigma 3V,
and mixtures thereof.

The preferred additional organic photoprotective agents
are chosen from:
Ethylhexyl methoxycinnamate,
Homosalate,
Ethylhexyl salicylate,
Butyl methoxy dibenzoylmethane,
Octocrylene,
Phenylbenzimidazole sulphonic acid,
Benzophenone-3,
Benzophenone-4,
Benzophenone-5,
n-Hexyl 2-(4-diethylamino-2-hydroxybenzoyl)benzoate,
4-Methylbenzylidene camphor,
Terephthalylidene dicamphor sulphonic acid,
Disodium phenyl dibenzimidazole tetrasulphonate,
Methylenebis(benzotriazolyltetramethylbutylphenol),
Ethylhexyl triazone,
bis(Ethylhexyloxyphenol methoxyphenyl triazone),
Diethylhexyl butamido triazone,
2,4,6-tris(Dineopentyl 4′-aminobenzalmalonate)-s-
triazine,
2,4,6-tris(Diisobutyl 4′-aminobenzalmalonate)-s-
triazine,
Drometrizole trisiloxane,
Polyisilcone-15,
Dineopentyl 4'-methoxybenzalmalonate,
1,1-Dicarboxy-(2,2’-dimethylpropyl)-4,4-diphenyl-
butadiene,
2,4-bis[5-1-(Dimethylpropyl)benzoxazol-2-yl-
(4-phenyl)iminol-6-(2-ethylhexyl)imino-1,3,5-triazine,
and mixtures thereof.

The inorganic photoprotective agents are chosen from
pigments or else nanopigments (mean size of the primary
particles: generally between 5 nm and 100 nm,
preferably between 10 nm and 50 nm) of coated or
uncoated metal oxides such as, for example,
nanopigments of titanium oxide (amorphous or
crystalline in rutile and/or anatase form), iron oxide,
zinc oxide, zirconium oxide or cerium oxide, and
mixtures thereof. Conventional coating agents are,
moreover, alumina and/or aluminium stearate. Such
coated or uncoated metal oxide nanopigments are in
particular described in patent applications EP 518 772
and EP 518 773.

The additional photoprotective agents are generally
present in the compositions according to the invention
in proportions ranging from 0.01% to 20% by weight
relative to the total weight of the composition, and
preferably ranging from 0.1% to 10% by weight relative
to the total weight of the composition.

The nanopigments treated are pigments that have
undergone one or more surface treatments of chemical,
electronic, mechanochemical and/or mechanical nature
with compounds as described, for example, in Cosmetics
& Toiletries, February 1990, Vol. 105, pp. 53-64, such
as aminoacids, beeswax, fatty acids, fatty alcohols,
anionic surfactants, lecithins, sodium salts, potassium
salts, zinc salts, iron salts or aluminium salts of
fatty acids, metal (titanium or aluminium) alkoxides,
polyethylene, silicones, proteins (collagen, elastin), alkanolamines, silicon oxides, metal oxides, sodium hexametaphosphate, alumina or glycerol.

The treated nanopigments may more particularly be titanium oxides treated with:
- silica and alumina, such as the products “Microtitanium Dioxide MT 500 SA” and “Microtitanium Dioxide MT 100 SA” from the company TAYCA, and the products “Tioveil Fin”, “Tioveil OP”, “Tioveil MOTG” and “Tioveil IPM” from the company TIOXIDE,
- alumina and aluminium stearate, such as the product “Microtitanium Dioxide MT 100 T” from the company TAYCA,
- alumina and aluminium laurate, such as the product “Microtitanium Dioxide MT 100 S” from the company TAYCA,
- iron oxides and iron stearate, such as the product “Microtitanium Dioxide MT 100 F” from the company TAYCA,
- silica, alumina and silicone, such as the products “Microtitanium Dioxide MT 100 SAS”, “Microtitanium Dioxide MT 600 SAS” and “Microtitanium Dioxide MT 500 SAS” from the company TAYCA,
- sodium hexametaphosphate, such as the product “Microtitanium Dioxide MT 150 W” from the company TAYCA,
- octyltrimethoxysilane, such as the product “T-805” from the company DEGUSSA,
- alumina and stearic acid, such as the product “UVTM160” from the company KEMIRA,
- alumina and glycerol, such as the product “UVTM212” from the company KEMIRA,
- alumina and silicone, such as the product “UVTM262” from the company KEMIRA.

Other titanium oxide nanopigments treated with a silicone are preferably TiO₂ treated with octyltrimethylsilane, the mean size of the elemental
particles of which is between 25 and 40 nm, such as the product sold under the trade name “T 805” by the company DEGUSSA SILICES, TiO$_2$ treated with a polydimethylsiloxane, the mean size of the elemental particles of which is 21 nm, such as the product sold under the trade name “70250 Cardre UF TiO2SI3” by the company CARDRE, anatase/rutile TiO$_2$ treated with a polydimethylhydrogenosiloxane, the mean size of the elemental particles of which is 25 nm, such as the product sold under the trade name “Micro Titanium Dioxide USP Grade Hydrophobic” by the company COLOR TECHNIQUES.

The uncoated titanium oxide nanopigments are, for example, sold by the company TAYCA under the trade names “Microtitanium Dioxide MT 500 B” or “Microtitanium Dioxide MT600 B”, by the company DEGUSSA under the name “P 25”, by the company WACKHER under the name “Oxyde de titane transparent FW”, by the company MIYOSHI KASEI under the name “UFTR”, by the company TOMEN under the name “ITS” and by the company TIOXIDE under the name “TIOVEIL AQ”.

The uncoated zinc oxide nanopigments are, for example:
- those sold under the name “Z-cote” by the company Sunsmart;
- those sold under the name “Nanox” by the company Elementis;
- those sold under the name “Nanogard WCD 2025” by the company Nanophase Technologies.

The coated zinc oxide nanopigments are, for example:
- those sold under the name “Oxide zinc CS-5” by the company Toshibi (ZnO coated with polymethylhydrogenosiloxane);
- those sold under the name “Nanogard Zinc Oxide FN” by the company Nanophase Technologies (as a dispersion at 40% in Finsolv TN, C$_{12}$-C$_{15}$ alkyl benzoate);
- those sold under the name “DAITOPERSION ZN-30” and
"DAITOPERSION Zn-50" by the company Daito (dispersions in cyclopolydimethylsiloxane/oxyethyleneated polydimethylsiloxane, containing 30% or 50% of nano zinc oxides coated with silica and polymethylhydrogenosiloxane);
- those sold under the name "NFD Ultrafine ZnO" by the company Daikin (ZnO coated with perfluoroalkyl phosphate and perfluoroalkylethyl-based copolymer as a dispersion in cyclopentasiloxane);
- those sold under the name "SPD-Z1" by the company Shin-Etsu (ZnO coated with silicone-grafted acrylic polymer, dispersed in cyclosiloxane);
- those sold under the name "Escalol Z100" by the company ISP (ZnO treated with alumina and dispersed in the mixture ethylhexyl methoxycinnamate/PVP-hexadecene copolymer/methicone);
- those sold under the name "Fuji ZnO-SMS-10" by the company Fuji Pigment (ZnO coated with silica and polymethylsilsesquioxane);
- those sold under the name "Nanox Gel TN" by the company Elementis (ZnO dispersed at 55% in C12-C15 alkyl benzoate with hydroxy stearic acid polycondensate).

The uncoated cerium oxide nanopigments are sold under the name "COLLOIDAL CERIUM OXIDE" by the company RHONE POULENC.

The uncoated iron oxide nanopigments are, for example, sold by the company ARNAUD under the names "NANOGARD WCD 2002 (FE 45B)", "NANOGARD IRON FE 45 BL AQ", "NANOGARD FE 45R AQ" or "NANOGARD WCD 2006 (FE 45R)", or by the company MITSUBISHI under the name "TY-220".

The coated iron oxide nanopigments are, for example, sold by the company ARNAUD under the names "NANOGARD WCD 2008 (FE 45B FN)", "NANOGARD WCD 2009 (FE 45B 556)", "NANOGARD FE 45 BL 345" and "NANOGARD FE 45 BL", or by the company BASF under the name "OXYDE DE FER TRANSPARENT".

Mention may also be made of the mixtures of metal
oxides, in particular of titanium dioxide and of cerium oxide, including the equal-weight mixture of titanium dioxide and cerium dioxide coated with silica, sold by the company IKEDA under the name "SUNVEIL A", and also the mixture of titanium dioxide and zinc dioxide coated with alumina, with silica and with silicone such as the product "M 261" sold by the company KEMIRA, or coated with alumina, with silica and with glycerol such as the product "M 211" sold by the company KEMIRAL.

The nanopigments can be introduced into the compositions according to the invention as they are or in the form of a pigmentary paste, i.e. as a mixture with a dispersing agent, as described, for example, in document GB-A-2206339.

The additional photoprotective agents are generally present in the compositions according to the invention in proportions ranging from 0.01% to 20% by weight relative to the total weight of the composition, and preferably ranging from 0.1% to 10% by weight relative to the total weight of the composition.

The compositions according to the invention can also contain artificial tanning and/or browning agents for the skin (self-tanning agents), and more particularly dihydroxyacetone (DHA). They are preferably present in amounts ranging from 0.1% to 10% by weight relative to the total weight of the composition.

The compositions in accordance with the present invention can also comprise conventional cosmetic adjuvants in particular chosen from fatty substances, organic solvents, hydrophilic or lipophilic, ionic or non-ionic thickeners, softeners, humectants, opacifiers, stabilizers, emollients, silicones, anti-foams, fragrances, preserving agents, anionic, cationic, non-ionic, zwitterionic or amphoteric surfactants, active agents, fillers, polymers,
propellants, basifying or acidifying agents, or any other ingredient normally used in the cosmetics and/or dermatological field.

The fatty substances may consist of an oil or a wax or mixtures thereof. The term "oil" is intended to mean a compound that is liquid at ambient temperature. The term "wax" is intended to mean a compound that is solid or substantially solid at ambient temperature, and the melting point of which is generally above 35°C.

As oils, mention may be made of mineral oils (paraffin); plant oils (sweet almond oil, macadamia oil, blackcurrant seed oil, jojoba oil); synthetic oils such as perhydrosqualene, fatty alcohols, acids or esters (such as the C\textsubscript{12}-C\textsubscript{15} alkyl benzoate sold under the trade name "Finsolv TN" by the company WITCO, octyl palmitate, isopropyl lanolate, triglycerides, including those of capric/caprylic acids), oxyethylated or oxypropylenated fatty esters and ethers; silicone oils (cyclomethicone, polydimethylsiloxanes or PDMSs) or fluoro oils, polyakylenes.

As waxy compounds, mention may be made of paraffin, carnauba wax, beeswax and hydrogenated castor oil.

Among organic solvents, mention may be made of lower alcohols and polyols. The latter may be chosen from glycols and glycol ethers, such as ethylene glycol, propylene glycol, butylene glycol, dipropylene glycol or diethylene glycol.

As hydrophilic thickeners, mention may be made of carboxyvinyl polymers such as carbopols (carbomers) and pemulens (acrylate/C\textsubscript{10}-C\textsubscript{30} alkyl acrylate copolymer); polyacrylamides such as, for example, the crosslinked copolymers sold under the names Sepigel 305 (CTFA name: polyacrylamide/C\textsubscript{13-14} isoparaffin/Laureth 7) or Simulgel 600 (CTFA name: acrylamide/sodium
acryloyldimethyltaurate copolymer/isoheaxadecane/polysorbate 80) by the company Seppic; polymers and copolymers of 2-acrylamido-2-methylpropanesulphonic acid, optionally crosslinked and/or neutralized, such as the poly(2-acrylamido-2-methylpropanesulphonic acid) sold by the company Hoechst under the trade name "Hostacerin AMPS" (CTFA name: ammonium polyacryldimethyltauramide); cellulosic derivatives such as hydroxyethylcellulose; polysaccharides and in particular gums such as xanthan gum; and mixtures thereof.

As lipophilic thickeners, mention may be made of modified clays such as hectorite and its derivatives, for instance the products sold under the name Bentone.

Among the active agents, mention may be made of:
- anti-pollution agents and/or free-radical scavengers;
- depigmenting agents and/or propigmenting agents;
- anti-glycation agents;
- NO-synthase inhibitors;
- agents for stimulating the synthesis of dermal or epidermal macromolecules and/or preventing their degradation;
- agents for stimulating fibroblast proliferation;
- agents for stimulating keratinocyte proliferation;
- muscle relaxants;
- tensioning agents;
- desquamating agents;
- moisturizers;
- anti-inflammatory agents;
- agents that act on the energy metabolism of cells;
- insect repellents;
- substance P antagonists or CRGP antagonists.

Of course, those skilled in the art will take care to choose the possible additional compound(s) mentioned above and/or the amounts thereof in such a way that the advantageous properties intrinsically associated with
the compositions in accordance with the invention are not, or not substantially, impaired by the addition(s) envisaged.

The compositions according to the invention can be prepared according to the techniques well known to those skilled in the art, in particular those intended for the preparation of emulsions of oil-in-water or water-in-oil type. They can in particular be in the form of a simple or complex (O/W, W/O, O/W/O or W/O/W) emulsion such as a cream or a milk, or in the form of a gel or of a cream-gel, in the form of a lotion, a powder or a solid stick, and can optionally be packaged as an aerosol and be in the form of a foam or a spray.

Preferably, the compositions according to the invention are in the form of an oil-in-water or water-in-oil emulsion.

The emulsions generally contain at least one emulsifier chosen from amphoteric, anionic, cationic or non-ionic emulsifiers, used alone or as a mixture. The emulsifiers are chosen appropriately depending on the emulsion to be obtained (W/O or O/W).

As emulsifying surfactants that can be used for the preparation of the W/O emulsions, mention may, for example, be made of alkyl esters or ethers of sorbitan, of glycerol or of sugars; silicone surfactants, for instance dimethicone copolymers, such as the mixture of cyclomethicone and of dimethicone copolyol, sold under the name "DC 5225 C" by the company Dow Corning, and alkyl dimethicone copolymers such as the laurylmethicone copolyol sold under the name "Dow Corning 5200 Formulation Aid" by the company Dow Corning; cetyl dimethicone copolyol such as the product sold under the name Abil EM 90R by the company Goldschmidt and the mixture of cetyl dimethicone copolyol, of polyglyceryl isostearate (4 mol of glycerol) and of hexyl laurate
sold under the name ABIL WE 09 by the company Goldschmidt. One or more co-emulsifiers can also be added thereto, which co-emulsifiers can, advantageously, be chosen from the group comprising polyol alkyl esters. As polyol alkyl esters, mention may in particular be made of esters of glycerol and/or of sorbitan and, for example, polyglyceryl isostearate, such as the product sold under the name Isolan GI 34 by the company Goldschmidt, sorbitan isostearate, such as the product sold under the name Arlacel 987 by the company ICI, and the mixture of sorbitan isostearate and of glycerol, such as the product sold under the name Arlacel 986 by the company ICI, and mixtures thereof.

For the O/W emulsions, emulsifiers that may, for example, be mentioned include non-ionic emulsifiers such as 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 such as sucrose stearate; ethers of a fatty alcohol and of a sugar, in particular alkylpolyglucosides (APGs) such as the decylglucoside and the laurylglucoside sold, for example, by the company Henkel under the respective names Plantaren 2000 and Plantaren 1200, the cetostearylglucoside optionally as a mixture with cetostearyl alcohol, sold, for example, under the name Montanov 68 by the company Seppic, under the name Tegocare CG90 by the company Goldschmidt and under the name Emulgade KE3302 by the company Henkel, and also the arachidyl glucoside, for example, in the form of the mixture of arachidyl and behenyl alcohols and of arachidyl glucoside sold under the name Montanov 202 by the company Seppic. According to a specific embodiment of the invention, the mixture of alkylpolyglucoside as defined above with the
corresponding fatty alcohol can be in the form of a self-emulsifying composition, as described, for example, in document WO-A-92/06778. When an emulsion is involved, the aqueous phase of the latter may comprise a non-ionic vesicular dispersion prepared according to known processes (Bangham, Standish and Watkins, J. Mol. Biol. 13, 238 (1965), FR 2 315 991 and FR 2 416 008).

The compositions according to the invention find their application in a large number of treatments, in particular cosmetic treatments, for the skin, the lips and the hair, including the scalp, in particular for protecting and/or caring for the skin, the lips and/or the hair, and/or for making up the skin and/or the lips.

Another subject of the present invention consists of the use of the compositions according to the invention as defined above, for the manufacture of products for the cosmetic treatment of the skin, the lips, the nails, the hair, the eyelashes, the eyebrows and/or the scalp, in particular care products and makeup products.

The cosmetic compositions according to the invention may be used, for example, as a care product and/or an sunscreen product for the face and/or the body, of liquid to semi-liquid consistency, such as milks, more or less rich creams, cream-gels or pastes. They may optionally be packaged as an aerosol and may be in the form of a foam or a spray.

The compositions according to the invention in the form of vaporizable fluid lotions in accordance with the invention are applied to the skin or the hair in the form of fine particles by means of pressurization devices. The devices in accordance with the invention are well known to those skilled in the art and include non-aerosol pumps or “atomizers”, aerosol containers
comprising a propellant and also aerosol pumps that use compressed air as propellant. The latter pumps are described in patents US 4,077,441 and US 4,850,517 (forming an integral part of the content of the description).

The compositions packaged as an aerosol in accordance with the invention generally contain conventional propellants such as, for example, hydrofluoro compounds, dichlorodifluoromethane, difluoroethane, dimethyl ether, isobutane, n-butane, propane or trichlorofluoromethane. They are preferably present in amounts ranging from 15% to 50% by weight relative to the total weight of the composition.

Concrete but in no way limiting examples illustrating the invention will now be given.

**EXAMPLES 1 to 12**

The photostabilizing effect of various phenolic compounds of formula (I) or (II) in accordance with the invention with respect to the dibenzoylmethane derivative: butyl methoxy dibenzoylmethane, marketed under the trade name “PARSOL 1789” by the company Roche Vitamins, is evaluated.

The photostabilizing effect of the following 3 known phenolic compounds of the prior art is also evaluated:

**Comparative Example 1:**

![Chemical Structure](image-url)
Comparative Example 2:

![Chemical structure image](RN = 118-82-1)

Comparative Example 3:

1,1,3-Tri-(2-methyl-4-hydroxy-5-tert-butylphenyl)butane (RN = 1843-03-4) such as the product sold under the commercial name Mixxim A0-30 by the company Fairmount Chemical.

![Chemical structure image](RN = 1843-03-4)

PRINCIPLE OF THE METHOD:

The percentage loss of dibenzoylmethane derivative, induced by exposure to a solar simulator, of a formula spread into films in the region of 20 μm thick, is measured.

The evaluation is carried out by HPLC analysis of the screening agent in solution, after extraction of the films, by comparing irradiated and non-irradiated samples.
MATERIALS AND METHODS:

Solar simulator: Oriel 1000W device equipped with a 4-inch output, with an 81017 filter and a dichroic mirror. The samples are exposed in the horizontal position.

UV-meter: OSRAM CENTRA device equipped with 2 reading heads, one for UVA and the other for UVB. The simulator - UV-meter assembly is calibrated annually by spectroradiometry.

Irradiance measurements carried out at the beginning and the end of exposure by placing the reading heads in the position of the sample.

The irradiances are:
0.35 - 0.45 mW/cm² in the UVB range
16 - 18 mW/cm² in the UVA range.

The residual butyl methoxy dibenzoylmethane is measured by chromatography: HPLC system with diode array detector.

COMMON SUPPORT

The phenols are introduced into the common support defined above at a content of 4% in the presence of 1% of butyl methoxy dibenzoylmethane of the composition.
<table>
<thead>
<tr>
<th>Phase</th>
<th>Name</th>
<th>Amount per 100 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatty</td>
<td>Butyl methoxy</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>dibenzoylmethane</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phenolic compound</td>
<td>4</td>
</tr>
<tr>
<td>Aqueous</td>
<td>Pure glycerol</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>qs 100</td>
</tr>
</tbody>
</table>

The loss of butyl methoxy dibenzoylmethane is also measured after irradiation in the same support not containing any phenolic compound (comparative example 4).

**IMPLEMENTATION OF PHOTOSTABILITY TESTS**

Approximately 20 mg of each formula tested are spread out over a surface area of 10 cm² on an etched face of a disc of molten silica. The exact amount is determined by weighing. 3 films are exposed to the solar simulator and 3 others serve as a control.

The samples are exposed 3 at a time to the light of the solar simulator for a period of time sufficient to deliver a UVA dose equal to 12 G corrected with respect to the sensitivity of the UV-meter corresponding to the degradation of approximately 50% of the butyl methoxy dibenzoylmethane in the absence of phenolic agent.

At the end of the exposure, each support disc is introduced into a 600 ml container with 10 ml of an appropriate solvent (in general, EtOH); the whole is placed in an ultrasound tank for 5 minutes.

The solution is then transferred into bottles suitable for the support compatible with the HPLC analytical
device used.

The analytical conditions can be adjusted according to the active agent tested.

The calculation of the losses is carried out based on the means obtained on the irradiated and non-irradiated samples, as described below:

<table>
<thead>
<tr>
<th>Examples</th>
<th>Phenolic derivative</th>
<th>% phenolic compound</th>
<th>% Parsol 1789</th>
<th>% loss of Parsol 1789</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparative example 1</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td>4</td>
<td>1</td>
<td>25.3±2.5</td>
</tr>
<tr>
<td>Comparative example 2</td>
<td><img src="image2.png" alt="Diagram" /></td>
<td>4</td>
<td>1</td>
<td>25.2±1.4</td>
</tr>
<tr>
<td>Comparative example 3</td>
<td><img src="image3.png" alt="Diagram" /></td>
<td>4</td>
<td>1</td>
<td>20.8±7.5</td>
</tr>
<tr>
<td>Comparative example 4</td>
<td>none</td>
<td>0</td>
<td>1</td>
<td>46.2±1.5</td>
</tr>
<tr>
<td>1</td>
<td><img src="image4.png" alt="Diagram" />(a)</td>
<td>4</td>
<td>1</td>
<td>8.8±4.4</td>
</tr>
<tr>
<td>Examples</td>
<td>Phenolic derivative</td>
<td>% phenolic compound</td>
<td>% Parsol 1789</td>
<td>% loss of Parsol 1789</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>----------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>2</td>
<td><img src="c" alt="Image" /></td>
<td>4</td>
<td>1</td>
<td>5.0±1.7</td>
</tr>
<tr>
<td>3</td>
<td><img src="e" alt="Image" /></td>
<td>4</td>
<td>1</td>
<td>9.4±2.1</td>
</tr>
<tr>
<td>4</td>
<td><img src="f" alt="Image" /></td>
<td>4</td>
<td>1</td>
<td>8.5±0.7</td>
</tr>
<tr>
<td>5</td>
<td><img src="g" alt="Image" /></td>
<td>4</td>
<td>1</td>
<td>10.7±1.1</td>
</tr>
<tr>
<td>6</td>
<td><img src="j" alt="Image" /></td>
<td>4</td>
<td>1</td>
<td>9.2±2.3</td>
</tr>
</tbody>
</table>
TABLE I (continued)

<table>
<thead>
<tr>
<th>Examples</th>
<th>Phenolic derivative</th>
<th>% phenolic compound</th>
<th>% Parsol 1789</th>
<th>% loss of Parsol 1789</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td><img src="image1" alt="Chemical Structure" /></td>
<td>4</td>
<td>1</td>
<td>3.2±3.2</td>
</tr>
<tr>
<td>8</td>
<td><img src="image2" alt="Chemical Structure" /></td>
<td>4</td>
<td>1</td>
<td>7.8±1.3</td>
</tr>
<tr>
<td>9</td>
<td><img src="image3" alt="Chemical Structure" /></td>
<td>4</td>
<td>1</td>
<td>6.4±1.5</td>
</tr>
<tr>
<td>10</td>
<td><img src="image4" alt="Chemical Structure" /></td>
<td>4</td>
<td>1</td>
<td>11.9±1.3</td>
</tr>
<tr>
<td>11</td>
<td><img src="image5" alt="Chemical Structure" /></td>
<td>4</td>
<td>1</td>
<td>5.5±4.2</td>
</tr>
<tr>
<td>12</td>
<td><img src="image6" alt="Chemical Structure" /></td>
<td>4</td>
<td>1</td>
<td>4.6±3.7</td>
</tr>
</tbody>
</table>
All the phenolic compounds of formula (I) or (II) of Examples 1 to 12 according to the invention have a photostabilizing effect with respect to the dibenzoylmethane derivatives which is much better than that obtained with the phenolic compounds of Comparative Examples 1 to 3 of the prior art.
1. Composition containing, in a cosmetically acceptable medium, at least one UV-A-screening agent of the dibenzoylmethane derivative type and at least one phenol or bisphenol compound corresponding to the following general formula (I) or (II):

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

in which:
R₁, which may be identical or different, denote hydrogen or a C₁-C₄ alkyl radical, or else two adjacent radicals R₁ can together form a C₅-C₇ ring,
R₂ denotes:

- a hydrogen atom,
- a linear or branched C₁-C₂₀ alkyl radical that may contain at least one substituent chosen from a C₅-C₇ carbon-based ring and an oxygen, nitrogen, sulphur or silicon atom;
- a C₁-C₂₀ alkenyl radical;
- a C₁-C₂₀ alkylaryl radical,
R₃, which may be identical or different, represent
- a C₁-C₂₀ alkoxy radical that may be substituted with at least one oxygen or silicon;
- a linear or branched C₁-C₂₀ alkyl or hydroxyalkyl that may contain at least one substituent chosen from a C₅-C₇ carbon-based ring and an oxygen, nitrogen, sulphur or silicon atom;
- a C₁-C₂₀ alkenyl radical;
- a C₇-C₂₀ alkylaryl radical optionally substituted on the aryl component with at least one hydroxyl or C₁-C₄ alkoxy, two adjacent radicals R₃ can together form a C₅-C₇ ring optionally substituted with at least one oxygen atom, m is 0, 1 or 2, n is 0, 1, 2 or 3, p is 0 or 1, A is the linker arm between the two aromatic rings and may be a direct bond, a methylene group mono- or disubstituted with a C₁-C₄ alkyl radical, a sulphur atom or an oxygen atom; with the proviso that, when p = 1, R₁ and R₂ are other than hydrogen and R₃ is in the ortho-position with respect to the OH function, then R₃ is other than a tert-alkyl radical.

2. Composition according to Claim 1, where the compounds of formula (I) are chosen from:
3. Composition according to Claim 1, where the compounds of formula (II) are chosen from:
4. Composition according to any one of Claims 1 to 3, where the compound(s) of formula (I) or (II) is (are) present in proportions ranging from 0.01% to 20% by weight, preferably from 0.1% to 10% by weight, relative to the total weight of the composition.

5. Composition according to any one of the preceding claims, where the dibenzoylmethane derivative is chosen from:

- 2-methyl dibenzoylmethane,
- 4-methyl dibenzoylmethane,
- 4-isopropyl dibenzoylmethane,
- 4-tert-butyl dibenzoylmethane,
- 2,4-dimethyl dibenzoylmethane,
- 2,5-dimethyl dibenzoylmethane,
- 4,4’-diisopropyl dibenzoylmethane,
- 4,4’-dimethoxy dibenzoylmethane,
- 4-tert-butyl-4’-methoxy dibenzoylmethane,
- 2-methyl-5-isopropyl-4’-methoxy dibenzoylmethane,
- 2-methyl-5-tert-butyl-4’-methoxy dibenzoylmethane,
- 2,4-dimethyl-4’-methoxy dibenzoylmethane,
- 2,6-dimethyl-4-tert-butyl-4’-methoxy dibenzoylmethane.

6. Composition according to Claim 5, where the dibenzoylmethane derivative is the 4-isopropyl dibenzoylmethane corresponding to the formula below:

![Dibenzoylmethane Structure]

7. Composition according to Claim 6, where the dibenzoylmethane derivative is 4-(tert-butyl)-4’-methoxy dibenzoylmethane or Butyl Methoxy Dibenzoylmethane having the following formula:
8. Composition according to any one of Claims 1 to 7, where the dibenzoylmethane derivative(s) is (are) present at contents that range from 0.01% to 20% by weight, and more preferably from 0.1% to 10% by weight, and even more preferably from 0.1% to 6% by weight, relative to the total weight of the composition.

9. Composition according to any one of Claims 1 to 8, characterized in that it also contains other organic or inorganic photoprotective agents active in the UV-A range and/or UV-B range, that are water-soluble or liposoluble or else insoluble in the cosmetic solvents commonly used.

10. Composition according to Claim 9, where the additional organic photoprotective agents are chosen from anthranilates; cinnamic derivatives; salicylic derivatives, camphor derivatives, benzophenone derivatives; β,β-diphenyl acrylate derivatives; triazine derivatives; benzotriazole derivatives; benzaldehyde derivatives; benzimidazole derivatives; imidazolines; bisbenzoxazolyl derivatives; p-aminobenzoic acid (PABA) derivatives; methylenebis(hydroxyphenylbenzotriazole) derivatives; benzoazole derivatives; screening polymers and screening silicones; α-alkylstyrene-derived dimers; 4,4-diarylbutadienes, and mixtures thereof.

11. Composition according to Claim 10, characterized in that the organic UV-screening agent(s) is (are) chosen from the following compounds: Ethylhexyl methoxycinnamate,
Homosalate,
Ethylhexyl salicylate,
Butyl methoxy dibenzoylethane,
Octocrylene,
5 Phenylbenzimidazole sulphonic acid,
Benzophenone-3,
Benzophenone-4,
Benzophenone-5,
n-Hexyl 2-(4-diethylamino-2-hydroxybenzoyl)benzoate,
10 4-Methylbenzylidene camphor,
Terephthalylidene dicamphor sulphonic acid,
Disodium phenyl dibenzimidazole tetrasulphonate,
Methylenebis(benzotriazolyltetramethylbutylphenol),
Ethylhexyl triazone,
15 bis(Ethylhexyloxyphenol methoxyphenyl triazine),
Diethylhexyl butamido triazone,
2,4,6-tris(Dineopentyl 4′-aminobenzalmalonate)-s-triazine,
2,4,6-tris(Diisobutyl 4′-aminobenzalmalonate)-s-triazine,
20 Drometrizole trisiloxane,
Polysilicone-15,
Dineopentyl 4′-methoxybenzalmalonate,
1,1-Dicarboxy-(2,2′-dimethylpropyl)-4,4-diphenyl-
25 butadiene,
2,4-bis[5-1-(Dimethylpropyl)benzoxazol-2-yl-(4-phenyl)imino]-6-(2-ethylhexyl)imino-1,3,5-triazine,
and mixtures thereof.

30 12. Composition according to Claim 9, characterized in that the additional inorganic photoprotective agents are pigments or nanopigments of metal oxides, which are treated or untreated.

35 13. Composition according to Claim 12, characterized in that said pigments or nanopigments are chosen from titanium oxide, zinc oxide, iron oxide, zirconium oxide and cerium oxide, and mixtures thereof, which are treated or untreated.
14. Composition according to any one of Claims 1 to 13, characterized in that it also comprises at least one artificial tanning and/or browning agent for the skin.

15. Composition according to any one of Claims 1 to 14, characterized in that it also comprises at least one adjuvant chosen from fatty substances, organic solvents, hydrophilic or lipophilic, ionic or non-ionic thickeners, softeners, humectants, opacifiers, stabilizers, emollients, silicones, anti-foams, fragrances, preserving agents, anionic, cationic, non-ionic, zwitterionic or amphoteric surfactants, active agents, fillers, polymers, propellants, and basifying or acidifying agents.

16. Composition according to any one of Claims 1 to 15, characterized in that it is in the form of an oil-in-water or water-in-oil emulsion.

17. Use of a composition as defined in any one of Claims 1 to 16, for the manufacture of products for the cosmetic treatment of the skin, the lips, the nails, the hair, the eyelashes, the eyebrows and/or the scalp.

18. Use of a composition as defined in any one of Claims 1 to 16, for the manufacture of care products for the skin, the lips, the nails, the hair and/or the scalp.

19. Use of a composition as defined in any one of Claims 1 to 16, for the manufacture of makeup products.

20. Process for improving the chemical stability, against UV radiation, of at least one UV-A-screening agent of the dibenzoylmethane derivative type as defined in any one of the preceding claims, characterized in that at least one phenol or bisphenol
compound of formula (I) or (II) as defined in the preceding claims is combined with said dibenzoylmethane derivative.

5 21. Use of a phenol or bisphenol compound of formula (I) or (II) as defined in the preceding claims, in a composition comprising, in a cosmetically acceptable support, at least one UV-A-screening agent of the dibenzoylmethane derivative type as defined in any one of the preceding claims, with the aim of improving the effectiveness of said composition against UV-A rays.