Abstract: The present invention relates to novel ureidopyrimidones of formula (I) or (II) and to their cosmetic use as agents for screening out UV radiation. The present invention also relates to a composition comprising, in a cosmetically acceptable medium, at least one ureidopyrimidone of formula (I) or (II).
The present invention relates to novel ureidopyrimidones of formula (I) or (II) that will be defined later in detail, and to the cosmetic use of the ureidopyrimidones of formula (I) or (II) as agents for screening out UV radiation.

The present invention also relates to a composition comprising, in a cosmetically acceptable medium, at least one ureidopyrimidone of formula (I) or (II).

It is known that light radiation with wavelengths of between 280 nm and 400 nm permits tanning of the human epidermis and that light rays with wavelengths more particularly between 280 and 320 nm, known as UV-B rays, cause skin burns and erythema which can harm the development of a natural tan. For these reasons, as well as for aesthetic reasons, there is a constant demand for means of controlling this natural tanning in order thus to control the colour of the skin; this UV-B radiation should thus be screened out.

It is also known that UV-A rays, with wavelengths between 320 and 400 nm, which cause tanning of the skin, are liable to induce adverse changes therein, in particular in the case of sensitive skin or skin that is continually exposed to solar radiation. UV-A rays cause in particular a loss of elasticity of the skin and the appearance of wrinkles leading to 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 photoallergic reactions. Thus, for aesthetic and cosmetic reasons, for instance conservation of the skin's natural elasticity, an increasingly large number of people wish to control the effect of UV-A rays on their skin. It is thus desirable also to screen out UV-A radiation.
For the purpose of protecting the skin and keratin materials against UV radiation, antisun compositions comprising organic screening agents that are active in the UV-A range and in the UV-B range are generally used.

These antisun compositions are quite often in the form of an emulsion, of oil-in-water type (i.e. a cosmetically and/or dermatologically acceptable support consisting of an aqueous dispersing continuous phase and of a fatty dispersed discontinuous phase), or of water-in-oil type (aqueous phase dispersed in a continuous fatty phase), which contains, in varying concentrations, one or more standard liposoluble organic screening agents and/or standard water-soluble organic screening agents capable of selectively absorbing the harmful UV radiation, these screening agents (and the amounts thereof) being selected as a function of the desired sun protection factor, the sun protection factor (SPF) being expressed mathematically as the ratio of the dose of UV radiation required to reach the erythema-forming threshold with the UV-screening agent to the dose of the UV radiation required to reach the erythema-forming threshold without the UV-screening agent. In such emulsions, the hydrophilic screening agents are present in the aqueous phase and the lipophilic screening agents are present in the fatty phase.

Oil-in-water emulsions are, in general, more appreciated by consumers than water-in-oil emulsions, especially on account of their pleasant feel (similar to water) and of their presentation in the form of milk or non-greasy cream; however, they also lose their UV-stabilizing efficacy more easily once they come into contact with water; specifically, hydrophilic screening agents have a tendency to disappear with water, on bathing in the sea or in a swimming pool, under the shower or when practising water sports; thus, the antisun compositions they contain, alone or combined with lipophilic screening agents, no longer afford the
desired initial protection once the substrate (skin or hair) onto which they have been applied comes into contact with water.

Antisun compositions with improved water resistance may be obtained by using water-in-oil emulsions. Specifically, a hydrophilic screening agent is more water-remanent in a water-in-oil emulsion than in an oil-in-water emulsion. However, as has been indicated above, such compositions are still not entirely satisfactory since they leave upon application a greasy feel that users find particularly unpleasant.

Thus, there is still a need to find novel UV-screening agents that can be applied to the surface of the skin and/or the hair and that are more remanent with respect to common attacking factors during use, such as water, washing, bathing, swimming, sand, perspiration, sebum and rubbing, than standard UV-screening agents.

It has already been proposed in patent application FR 2 680 683, in order to improve the water remanence of UV-screening agents of the benzylidenecamphor type, to graft them onto hydrocarbon-based polymers forming a film on the skin and/or the hair. Unfortunately, grafting onto a polymer may give rise to solubility problems in the antisun formulations containing them, and the small amount of screening agent that is grafted relative to the molecular weight reduces the efficacy of the grafted screening agent relative to the non-grafted screening agent.

The object of the present invention is thus to find novel UV-screening agents that can be applied to the surface of the skin and/or the hair and that are more remanent with respect to common attacking factors during use, such as water, washing, bathing, swimming, sand, perspiration, sebum and rubbing, than standard UV-screening agents, without the drawbacks encountered by polymers grafted with screening molecules.

The Applicant has discovered, surprisingly, a novel family of UV-screening agents of the
Specifically, the Applicant has discovered in the course of its research that these ureidopyrimidones of formula (I) or (II) show substantially greater remanence than standard UV-screening agents. These same compounds of formula (I) or (II) can especially form, via at least four hydrogen bonds, a film on the surface of the skin and/or the hair.

This discovery forms the basis of the present invention.

One subject of the present invention is thus novel ureidopyrimidones of formula (I) or (II) that will be defined later in detail.

A subject of the present invention is also the cosmetic use of the ureidopyrimidones of formula (I) or (II) as agents for screening out UV radiation.

The present invention also relates to a composition comprising, in a cosmetically acceptable medium, at least one ureidopyrimidone of formula (I) or (II). Other characteristics, aspects and advantages of the invention will emerge on reading the detailed description that follows.

The term "cosmetically acceptable" means compatible with the skin and/or its integuments, having a pleasant colour, odour and feel and not causing any unacceptable discomfort (stinging, tautness or redness) liable to put the consumer off using this composition.

**UREIDOPYRIMIDONES**

The ureidopyrimidones in accordance with the invention correspond to one of the formulae (I) and (II) below:
in which:
- \( n = 1, 2 \) or \( 3 \); preferably \( n = 1 \);
- \( m = 0 \) or \( 1 \);
- \( w = 0 \) or \( 1 \); the value of \( w \) is conditioned by the nature of the groups \( A_1 \) and \( A_2 \) as specifically mentioned in the definition of the said groups;
- \( q = 0 \) or \( 1 \); the value of \( q \) is conditioned by the nature of the groups \( A_1 \) and \( A_2 \) as specifically mentioned in the definition of the said groups;
- \( R_1 \) and \( R_2 \), which may be identical or different within the same molecule, represent hydrogen, \(-\text{OH}, -\text{NRR'}\); or a carbon-based group, especially saturated or unsaturated, optionally aromatic, linear, branched and/or cyclic \( C_{1-18} \) alkyl, which may contain one or more heteroatoms chosen from \( O, S \) and \( N \); \( R_1 \) may also be the radical: \(-Z_1-A_1\);
- \( Z \) represents a multivalent radical (divalent to tetravalent, depending on the value of \( n \)) chosen from:
  (i) a linear or branched, saturated or unsaturated \( C_{1-32} \) carbon-based and especially hydrocarbon-based radical; optionally interrupted or substituted, one or more times, with an optionally aromatic \( C_{3-12} \) (hetero) cycle; or
  (ii) an optionally aromatic \( C_{3-12} \) carbon-based and especially hydrocarbon-based (hetero)cyclic radical; optionally substituted with one or more
linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>32</sub>
carbon-based and especially hydrocarbon-based radicals;

(iii) a radical - (C<sub>5</sub>-C<sub>6</sub>) cycloalkyl (C<sub>1</sub>-C<sub>12</sub>) alkyl-

the said radical Z optionally being:

(1) substituted with 1 to 12 identical or different
groups chosen from -OH, -SO<sub>3</sub>R, -OSO<sub>3</sub>R, -SO<sub>3</sub>H, -OSO<sub>3</sub>H, -
COOH, -COOR, -CONRR', C<sub>1</sub>-C<sub>4</sub> alkyl and -N<sup>+</sup>RR'R", An<sup>−</sup>

and/or

(2) interrupted or terminated with 1 to 5 identical or
different groups chosen from the divalent groups: -S-, -
NH- (or =NH), -O-, -C(0)-, -SO<sub>2</sub>-, or combinations thereof, for instance -NHCO(0),
-C(0)NH-, -OC(0)-, -
-C(0)O-, or

with R<sub>a</sub> = H or halogen, especially CI, or C<sub>1</sub>-C<sub>6</sub> alkyl;
R, R' and R" , which may be identical or different,

being H or a linear or branched C<sub>1</sub>-C<sub>12</sub> alkyl radical; it
being understood that the said radical Z comprises at
least one heteroatom chosen from N, O and S; when Z is
interrupted or substituted with a cationic group, the
electrical neutrality of the compounds of formula (I)
is ensured by a cosmetically acceptable anion or
mixture of anions An<sup>−</sup>;
- Z<sub>i</sub> and Z'<sub>i</sub>, which may be identical or different,
denote a divalent radical z;
- Z may also denote a covalent bond for the compounds
of formula (I) when n = 1 and q = 0, Z'<sub>i</sub> not being able
to denote a covalent bond;
- Z₂ is a linear or branched divalent C₁-C₃₂ alkyl radical; with the condition that when w = 0, then the radical A₁ and the diradical A₂ cannot end with a nitrogen; the monoradicals A₁ corresponding to one of the formulae (Ilia) to (XIIa) below:

a) para-aminobenzoate:

\[
\text{w = 1; } \quad \begin{array}{c}
\text{R}^1 \text{X-R}^1 \\
\text{N} \\
\text{H}
\end{array} \quad \text{(Ila)}
\]

b) cinnamate, benzalmalonate or cyanoacrylate:

\[
\text{X = 0 or 1}
\]

it being understood that q = w = x = 1 when Z is not a covalent bond and q = x = 0 when Z is a covalent bond.

c) benzophenone:

\[
\text{w = 1; } \quad \begin{array}{c}
\text{OH} \\
\text{N} \\
\text{H}
\end{array} \quad \text{(Va)}
\]

d) benzylidene camphor:

\[
\text{w = 1; } \quad \begin{array}{c}
\text{OH} \\
\text{N} \\
\text{H}
\end{array} \quad \text{(Va)}
\]
e) benzotriazole:

\[ \text{with } X = 0 \text{ or } \text{NH} \]

Ak = saturated C\text{\textsubscript{1}}-C\text{\textsubscript{6}} and preferably C\text{\textsubscript{2}} linear divalent alkyl radical.
s-triazine with the radicals $A_3$, which may be identical or different, representing the radicals of formula (IIia), (IVa), (Va), (Via) or (IXa);

- the diradicals $A_2$ corresponding to one of the formulae (IIIb) to (VIIb) below:

a/ para-aminobenzoate:

$$w = 1;$$

with $X = O$ or $NH$

b/ cinnamate, benzalmalonate or cyanoacrylate:

$$w = 1;$$

with $X = O$ or $NH$
c/ benzophenone:

\[
\text{w} = 0; \quad (\text{Vb})
\]

5 d/ benzylidenecamphor:

\[
\text{w} = 0; \quad (\text{Vlb})
\]

e/ s-triazine:

\[
\text{w} = 0; \quad (\text{Vllb})
\]

with \( A_4 \) representing a radical of formula (Ilia), (IVa), (Va), (Via) or (IXa);

in which:

- \( R^1 \) represents a linear or branched \( \text{C}_1-\text{C}_{30} \) alkyl or \( \text{C}_3-\text{C}_{30} \) alkenyl radical, which may bear one or more hydroxyl substituents and which may contain in the carbon-based chain an alkyl ring, one or more heteroatoms chosen from oxygen, nitrogen and silicon atoms, an optionally substituted \( \text{C}_6-\text{C}_{20} \) aryl radical;

- \( R^2 \) and \( R^1 \) represent, independently, a linear or branched \( \text{C}_1-\text{C}_{10} \) alkoxy radical, a linear or branched \( \text{C}_1-\text{C}_{10} \) alkyl radical, a linear or branched \( \text{C}_2-\text{C}_8 \) alkenyl radical or \(-\text{OSi(CH}_3)_3\), two adjacent radicals \( R^2 \) together possibly forming an alkylidenedioxy group in which the
alkylidene group contains 1 to 2 carbon atoms (i.e. a group -O-(CH₂)ᵗ-O- with t = 1 or 2),
- p and p' are, independently, 0, 1 or 2,
- R³ is hydrogen, a C₁-C₄ alkyl radical, or a radical
chosen from -(C=O)XR¹, -CN, -(C=O)R¹, -S₀₂R⁴ with R¹
having the same definition as above, and
- R⁴ represents a linear or branched C₁-C₁₂ alkyl radical
or a C₆-C₂₀ aryl radical, which is optionally substituted,
- R⁵ represents a divalent C₂-C₈ alkyl radical,
- X represents oxygen or a radical -NR⁶ with R⁶ being a
linear or branched C₁-C₈ alkyl radical.
Preference will be given to the compounds of
formula (I) or (II) in which:
- n is 1;
- m is 0 or 1;
- Rᵢ is H or -Zᵢ₁-A₁;
- R₂ is a linear or branched C₁-C₃ alkyl radical;
- the radical Z (or Z₁ and/or Z'₁) denotes a linear Cᵢ-
C₁₂ divalent alkyl radical, the divalent C₃-C₈ cycloalkyl
radical optionally substituted with one or more
identical or different linear or branched C₁-C₄ alkyl
radicals or the following divalent radicals:

Z also possibly denoting a covalent bond when n = 1 and
q = 0,
Z₂ denotes a linear divalent C₂-C₂₀ alkyl radical,
and in the radicals A₁ and/or A₂,
- R¹ is a C₁-C₈ alkyl, optionally substituted with 1 or
2 hydroxyl groups,
- X is -O-,
- p = p' = 0,
- R³ is -CN or -COOR¹,
- R⁵ is -CH2CH2-.

Even more preferably,
- n is 1;
- m is 0 or 1;
- R₁ is H or -Z₁'-A₁;
- R₂ is the linear or branched C₁-C₃ alkyl radical;

- the radical Z (or Z₁ and/or Z₁') denotes a linear
divalent C₁-C₁₂ alkyl radical, preferably a 1,2-
ethylene; 1,6-hexylene; 1,4-butylene radical, or a
divalent radical:

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  O
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Z also possibly denoting a covalent bond when n = 1 and
q = 0,
Z₂ denotes a linear divalent C₂-C₂₀ alkyl radical, in
particular a tetradecyl radical;
- R¹ is a C₁-C₈ alkyl, optionally substituted with 1 or
2 hydroxyl groups,
- X is -O-,
- p = p' = 0,
- R³ is -CN or -COOR¹,
- R⁵ is -CH2CH2-.

Preferably, the weight-average molecular weight
(Mw) of the compounds of formula (I) or (II) according
to the invention is less than 2000 g/mol.

The following will be noted as particularly
preferred derivatives:

1/ para-aminobenzoate derivatives:

- those of formula (I) for which Aį corresponds to
  formula (Ilia)
2/ cinnamate derivatives:

- those of formula (I) for which $A_1$ corresponds to formula (IVa)

- those of formula (II) for which $A_2$ corresponds to formula (IIIb)
- those of formula (II) for which $A_2$ corresponds to formula (IVb):

- benzalmalonate derivatives of formula (I) for which $A_1$ corresponds to formula (IVa):
4/ cyanoacylate derivatives:

- those of formula (I) for which $A_1$ corresponds to formula (IVa):

- those of formula (II) for which $A_2$ corresponds to formula (IVb):

5/ benzophenone derivatives of formula (I) in which $A_1$ corresponds to formula (Va):
6/ benzylidene camphor derivatives:

- those of formula (I) for which $A_1$ corresponds to formula (V)(a):

- those of formula (I) for which $A_i$ corresponds to formula (V)(a):

- those of formula (II) for which $A_2$ corresponds to formula (VI)(b):

7/ benzotriazole derivatives:
- those of formula (I) for which $A_i$ corresponds to formula (IXa):

- those of formula (I) for which $A_i$ corresponds to formula (XIIa):

8/ $s$-triazine derivatives:

- those of formula (I) for which $A_i$ corresponds to formula (XIIa)
those of formula (II) for which \( A_2 \) corresponds to formula (VIlb) in which \( A_1 \) represents a radical of formula (IVA)
The products of formula (I) may be obtained by reaction between a reactive function Y linked to group A', with a reactive function W attached to Z of the derivative of formula (XIII), the two reactive functions obviously being capable of reacting together, as described in the scheme below.

The products of formula (II) may be obtained by reaction between a reactive function Y linked to group A', with a reactive function W attached to Z of the derivative of formula (XIII), the two reactive functions obviously being capable of reacting together, as described in the scheme below.

\[
\text{A'}_1 \text{ and A'}_2 \text{ are such that, after reaction between the reactive groups } W \text{ and } Y, \text{ the compounds (I) or (II) containing, respectively, the radicals } A_i \text{ and } A_2 \text{ are obtained.}
\]

The reactive functions W and Y may preferably be chosen from the following functions:
- isocyanate \( -\text{N} = \text{C} = \text{O}; \)
- isothiocyanate \(-\text{N}=\text{C}=-\text{S}\);
- acid or carboxylic ester \(-\text{COOR}_a\) or activated ester \(\text{COOR}_b\) with \(\text{R}_a\) being \(\text{H}\) or a linear or branched \(\text{C}_1-\text{C}_4\) alkyl radical and better still a methyl or ethyl radical; and \(\text{OR}_b\) being chosen from phenoxy, 4-nitrophenoxy, 2,4,5-trichlorophenoxy and the following radicals:

- acyl halide,
- acyl imidazole or acyl benzotriazole of formula:

- acid anhydride;
- activated carbamic acid \(-\text{NHCOX}\) with \(X=\text{Cl}\), imidazole or \(\text{OR}_b\) with \(\text{OR}_b\) as defined above;
- hydroxyl \((\text{OH})\) or activated hydroxyl, for example in the form of \(\text{O-tosylate}\);
- primary or secondary amine \(-\text{NHR}_a\), in which \(\text{R}_a\) is as defined above.

Preferably, the reactive functions \(W\) and \(Y\) that are precursors of the bond between \(Z\) or \(Z'i\) and \(A'i\) or \(A'_{2}\) (or \(A'_{1}\) and \(A'_{2}\)) are chosen from isocyanate, amine and hydroxyl functions.

One particular method for obtaining the derivative of formula (XIII) or (XIII') is the one described in the article by Katritzky et al., Comprehensive Organic Functional Group Transformations, Pergamon: Oxford, 1995, vol. 6, pp. 500-506 or in Arkiv der Pharmazie, 314(1), 34-41, 1981.

To obtain compound (XIII), it is especially possible to react:
- an isocytosine \(B\) with an activated carbamic acid:
an isocytosine $B$ with an amine-derived isocyanate:

\[
\begin{align*}
\text{O} & \quad \text{N} & \quad \text{N} & \quad \text{H} \\
\text{R}_1 & \quad \text{R}_2 & \quad \text{H} & \quad \text{Cl} \\
\end{align*}
\]

$B$

- an isocytosine containing an activated carbamic function $C$ with an amine:

\[
\begin{align*}
\text{O} & \quad \text{N} & \quad \text{N} & \quad \text{H} \\
\text{R}_1 & \quad \text{R}_2 & \quad \text{H} & \quad \text{H} \\
\end{align*}
\]

$C$

- a $\beta$-keto ester $D$ (with $R_1$ being $H$) with a guanylalkylurea derivative $E$:

\[
\begin{align*}
\text{O} & \quad \text{N} & \quad \text{N} & \quad \text{H} \\
\text{R}_1 & \quad \text{R}_2 & \quad \text{H} & \quad \text{H} \\
\end{align*}
\]

$D$

The process is performed in the same manner to obtain the compounds (XIII').

Another process for preparing the derivatives of formula (I) or (II) for which $w = 1$ consists in

\[
\begin{align*}
\text{O} & \quad \text{N} & \quad \text{N} & \quad \text{H} \\
\text{R}_1 & \quad \text{R}_2 & \quad \text{H} & \quad \text{H} \\
\end{align*}
\]

$E$
synthesizing the following compound (with \( R_1 = H \) and \( R_2 = \text{methyl} \)):

\[
\begin{align*}
\text{O} & \text{N} \text{N} \text{N} \text{N} \text{O} \\
\text{E} & \text{N} \text{N} \text{Z} \text{N} \text{E} \\
\text{R}_1 & \text{R}_2
\end{align*}
\]

\( \text{R}_1 = H \)

\( \text{R}_2 = \text{CH}_3 \)

and then in reacting it with (respectively) the function(s) \( Y = \text{alcohol or amine of the compound } Y-A'^1 \) (or, respectively, of the compound \( Y-A'_2 - [Z_2-A'_2]_m-Y \)).

Another process for preparing the derivatives of formula (I) or (II) consists in synthesizing the following compound (with \( R_1 = H \) and \( R_2 = \text{methyl} \)):

\[
\begin{align*}
\text{O} & \text{N} \text{N} \text{N} \text{N} \text{O} \\
\text{E} & \text{N} \text{N} \text{Z} \text{N} \text{E} \\
\text{R}_1 & \text{R}_2
\end{align*}
\]

\( \text{R}_1 = H \)

\( \text{R}_2 = \text{CH}_3 \)

and then in reacting it with (respectively) the function(s) \( Y = \text{activated carboxylic acid or sulfonic acid of the compound } Y-A'^1 \) (or, respectively, of the compound \( Y-A'_2 - [Z_2-A'_2]_m-Y \)).

The ureidopyrimidone(s) in accordance with the invention may be present in the compositions according to the invention in a concentration of between 0.1% and 15% and preferably between 0.2% and 10% by weight relative to the total weight of the composition.

The compositions in accordance with the invention may also comprise other additional UVA-active and/or UVB-active organic or mineral UV-screening agents that are liposoluble or even insoluble, and also watersoluble UVB-screening agents, in the cosmetic solvents commonly used.

Needless to say, a person skilled in the art will take care to select the optional additional screening agent(s) and/or the amounts thereof such that the advantageous properties intrinsically associated with
the compositions in accordance with the invention are not, or are not substantially, adversely affected by the envisaged addition(s).

The additional organic screening agents are chosen especially from dibenzoylmethane derivatives; anthranilates; cinnamic derivatives; salicylic derivatives; camphor derivatives; benzophenone derivatives; β,β-diphenylacrylate derivatives; triazine derivatives other than those of formula (I); benzalmalonate derivatives, especially those mentioned in patent US 5 624 663; benzimidazole derivatives; imidazolines; p-aminobenzoic acid (PABA) derivatives; benzotriazole derivatives; methylenebis (hydroxyphenyl-benzotriazole) derivatives as described in patent applications US 5 237 071, US 5 166 355, GB 2 303 549, DE 197 26 184 and EP 893 119; benoxazole derivatives as described in patent applications EP 0 832 642, EP 1 027 883, EP 1 300 137 and DE 101 62 844; screening polymers and screening silicones such as those described especially in patent application WO 93/04665; α-alkylstyrene-based dimers, such as those described in patent application DE 198 55 649; 4,4-diarylbutadienes such as those described in patent applications EP 0 967 200, DE 197 46 654, DE 197 55 649, EP-A-1 008 586, EP 1 133 980 and EP 133 981; merocyanin derivatives such as those described in patent applications WO 04/006 878, WO 05/058 269 and WO 06/032 741; the indanylidene screening agents of patents EP-A-0 823 418 and EP-A-1 341 752.

As examples of organic UV-screening agents, mention may be made of those denoted hereinbelow under their INCI name:

Dibenzoylmethane derivatives:

Butylmethoxydibenzoylmethane, sold under the trade name Parsol 1789 by the company DSM Nutritional Products.

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 Symrise,
Dipropylene glycol salicylate sold under the name Dipsal by Scher,
TEA salicylate sold under the name Neo Heliopan TS by Symrise.

Cinnamic derivatives:

Ethylhexyl methoxycinnamate sold in particular under the trade name Parsol MCX by DSM Nutritional Products,
Isopropyl methoxycinnamate,
Isoamyl methoxycinnamate sold under the trade name Neo Heliopan E 1000 by Symrise,
Cinoxate,
DEA methoxycinnamate,
Diisopropyl methylcinnamate,
Glyceryl ethylhexanoate dimethoxycinnamate.

β,β-Diphenylacrylate 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
sold under the trade name Uvinul A+, or in the form of a mixture with octyl methoxycinnamate under the trade name Uvinul A+B by BASF.

Benzylidenecamphor derivatives:
3-Benzylidenecamphor manufactured under the name Mexoryl SD by Chimex,
4-Methylbenzylidenecamphor sold under the name Eusolex 6300 by Merck,
Benzylidenecamphorsulfonic acid manufactured under the name Mexoryl SL by Chimex,
Camphor benzalkonium methosulfate manufactured under the name Mexoryl SO by Chimex,
Terephthalylidenedicamphorsulfonic acid manufactured under the name Mexoryl SX by Chimex,
Polyacrylamidomethylbenzylidenecamphor manufactured under the name Mexoryl SW by Chimex.

Phenylbenzimidazole derivatives:
Phenylbenzimidazolesulfonic acid sold in particular under the trade name Eusolex 232 by Merck,
Disodium phenyl dibenzimidazole tetrasulfonate sold under the trade name Neo Heliopan AP by Symrise.
Benzotriazole derivatives:
Drometrizole trisiloxane sold under the name Silatrizole by Rhodia Chimie,
Methylenebis (benzotriazolyl)tetramethylbutylphenol sold in solid form under the trade name MIXXIM BB/100 by Fairmount Chemical, or in micronized form as an aqueous dispersion under the trade name Tinosorb M by Ciba Specialty Chemicals.

Triazine derivatives:
Bis (ethylhexyloxyphenol) methoxyphenyltriazine sold under the trade name Tinosorb S by Ciba Geigy,
Ethylhexyl triazone sold in particular under the trade name Uvinul T150 by BASF,
Diethylhexylbutamidotriazone sold under the trade name Uvasorb HEB by Sigma 3V,
2,4-bis (n-butyl 4'-aminobenzalmalonate) -6-[(3-(1,3,3,3-tetramethyl-1-
[(trimethylsilyl) oxy] disiloxanyl) propyl) amino] -s-triazine,
2,4,6-tris (dineopentyl 4'-aminobenzalmalonate) -s-triazine,
2,4,6-tris (diisobutyl 4'-aminobenzalmalonate) -s-triazine,
2,4-bis (dineopentyl 4'-aminobenzalmalonate) -6- (n-butyl 4'-aminobenzoate) -s-triazine,
the symmetrical triazine screening agents described in patent US 6 225 467, patent application WO 2004/085 412 (see compounds 6 and 9) or the document Symmetrical Triazine Derivatives IP.COM Journal, IP.COM INC West Henrietta, NY, US (20 September 2004), especially 2,4,6-tris (biphenyl)-1,3,5-triazines (in particular 2,4,6-tris (biphenyl-4-yl-1, 3,5-triazine) and 2,4,6-tris (terphenyl)-1,3,5-triazine which is also mentioned in Beiersdorf patent applications WO 06/035 000, WO 06/034 982, WO 06/034 991, WO 06/035 007, WO 2006/034 992 and WO 2006/034 985.
Anthranilic derivatives:
Menthyl anthranilate sold under the trade name Neo Heliopan MA by Symrise.

Imidazoline derivatives:
Ethylhexyldimethoxybenzylidenedioxoimidazoline propionate.

Benzalmalonate derivatives:
Dineopentyl 4'-methoxybenzalmalonate.

Polyorganosiloxane containing benzalmalonate functions, for instance Polysilicone-15, sold under the trade name Parsol SLX by DSM Nutritional Products.

4,4-Diarylbutadiene derivatives:
1,1-Dicarboxy (2,2'-dimethylpropyl) -4, 4-diphenylbutadiene.

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 preferential additional organic screening agents are chosen from:
Ethylhexyl methoxycinnamate,
Homosalate,
Ethylhexyl salicylate,
Octocrylene,
Butylmethoxydibenzoylmethane,
Terephthalylidenediacamphor sulfonic acid,
Disodium phenyl dibenz imidazole tetrasulfonate,
Phenylbenz imidazole sulfonic acid,
Benzophenone-3,
n-Hexyl 2-(4-diethylamino-2-hydroxybenzoyl) benzoate,
4-Methylbenzylidenecamphor,
Ethylhexyltriazone,
Bis (ethylhexyloxyphenol) methoxyphenyltriazine,
Diethylhexylbutamidotriazone,
2,4-Bis (n-butyl 4'-aminobenzalmalonate) -6-[3-{1,3,3,3-tetramethyl-1-
[(trimethylsilyl) oxy] disiloxanyl propyl} amino] -s-triazine,

2,4,6-Tris (biphenyl-4-yl) -1,3,5-triazine,
2,4,6-Tris (dineopentyl 4'-aminobenzalmalonate) -s-triazine,
2,4,6-Tris (diisobutyl 4'-aminobenzalmalonate) -s-triazine,
2,4-Bis (dineopentyl 4'-aminobenzalmalonate) -6-(n-butyl 4'-aminobenzoate) -s-triazine,

Methylenebis (benzotriazolyl) tetramethylbutylphenol,
Drometrizole trisiloxane,
Polysilicone-15,
Dineopentyl 4'-methoxybenzalmalonate,
1,1-Dicarboxy (2,2' -dimethylpropyl) -4,4-diphenylbutadiene,

2,4-Bis[5- (1-dimethylpropyl )benzoxazol-2-yl (4-
phenyl) imino] -6- (2-ethylhexyl) imino-1,3,5-triazine, and mixtures thereof.

The additional mineral screening agents are chosen from coated or uncoated metal oxide pigments in which the mean size of the primary particles is preferentially between 5 nm and 100 nm (preferably between 10 nm and 50 nm), for instance titanium oxide (amorphous or crystallized in rutile and/or anatase form), iron oxide, zinc oxide, zirconium oxide or cerium oxide pigments, which are all UV-photoprotective agents that are well known per se. The pigments may be coated or uncoated.

The coated pigments 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 amino acids, beeswax, fatty acids, fatty alcohols, anionic surfactants, lecithins, sodium, potassium, zinc, iron or aluminium salts of fatty acids, metal alkoxides (of titanium or of aluminium), polyethylene, silicones, proteins (collagen, elastin), alkanolamines,
silicon oxides, metal oxides or sodium hexametaphosphate.

As is known, silicones are organosilicon polymers or oligomers of linear or cyclic, branched or crosslinked structure, of variable molecular weight, obtained by polymerization and/or polycondensation of suitably functionalized silanes, and consist essentially of a repetition of main units in which the silicon atoms are linked together via oxygen atoms (siloxane bond), optionally substituted hydrocarbon-based radicals being directly attached via a carbon atom to the said silicon atoms.

The term "silicones" also includes the silanes required for their preparation, in particular alkylsilanes.

The silicones used for coating the nanoparticles that are suitable for the present invention are preferably chosen from the group containing alkylsilanes, polydialkylsiloxanes and polyalkylhydrogenosiloxanes. Even more preferentially, the silicones are chosen from the group containing octyltrimethylsilane, polydimethylsiloxanes and polymethylhydrogenosiloxanes.

Needless to say, before being treated with silicones, the metal oxide pigments may have been treated with other surface agents, in particular with cerium oxide, alumina, silica, aluminium compounds or silicon compounds, or mixtures thereof.

The coated pigments are more particularly titanium oxides that have been coated:
- with silica, such as the product Sunveil from the company Ikeda and the product Eusolex T-AVO from the company Merck,
- with silica and iron oxide, such as the product Sunveil F from the company Ikeda,
- with silica and alumina, such as the products Microtitanium Dioxide MT 500 SA and Microtitanium Dioxide MT 100 SA from the company Tayca, Tioveil from
the company Tioxide and Mirasun TiW 6 0 from the company Rhodia,
- with alumina, such as the products Tipaque TTO-55 (B) and Tipaque TTO-55 (A) from the company Ishihara and UVT 14/4 from the company Kemira,
- with alumina and aluminium stearate, such as the product Microtitanium Dioxide MT 100 TV, MT 100 TX, MT 100 Z and MT-01 from the company Tayca, and the products Solaveil CT-10 W, Solaveil CT 100 and Solaveil CT 200 from the company Uniqema,
- with silica, alumina and alginic acid, such as the product MT-100 AQ from the company Tayca,
- with alumina and aluminium laurate, such as the product Microtitanium Dioxide MT 100 S from the company Tayca,
- with iron oxide and iron stearate, such as the product Microtitanium Dioxide MT 100 F from the company Tayca,
- with zinc oxide and zinc stearate, such as the product BR351 from the company Tayca,
- with silica and alumina and treated with a silicone, such as the products Microtitanium Dioxide MT 600 SAS, Microtitanium Dioxide MT 500 SAS or Microtitanium Dioxide MT 100 SAS from the company Tayca,
- with silica, alumina and aluminium stearate and treated with a silicone, such as the product STT-30-DS from the company Titan Kogyo,
- with silica and treated with a silicone, such as the product UV-Titan X 195 from the company Kemira, or the product SMT-100 WRS from the company Tayca,
- with alumina and treated with a silicone, such as the products Tipaque TTO-55 (S) from the company Ishihara or UV Titan M 262 from the company Kemira,
- with triethanolamine, such as the product STT-65-S from the company Titan Kogyo,
- with stearic acid, such as the product Tipaque TTO-55 (C) from the company Ishihara,
- with sodium hexametaphosphate, such as the product Microtitanium Dioxide MT 150 W from the company Tayca.
Other titanium oxide pigments treated with a silicone are preferably TiO₂ treated with octyltrimethylsilane and for which the mean size of the elementary particles is between 25 and 40 nm, such as the product sold under the trade name T805 by the company Degussa Silices, TiO₂ treated with a polydimethylsiloxane and for which the mean size of the elementary particles is 21 nm, such as the product sold under the trade name 70250 Cardre UF Ti02SI3 by the company Cardre, anatase/rutile TiO₂ treated with a polydimethylhydrogenosiloxane and for which the mean size of the elementary particles is 25 nm, such as the product sold under the trade name Microtitanium Dioxide USP Grade Hydrophobic by the company Color Techniques.

The uncoated titanium oxide pigments are sold, for example, by the company Tayca under the trade names Microtitanium Dioxide MT 500 B or Microtitanium Dioxide MT 600 B, by the company Degussa under the name P 25, by the company Wackher under the name Transparent titanium oxide PW, by the company Miyoshi Kasei under the name UFTR, by the company To men under the name ITS and by the company Tioxide under the name Tioveil AQ.

The uncoated zinc oxide pigments 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 pigments are, for example:
- those sold under the name Z-Cote HP1 by the company Sunsmart (dimethicone-coated ZnO);
- those sold under the name Zinc Oxide CS-5 by the company Toshiba (ZnO coated with polymethylhydrogenosiloxane);
- those sold under the name Nanogard Zinc Oxide FN by the company Nanophase Technologies (as a 40% dispersion in Finsolv TN, c₁₂-c₁₅ alkyl benzoate).
- those sold under the name Daitopersion ZN-30 and Daitopersion ZN-50 by the company Daito (dispersions in cyclopolydimethylysiloxane/oxyethyleneated polydimethylsiloxane, containing 30% or 50% of nanozinc oxides coated with silica and polymethylhydrogensiloxane);
- those sold under the name NFD Ultrafine ZnO by the company Daikin (ZnO coated with perfluoroalkyl phosphate and copolymer based on perfluoroalkylethyl 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 cyclodimethylsiloxane);
- those sold under the name Escalol Z100 by the company ISP (alumina-treated ZnO dispersed in an ethylhexyl methoxycinnamate/PVP-hexadecene/methicone copolymer mixture);
- 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 a concentration of 55% in C_{12}-C_{15} alkyl benzoate with hydroxystearic acid polycondensate).

The uncoated cerium oxide pigments are sold under the name Colloidal Cerium Oxide by the company Rhone-Poulenc.

The uncoated iron oxide nanopigments are sold, for example, by the company Arnaud under the names Nanogard WCD 2002 (FE 45B), Nanogard Iron FE 45 BL AQ, Nanogard FE 45R AQ and Nanogard WCD 2006 (FE 45R) or by the company Mitsubishi under the name TY-220.

The coated iron oxide pigments are sold, for example, 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 Transparent Iron Oxide.

Mention may also be made of mixtures of metal oxides, especially of titanium dioxide and of cerium dioxide, including the silica-coated equal-weight
mixture of titanium dioxide and of cerium dioxide, sold by the company Ikeda under the name Sunveil A, and also the alumina, silica and silicone-coated mixture of titanium dioxide and of zinc dioxide, such as the product M 261 sold by the company Kemira, or the alumina, silica and glycerol-coated mixture of titanium dioxide and of zinc dioxide, such as the product M 211 sold by the company Kemira.

The additional UV-screening 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 aqueous compositions in accordance with the present invention may also comprise standard cosmetic adjuvants chosen especially from fatty substances, organic solvents, ionic or nonionic, hydrophilic or lipophilic thickeners, softeners, humectants, opacifiers, stabilizers, emollients, silicones, antifoams, fragrances, preserving agents, anionic, cationic, nonionic, zwitterionic or amphoteric surfactants, active agents, fillers, polymers, propellants, acidifying or basifying agents or any other ingredient usually used in cosmetics and/or dermatology.

The fatty substances may consist of an oil or a wax other than the apolar waxes as defined above, or mixtures thereof. The term oil means a compound that is liquid at room temperature. The term wax means a compound that is solid or substantially solid at room temperature and whose melting point is generally greater than 35°C.

Oils that may be mentioned include mineral oils (paraffin); plant oils (sweet almond oil, macadamia oil, grapeseed oil or jojoba oil); synthetic oils, for instance perhydrosqualene, fatty alcohols, fatty amides (for instance isopropyl lauroyl sarcosinate sold under the name Eldew SL-205 by the company Ajinomoto), fatty
acids or fatty esters, for instance the C₁₂-C₁₅ alkyl benzoate sold under the trade name Finsolv TN or Witconol TN by the company Witco, 2-ethylphenyl benzoate, for instance the commercial product sold under the name X-Tend 226® by the company ISP, octyl palmitate, isopropyl lanolate and triglycerides, including capric/caprylic acid triglycerides, and dicaprylyl carbonate sold under the name Cetiol CC by the company Cognis, oxyethylenated or oxypropylenated fatty esters and ethers; silicone oils (cyclomethicone and polydimethylsiloxanes, or PDMS) or fluoro oils, polyalkylenes, and trialkyl trimellitates such as tridecyl trimellitate.

Waxy compounds that may be mentioned include carnauba wax, beeswax, hydrogenated castor oil, polyethylene waxes and polymethylene waxes, for instance the product sold under the name Cirebelle 303 by the company Sasol.

Among the organic solvents that may be mentioned are lower alcohols and polyols. These polyols may be chosen from glycols and glycol ethers, for instance ethylene glycol, propylene glycol, butylene glycol, dipropylene glycol or diethylene glycol.

Hydrophilic thickeners that may be mentioned include carboxyvinyl polymers such as the Carbopol products (carbomers) and the Pemulen products (acrylate/C₁₀-C₃₀-alkylacrylate copolymer); polyacrylamides, for instance the crosslinked copolymers sold under the names Sepigel 305 (CTFA name: polyacrylamide/C₁₃-1₄ isoparaffin/ Laureth 7) or Simulgel 600 (CTFA name: acrylamide/sodium acryloyldimethyltaurate copolymer/ isohexadecane/polysorbate 80) by the company SEPPIC; 2-acrylamido-2-methylpropanesulfonic acid polymers and copolymers, which are optionally crosslinked and/or neutralized, for instance the poly (2-acrylamido-2-methylpropanesulfonic acid) sold by the company Hoechst under the trade name Hostacerin AMPS (CTFA name: ammonium polyacryloyldimethyltaurate) or Simulgel 800.
sold by the company SEPPIC (CTFA name: sodium polyacryloyldimethyltaurate/polysorbate 80/sorbitan oleate); copolymers of 2-acrylamido-2-methylpropane-sulfonic acid and of hydroxyethyl acrylate, for instance Simulgel NS and Sepinov EMT 10 sold by the company SEPPIC; cellulose-based derivatives such as hydroxyethylcellulose; polysaccharides and especially gums such as xanthan gum; water-soluble or water-dispersible silicone derivatives, for instance acrylic silicones, polyether silicones and cationic silicones, and mixtures thereof.

Lipophilic thickeners that may be mentioned include synthetic polymers such as poly(C10-C30 alkyl acrylates) sold under the name Intelimer IPA 13-1 and Intelimer IPA 13-6 by the company Landec, or modified clays such as hectorite and its derivatives, for instance the products sold under the name Bentone.

Needless to say, a person skilled in the art will take care to select the optional additional compound (s) mentioned above and/or the amounts thereof such that the advantageous properties intrinsically associated with the compositions in accordance with the invention are not, or are not substantially, adversely affected by the envisaged addition (s), especially the improvement in the photostability of the dibenzoylmethane derivative.

The compositions according to the invention may be prepared according to techniques that are well known to those skilled in the art. They may be in particular in the form of a simple or complex emulsion (O/W, W/O, O/W/O or W/O/W emulsion) such as a cream, a milk or a cream-gel; in the form of an aqueous gel; in the form of a lotion. They may optionally be packaged as an aerosol and may be in the form of a mousse or a spray.

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

The emulsification processes that may be used are of the paddle or impeller, rotor-stator or HHP type.
It is also possible, via HHP (between 50 and 800 b), to obtain stable dispersions with droplet sizes that may be as low as 100 nm.

The emulsions generally contain at least one emulsifier chosen from amphoteric, anionic, cationic and nonionic emulsifiers, which are used alone or as a mixture. The emulsifiers are appropriately chosen according to the emulsion to be obtained (W/O or O/W).

As emulsifying surfactants that may be used for the preparation of the W/O emulsions, examples that may be mentioned include sorbitan, glycerol or sugar alkyl esters or ethers; 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 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) and of hexyl laurate, sold under the name Abil WE 09 by the company Goldschmidt. One or more co-emulsifiers may also be added thereto, which may be chosen advantageously from the group comprising polyol alkyl esters.

Polyol alkyl esters that may especially be mentioned include polyethylene glycol esters, for instance PEG-30 dipolyhydroxystearate, such as the product sold under the name Arlacel P135 by the company ICI.

Glycerol and/or sorbitan esters that may especially be mentioned include, 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, sorbitan glyceryl isostearate, such as the product sold under
the name Arlacel 9 8 6 by the company ICI, and mixtures thereof.

For the O/W emulsions, examples of emulsifiers that may be mentioned include nonionic 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, for instance the mixture PEG-100 stearate/glyceryl stearate sold, for example, by the company ICI under the name Arlacel 165; oxyalkylenated (oxyethylenated and/or oxypropylenated) fatty alkyl ethers; sugar esters, for instance sucrose stearate; fatty alkyl ethers of sugars, especially polyalkylglucosides (APG) such as decylglucoside and laurylglucoside sold, for example, by the company Henkel under the respective names Plantaren 2000 and Plantaren 1200, cetostearyl glucoside 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 arachidyl glucoside, for example in the form of a mixture of arachidyl alcohol, behenyl alcohol and arachidyl glucoside, sold under the name Montanov 202 by the company SEPPIC. According to one particular embodiment of the invention, the mixture of the alkylpolyglucoside as defined above with the corresponding fatty alcohol may be in the form of a self-emulsifying composition as described, for example, in document WO-A-92/06778.

When it is an emulsion, the aqueous phase of this emulsion may comprise a nonionic 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, especially cosmetic treatments, of the skin, the lips
and the hair, including the scalp, especially 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 cosmetic products for treating the skin, the lips, the nails, the hair, the eyelashes, the eyebrows and/or the scalp, especially care products, antisun products and makeup products.

The cosmetic compositions according to the invention may be used, for example, as makeup products. The cosmetic compositions according to the invention may be used, for example, as care products and/or antisun protection products for the face and/or the body, of liquid to semi-liquid consistency, such as milks, more or less rich creams, cream-gels and pastes. They may optionally be conditioned in aerosol form and may be in the form of a mousse 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 comprise non-aerosol pumps or "atomizers", aerosol containers comprising a propellant and also aerosol pumps using compressed air as propellant. These devices are described in patents US 4 077 441 and US 4 850 517.

The compositions conditioned in aerosol form in accordance with the invention generally contain conventional propellants, for instance 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.
The compositions according to the invention may also comprise additional cosmetic or dermatological active agents.

Among the active agents that may be mentioned are:
- vitamins (A, C, E, K, PP, etc.) and derivatives or precursors thereof, alone or as mixtures;
- antiglycation agents;
- calmatives;
- NO-synthase inhibitors;
- agents for stimulating the synthesis of dermal or epidermal macromolecules and/or for preventing their degradation;
- agents for stimulating fibroblast proliferation;
- agents for stimulating keratinocyte proliferation;
- muscle relaxants;
- tensioning agents;
- matting agents;
- keratolytic agents;
- desquamating agents;
- moisturizers, for instance polyols such as glycerol, butylene glycol or propylene glycol;
- anti-inflammatory agents;
- agents acting on the energy metabolism of cells;
- insect repellants;
- substance P or CGRP antagonists;
- hair-loss counteractants and/or hair restorers;
- anti-wrinkle agents.

Needless to say, a person skilled in the art will take care to select the optional additional compound(s) mentioned above and/or the amounts thereof such that the advantageous properties intrinsically associated with the compositions in accordance with the invention are not, or are not substantially, adversely affected by the envisaged addition(s).

A person skilled in the art will select the said active agent(s) as a function of the effect desired on the skin, the hair, the eyelashes, the eyebrows and the nails.
The composition may also comprise at least one ingredient such as soft-focus fillers or agents that promote the natural coloration of the skin, which are intended to complement the biological effect of these active agents or to afford an immediate visual anti-ageing effect.

For caring for and/or making up greasy skin, a person skilled in the art will preferably select at least one active agent chosen from desquamating agents, sebum-regulating agents or anti-seborrhoeic agents, and astringents.

OTHER ADDITIONAL INGREDIENTS

The composition may also comprise at least one additional ingredient for complementing the biological effect of these active agents or for affording an immediate visual effect; mention may be made especially of matting agents, soft-focus fillers, fluorescers, agents for promoting the naturally pinkish coloration of the skin, and abrasive fillers or exfoliants.

To complement and/or optimize the effects imparted by the cosmetic and/or dermatological active agents mentioned above on the keratin materials, it may be advantageous to incorporate into the compositions of the invention other additional ingredients.

In particular, these additional ingredients may impart an immediate visual effect that will be relayed by the biological effect of the active agents mentioned above. They may also, via a mechanical action (e.g.: abrasive fillers), amplify the effect of the biological active agents mentioned above.

Matting agents

The term "matting agent" means agents intended to make the skin visibly more matt and less shiny.

The matting effect of the agent and/or composition containing it may especially be evaluated using a
gonioreflectometer, by measuring the ratio R between the specular reflection and the scattered reflection. A value of R of less than or equal to 2 generally reflects a matting effect.

The matting agent may especially be chosen from a rice starch or a corn starch: INCI name: *Zea mays* (Corn) Starch, such as, in particular, the product sold under the trade name Farmal CS 3650 Plus 036500 by National Starch, kaolinite, talc, a pumpkin seed extract, cellulose microbeads, plant fibres, synthetic fibres, in particular polyamide fibres, expanded acrylic copolymer microspheres, polyamide powders, silica powders, polytetrafluoroethylene powders, silicone resin powders, acrylic polymer powders, wax powders, polyethylene powders, powders of elastomeric crosslinked organopolysiloxane coated with silicone resin, talc/titanium dioxide/alumina/silica composite powders, amorphous mixed silicate powders, silicate particles and especially mixed silicate particles, and mixtures thereof.

Examples of matting agents that may especially be mentioned include:
- rice or corn starch, in particular an aluminium starch octenyl succinate sold under the name Dry Flo® by the company National Starch;
- kaolinite;
- silicas;
- talc;
- a pumpkin seed extract as sold under the name Curbilene® by the company Indena;
- cellulose microbeads as described in patent application EP 1 562 562;
- fibres, such as silk fibre, cotton fibre, wool fibre, flax fibre, cellulose fibre extracted especially from wood, from vegetables or from algae, polyamide fibre (Nylon®), modified cellulose fibre, poly-p-phenyleneterephthlamide fibre, acrylic fibre, polyolefin fibre, glass fibre, silica fibre, aramid fibre, carbon fibre, Teflon® fibre, insoluble collagen fibre,
polyester fibre, polyvinyl chloride or polyvinylidene chloride fibre, polyvinyl alcohol fibre, polyacrylonitrile fibre, chitosan fibre, polyurethane fibre, polyethylene phthalate fibre, fibres formed from a mixture of polymers, resorbable synthetic fibres, and mixtures thereof described in patent application EP 1 151 742;
- expanded acrylic copolymer microspheres such as those sold by the company Expancel under the name Expancel 551®;
- fillers with an optical effect as described in patent application FR 2 869 796, in particular:
  - polyamide powders (Nylon®), for instance Nylon 12 particles of the Orgasol type from Arkema, with a mean size of 10 microns and a refractive index of 1.54,
  - silica powders, for instance Silica beads SB150 from Miyoshi with a mean size of 5 microns and a refractive index of 1.45,
  - polytetrafluoroethylene powders, for instance PTFE Ceridust 9205F from Clariant, with a mean size of 8 microns and a refractive index of 1.36,
  - silicone resin powders, for instance the silicone resin Tospearl 145A from GE Silicone with a mean size of 4.5 microns and a refractive index of 1.41,
  - acrylic copolymer powders, especially of polymethyl (meth)acrylate, for instance the PMMA particles Jurymer MBI from Nihon Junyoki, with a mean size of 8 microns and a refractive index of 1.49, or the Micropearl M100® and F 80 ED® particles from the company Matsumoto Yushi-Seiyaku,
- wax powders, for instance the paraffin wax particles Microease 114S from Micropowders, with a mean size of 7 microns and a refractive index of 1.54,
- elastomeric crosslinked organopolysiloxane powders coated with silicone resin, especially with silsesquioxane resin, as described, for example, in patent US 5 538 793. Such elastomeric powders are sold under the names KSP-100, KSP-101, KSP-102, KSP-103, KSP-104 and KSP-105 by the company Shin-Etsu, and
talc/titanium dioxide/alumina/silica composite powders such as those sold under the name Coverleaf® AR-80 by the company Catalyst & Chemicals,
- mixtures thereof,
- compounds that absorb and/or adsorb sebum as described in patent application FR 2 869 796. Mention may be made especially of:
- silica powders, for instance the porous silica microspheres sold under the name Silica Beads SB-700 sold by the company Miyoshi, the products Sunsphere® H51, Sunsphere® H33 and Sunsphere® H53 sold by the company Asahi Glass; the polydimethylsiloxane-coated amorphous silica microspheres sold under the name SA Sunsphere® H-33 and SA Sunsphere® H-53 sold by the company Asahi Glass;
- amorphous mixed silicate powders, especially of aluminium and magnesium, for instance the product sold under the name Neusilin UFL2 by the company Sumitomo;
- polyamide (Nylon®) powders, for instance Orgasol® 4000 sold by the company Arkema, and
- acrylic polymer powders, especially of polymethyl methacrylate, for instance Covabead® LH85 sold by the company Wackherr; of polymethyl methacrylate/ethylene glycol dimethacrylate, for instance Dow Corning 5640 Microspone® Skin Oil Adsorber sold by the company Dow Corning, or Ganzpearl® GMP-0820 sold by the company Ganz Chemical; of polyallyl methacrylate/ethylene glycol dimethacrylate, for instance Poly-Pore® L200 or Poly-Pore® E200 sold by the company Amcol; of ethylene glycol dimethacrylate/lauryl methacrylate copolymer, for instance Polytrap® 6603 sold by the company Dow Corning;
- silicate particles, such as alumina silicate;
mixed silicate particles, such as:
magnesium aluminium silicate particles, such as saponite or hydrated magnesium aluminium silicate with a sodium sulfate sold under the trade name Sumecton® by the company Kunime; 
the magnesium silicate, hydroxyethylcellulose, black cumin oil, marrow oil and phospholipids complex or Matipure® from Lucas Meyer, and mixing thereof.

Preferred matting agents that may be used according to the invention include a pumpkin seed extract, a rice or corn starch, kaolinite, silicas, talc, polyamide powders, polyethylene powders, acrylic copolymer powders, expanded acrylic copolymer microspheres, silicone resin microbeads and mixed silicate particles, and mixtures thereof.

**Fillers with a soft-focus effect**

These fillers may be any material capable of modifying and hiding wrinkles by virtue of their intrinsic physical properties. These fillers may especially modify wrinkles via a tensioning effect, a covering effect or a soft-focus effect.

Examples of fillers that may be given include the following compounds:
- porous silica microparticles, for instance the silica beads SB 150 and SB 700 from Miyoshi with a mean size of 5 \( \mu \text{m} \); the series-H Sunspheers from Asahi Glass, for instance Sunspheers H33, H51 with respective sizes of 3.5 and 5 \( \mu \text{m} \);
- hollow hemispherical silicone resin particles such as NLK 500®, NLK 506® and NLK 510® from Takemoto Oil and Fat, especially described in EP-A-1 579 849;
- silicone resin powders, for instance the silicone resin Tospearl® 145 A from GE Silicone, with a mean size of 4.5 \( \mu \text{m} \);
- acrylic copolymer powders, especially of polymethyl (meth) acrylate, for instance the PMMA particles Jurymer MBI® from Nihon Junyoki, with a mean size of 8 µm, the hollow PMMA spheres sold under the name Covabead® LH 85 by the company Wackherr, and vinylidene/acylonitrile/methylene methacrylate expanded microspheres sold under the name Expance1®;
- wax powders, for instance the paraffin wax particles MicroEase® 114S from MicroPowders, with a mean size of 7 µm;
- polyethylene powders, especially comprising at least one ethylene/acid acid copolymer, and in particular consisting of ethylene/acid acid copolymers, for instance the Flobeads® EA 209 E particles from Sumitomo, with a mean size of 10 µm;
- crosslinked elastomeric organopolysiloxane powders coated with silicone resin and especially with silsesquioxane resin, under the names KSP 100®, KSP 101®, KSP 102®, KSP 103®, KSP 104® and KSP 105® by the company Shin-Etsu;
- talc/titanium dioxide/alumina/silica composite powders, for instance those sold under the name Coverleaf AR 80® by the company Catalyst & Chemicals;
- talc, mica, kaolin, lauryl glycine, starch powders crosslinked with octenyl succinate anhydride, boron nitride, polytetrafluoroethylene powders, precipitated calcium carbonate, magnesium carbonate, magnesium hydrogen carbonate, barium sulfate, hydroxyapatite, calcium silicate, cerium dioxide and glass or ceramic microcapsules;
- hydrophilic or hydrophobic, synthetic or unnatural, mineral or organic fillers such as silk fibres, cotton fibres, wool fibres, flax fibres, cellulose fibres extracted especially from wood, vegetables or algae, polyamide (Nylon®) fibres, modified cellulose fibres, poly-p-terephthalamide fibres, acrylic fibres, polyolefin fibres, glass fibres, silica fibres, aramide fibres, carbon fibres, polytetrafluoroethylene (Teflon®) fibres, insoluble collagen fibres, polyester fibres,
polyvinyl chloride fibres, polyvinylidene chloride fibres, polyvinyl alcohol fibres, polyacrylonitriles fibres, chitosan fibres, polyurethane fibres, polyethylene phthalate fibres, fibres formed from a mixture of polymers, resorbable synthetic fibres, and mixtures thereof described in patent application EP 1 151 742;
- spherical elastomeric crosslinked silicones, for instance Trefil E-505C® or E-506C® from Dow Corning;
- abrasive fillers, which, via a mechanical effect, smooth out the skin microrelief, such as abrasive silica, for instance Abrasif SP® from Semanez or nutshell powders (for example of apricot or walnut, from Cosmetochem).

The fillers with an effect on the signs of ageing are especially chosen from porous silica microparticles, hollow hemispherical silicones, silicone resin powders, acrylic copolymer powders, polyethylene powders, crosslinked elastomeric organopolysiloxane powders coated with silicone resin, talc/titania dioxide/alumina/silica composite powders, precipitated calcium carbonate, magnesium carbonate, magnesium hydrogen carbonate, barium sulfate, hydroxyapatite, calcium silicate, cerium dioxide, glass or ceramic microcapsules, and silk fibres or cotton fibres, and mixtures thereof.

The filler may be a soft-focus filler.

The term "soft-focus" filler means a filler which in addition gives the complexion transparency and a hazy effect. Preferably, the soft-focus fillers have a mean particle size of less than or equal to 15 microns. These particles may be in any form and in particular may be spherical or non-spherical. These fillers are more preferably non-spherical.

The soft-focus fillers may be chosen from silica and silicate powders, especially alumina powder, powders of polymethyl methacrylate (PMMA) type, talc, silica/TiO2 or silica/zinc oxide composites,
polyethylene powders, starch powders, polyamide powders, styrene/acrylic copolymer powders and silicone elastomers, and mixtures thereof.

Mention may be made in particular of talc with a number-average size of less than or equal to 3 microns, for example talc with a number-average size of 1.8 microns and especially the product sold under the trade name Talc P3® by the company Nippon Talc, Nylon® 12 powder, especially the product sold under the name Orgasol 2002 Extra D Nat Cos® by the company Atochem, silica particles 1% to 2% surface-treated with a mineral wax (INCI name: hydrated silica (and) paraffin) such as the products sold by the company Degussa, amorphous silica microspheres, such as the products sold under the name Sunsphere, for example of reference H-53® by the company Asahi Glass, and silica microbeads such as those sold under the name SB-700® or SB-150® by the company Miyoshi, this list not being limiting.

The concentration of these fillers with an effect on the signs of ageing in the compositions according to the invention may be between 0.1% and 40%, or even between 0.1% and 20% by weight, relative to the total weight of the composition.

Agents for promoting the naturally pinkish coloration of the skin

Mention may be made especially of:
- a self-tanning agent, i.e. an agent which, when applied to the skin, especially to the face, can produce a tan effect that is more or less similar in appearance to that which may result from prolonged exposure to the sun (natural tan) or under a UV lamp;
- an additional colouring agent, i.e. any compound that has particular affinity for the skin, which allows it to give the skin a lasting, non-covering coloration (i.e. that does not have a tendency to opacify the skin) and that is not removed either with water or using a solvent, and that withstands both rubbing and
washing with a solution containing surfactants. Such a lasting coloration is thus distinguished from the superficial and transient coloration provided, for example, by a makeup pigment; and mixtures thereof.

Examples of self-tanning agents that may especially be mentioned include: dihydroxyacetone (DHA), erythrulose, and the combination of a catalytic system formed from:
- manganese and/or zinc oxide salts, and
- alkali metal and/or alkaline-earth metal hydrogen carbonates.

The self-tanning agents are generally chosen from monocarbonyl or polycarbonyl compounds, for instance isatin, alloxan, ninyhydrin, glyceraldehyde, mesotartaric aldehyde, glutaraldehyde, erythrulose, pyrazoline-4,5-dione derivatives as described in patent application FR 2 466 492 and WO 97/35842, dihydroxyacetone (DHA) and 4,4-dihydroxypyrazolin-5-one derivatives as described in patent application EP 903 342. DHA will preferably be used.

The DHA may be used in free and/or encapsulated form, for example in lipid vesicles such as liposomes, especially described in patent application WO 97/25970.

In general, the self-tanning agent is present in an amount ranging from 0.01% to 20% by weight and preferably in an amount of between 0.1% and 10% of the total weight of the composition.

Other dyes that allow modification of the colour produced by the self-tanning agent may also be used.

These dyes may be chosen from synthetic or natural direct dyes.

These dyes may be chosen, for example, from red or orange dyes of the fluorane type such as those described in patent application FR 2 840 806. Mention may be made, for example, of the following dyes:
- tetrabromofluorescein or eosin known under the CTFA name: CI 45380 or Red 21;
- phloxin B known under the CTFA name: CI 45410 or Red 27;
- diiodofluorescein known under the CTFA name: CI 45425 or Orange 10;
5 - dibromofluorescein known under the CTFA name: CI 45370 or Orange 5;
- the sodium salt of tetrabromofluorescein known under the CTFA name: CI 45380 (Na salt) or Red 22;
- the sodium salt of phloxin B known under the CTFA name: CI 45410 (Na salt) or Red 28;
10 - the sodium salt of diiodofluorescein known under the CTFA name: CI 45425 (Na salt) or Orange 11;
- erythrosin known under the CTFA name: CI 45430 or Acid Red 51;
15 - phloxin known under the CTFA name: CI 45405 or Acid Red 98.

These dyes may also be chosen from anthraquinones, caramel, carmine, carbon black, azulene blues, methoxalene, trioxalene, guajazulene, chamuzulene, rose Bengal, eosin 10B, cyanosin and daphnin.

These dyes may also be chosen from indole derivatives, for instance the monohydroxyindoles as described in patent FR 2 651 126 (i.e.: 4-, 5-, 6- or 7-hydroxyindole) or the dihydroxyindoles as described in patent EP-B-0 425 324 (i.e.: 5,6-dihydroxyindole, 2-methyl-5, 6-dihydroxyindole, 3-methyl-5, 6-dihydroxyindole or 2,3-dimethyl-5, 6-dihydroxyindole).

Abrasives fillers or exfoliants

As exfoliants that may be used in rinse-out compositions according to the invention, examples that may be mentioned include exfoliant or scrubbing particles of mineral, plant or organic origin. Thus, polyethylene beads or powder, Nylon powder, polyvinyl chloride powder, pumice powder, ground apricot kernel or walnut husk, sawdust, glass beads and alumina, and mixtures thereof, may be used, for example. Mention may also be made of Exfogreen® from Solabia (bamboo
extract), extracts of strawberry akenes (Strawberry Akenes from Greentech), peach kernel powder, apricot kernel powder, and finally, in the field of plant powders with an abrasive effect, mention may be made of cranberry kernel powder.

As abrasive fillers or exfoliants that are preferred according to the invention, mention will be made of peach kernel powder, apricot kernel powder, cranberry kernel powder, strawberry akenes extracts and bamboo extracts.

The examples that follow serve to illustrate the invention without, however, being limiting in nature. In these examples, the amounts of the composition ingredients are given as weight percentages relative to the total weight of the composition.

Example 1: Diisobutyl 2-[4-([(6-methyl-4-oxo-1,4-
dihydropyrimidin-2-
yl) amino] carbonyl) amino) benzylidene] malonate (9)

Preparation of (9) from N-(6-methyl-4-oxo-1,4-
dihydropyrimidin-2-yl)-1H-imidazole-1-carboxamide

\[
\begin{align*}
\text{N-(6-Methyl-4-oxo-1,4-dihydropyrimidin-2-yl) -1H-} \\
\text{imidazole-1-carboxamide (1.4 g, 6.4x10^{-3} mol) is added} \\
\text{to a solution of diisobutyl 2-(4-aminobenzylidene) -} \\
\text{malonate (2.248 g, 7.04x10^{-3} mol) in 100 ml of 1,2-} \\
\text{dichloroethane, while sparging with argon. The reaction} \\
\text{mixture is brought to reflux and maintained at this} \\
\text{temperature for 20 hours. The solvent is evaporated off} \\
\text{under vacuum. The yellow residue obtained is taken up} \\
\text{in acetone. The insoluble material is filtered off and} \\
\text{rinsed with acetone.}
\end{align*}
\]
3.01 g (86% yield) of product (9) are obtained in the form of a pale yellow solid.

UV (DMSO/ethanol): $\lambda_{\text{max}} = 330$ nm; $\epsilon_{\text{max}} = 19,290$; $E_{1\%} = 410$.


Preparation of (10) from 1-(6-isocyanatohexyl)-3-(6-methyl-4-oxo-1,4-dihydropyrimidin-2-yl) urea

1- (6-Isocyanatohexyl) -3- (6-methyl-4-oxo-1, 4- dihydropyrimidin-2-yl) urea (0.35 g, 1.19 $\times 10^{-3}$ mol) is added to a solution of diisobutyl 2-(4-aminobenzylidene) malonate (0.419 g, 1.31 $\times 10^{-3}$ mol) in 20 ml of 1,2-dichloroethane, while sparging with argon. The reaction mixture is brought to reflux and maintained at this temperature for 21 hours. The solvent is evaporated off under vacuum. The yellow residue obtained is taken up in acetone. The insoluble material is filtered off and rinsed with acetone. It is taken up in 30 ml of hot ethanol, to which are added 3 ml of water. The precipitate is filtered off and dried under vacuum.

0.35 g (47% yield) of product (10) is obtained in the form of a pale yellow solid.

UV (ethanol): $\lambda_{\text{max}} = 331$ nm; $\epsilon_{\text{max}} = 22,060$; $E_{1\%} = 360$. 
Example 3: 2-ethylhexyl (2Z)-2-cyano-3-[4-((6-methyl-4-oxo-1,4-dihydropyrimidin-2-yl) amino) carbonyl] amino] phenyl] acrylate (12)

Preparation of (12) from N-(6-methyl-4-oxo-1,4-dihydropyrimidin-2-yl)-1H-imidazole-1-carboxamide

N-(6-Methyl-4-oxo-1,4-dihydropyrimidin-2-yl) -1H-imidazole-1-carboxamide (0.35 g, 1.6x10^{-3} mol) is added to a solution of 2-ethylhexyl (2Z)-3- (4-aminophenyl) -2-cyanoacrylate (0.529 g, 1.76>10^{-3} mol) in 20 ml of 1,2-dichloroethane, while sparging with argon. The reaction mixture is brought to reflux and maintained at this temperature for 25 hours. The solvent is evaporated off under vacuum. The yellow residue obtained is taken up in hot ethanol and filtered off. The insoluble material is taken up in dichloromethane and filtered off. The yellow solid obtained is dried.

0.722 g (72% yield) of product (12) is obtained in the form of a yellow solid.

UV (DMSO/ethanol) : \( \lambda_{\text{max}} = 368 \text{ nm} \); \( \varepsilon_{\text{max}} = 20 \times 410 \); \( E_{1\%} = 452 \).


Preparation of (13) from 1- (6-isocyanatohexyl )-3- (6-methyl-4-oxo-1, 4-dihydropyrimidin-2-yl) urea
1-(6-Isocyanatohexyl) -3-(6-methyl-4-oxo-1, 4-dihydropyrimidin-2-yl) urea (1 g, 3.4×10⁻³ mol) is added to a solution of 2-ethylhexyl (22) -3-(4-aminophenyl) -2-cyanoacrylate (1.126 g, 3.7×10⁻³ mol) in 20 ml of 1,2-dichloroethane, while sparging with argon. The reaction mixture is brought to reflux and maintained at this temperature for 24 hours. The solvent is evaporated off under vacuum. The yellow residue obtained is taken up in 100 ml of hot ethanol, to which are added 30 ml of water. The precipitate obtained is filtered off and dried under vacuum. 0.85 g (42% yield) of product (13) is obtained in the form of a yellow solid.

UV (CHCl₃) : λ_max = 369 nm; ε_max = 24 100; E₁% = 390.

**Example 5 : Dibutyl 4,4'-(6-{[4-({[6-methyl-4-oxo-1,4-dihydropyrimidin-2-yl] amino] carbonyl} amino) butyl] amino]-1,3,5-triazine-2,4-diyl} diimino] dibenzoate (22)**

Preparation of (22) from N-(4-aminobutyl) -N'-(6-methyl-4-oxo-1, 4-dihydropyrimidin-2-yl) urea hydrochloride
N- (4-Aminobutyl) -N' - (6-methyl-4-oxo-1, 4-
dihydropyrimidin-2-yl) urea hydrochloride (4.8 mg, 0.2
mmol) and 66 µl of diisopropylethylamine (0.4 mmol) are
added to a suspension of butyl 4-[(4-([4-
Butoxycarbonyl ]phenyl ]amino ]-6-chloro-1, 3,5-triazin-2-
yl)amino ]benzoate (0.1 g, 0.2 mmol) in 4 ml of
acetonitrile. The solution is stirred for 6 hours at
reflux. The final product is obtained by precipitation
from water, and is then dried under reduced pressure.
0.06 g (40% yield) of product (22) is obtained in the
form of a white powder.
UV (CHCl3) : \( \lambda_{\text{max}} = 310 \text{ nm} \); \( \epsilon_{\text{max}} = 79,940 \); \( E_{1\%} = 1140 \).
### FORMULATION EXAMPLES 6 to 8

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Ex. 6</th>
<th>Ex. 7</th>
<th>Ex. 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compound of Example 2 (formula 10)</td>
<td>3.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Compound of Example 4 (formula 13)</td>
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<td>3.0</td>
<td>-</td>
</tr>
<tr>
<td>Compound of Example 5 (formula 22)</td>
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<td>-</td>
<td>3.0</td>
</tr>
<tr>
<td>Butylmethoxydibenzoylmethane (Parsol 1789)</td>
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<td>-</td>
<td>2.0</td>
</tr>
<tr>
<td>Bis(ethylhexyloxyphenyl)methoxyphenyltriazine (Tinosorb S)</td>
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<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td>C12-15 Alkyl benzoate</td>
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<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Cetyl alcohol</td>
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<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Stearic acid</td>
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<tr>
<td>Glyceryl monostearate/PEG stearate mixture (100 OE)</td>
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<td>1.0</td>
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<tr>
<td>Mixture of cetyl stearyl glucoside and cetyl and stearyl alcohols</td>
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<tr>
<td>Dimethicone</td>
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<tr>
<td>Triethanolamine</td>
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<tr>
<td>Preserving agent</td>
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<tr>
<td>Titanium dioxide</td>
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<td><strong>Phase B</strong></td>
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<tr>
<td>Glycerol</td>
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<td>Complexing agent</td>
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<tr>
<td>Monocetyl phosphate</td>
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<tr>
<td>Water</td>
<td>qs 100 g</td>
<td>qs 100 g</td>
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<tr>
<td><strong>Phase C</strong></td>
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<tr>
<td>Xanthan gum</td>
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<td>Acrylic acid/stearyl methacrylate copolymer</td>
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<td>Isohexadecane</td>
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<td><strong>Phase D</strong></td>
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<tr>
<td>Triethanolamine</td>
<td>qs pH</td>
<td>qs pH</td>
<td>qs pH</td>
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</table>

**Procedure**
The fatty phase (A) is heated to 70°C. The aqueous phase (B) is heated in the final beaker. Phase (C) is prepared: dispersion of the powders in the oil. The fatty phase is emulsified in the aqueous phase with stirring using a rotor-stator. Phase (C) is introduced with faster stirring, and the mixture is then stirred slowly until it has cooled to room temperature. It is neutralized (D) and then packaged.
1. Ureidopyrimidones corresponding to one of the formulae (I) and (II) below:

\[
\begin{align*}
\text{(I)} & \quad \text{in which:} \\
& \quad - n = 1, 2 \text{ or } 3; \text{ preferably } n = 1; \\
& \quad - m = 0 \text{ or } 1; \\
& \quad - \text{w is conditioned by the nature of the groups } A_1 \text{ and } A_2 \text{ as specifically mentioned in the definition of the said groups; } \\
& \quad - q = 0 \text{ or } 1; \text{ the value of q is conditioned by the nature of the groups } A_1 \text{ and } A_2 \text{ as specifically mentioned in the definition of the said groups; } \\
& \quad - R_1 \text{ and } R_2, \text{ which may be identical or different within the same molecule, represent hydrogen, } -\text{OH}, -\text{NRR'}; \text{ or a carbon-based group, especially saturated or unsaturated, optionally aromatic, linear, branched and/or cyclic } C_1-\text{C}_{32} \text{ alkyl, which may contain one or more heteroatoms chosen from } 0, S \text{ and } N; \\
& \quad R_1 \text{ may also be the radical: } -Z'_1-A_1; \\
& \quad - Z \text{ represents a multivalent radical (divalent to tetravalent, depending on the value of } n) \text{ chosen from: } \\
& \quad (i) \text{ a linear or branched, saturated or unsaturated } C_1-\text{C}_{32} \text{ carbon-based and especially hydrocarbon-based radical; optionally interrupted or substituted, one or}
\end{align*}
\]
more times, with an optionally aromatic C₃-C₁₂ (hetero) cycle; or
(ii) an optionally aromatic C₃-C₁₂ carbon-based and especially hydrocarbon-based (hetero) cyclic radical; optionally substituted with one or more linear or branched, saturated or unsaturated C₁-C₃₂ carbon-based and especially hydrocarbon-based radicals;
(iii) a radical - (C₅-C₆) cycloalkyl (C₁-C₁₂) alkyl-
the said radical Z optionally being:

(1) substituted with 1 to 12 identical or different groups chosen from -OH, -SO₃R, -OSO₃R, -SO₃H, -OSO₃H, -COOH, -COOR, -CONRR', C₁-C₄ alkyl and -N"RR'R"", An⁻ and/or
(2) interrupted or terminated with 1 to 5 identical or different groups chosen from the divalent groups: -S-, -NH- (or =NH), -O-, -C(O)-, -SO₂-, or combinations thereof, for instance -NHC(O)-, -C(O)NH-, -OC(O)-, -C(O)O-, or

![Diagram](image)

with Rₐ = H or halogen, especially CI, or C₁-C₆ alkyl; R, R' and R'', which may be identical or different, being H or a linear or branched C₁-C₁₂ alkyl radical; it being understood that the said radical Z comprises at least one heteroatom chosen from N, O and S; when Z is interrupted or substituted with a cationic group, the electrical neutrality of the compounds of formula (I) is ensured by a cosmetically acceptable anion or mixture of anions An⁻;
- $Z_i$ and $Z'_i$, which may be identical or different, denote a divalent radical $Z$;
- $Z$ may also denote a covalent bond for the compounds of formula (I) when $n = 1$ and $q = 0$, $Z'_i$ not being able to denote a covalent bond;
- $Z_2$ is a linear or branched divalent C$_1$-C$_{32}$ alkyl radical;
with the condition that when $w = 0$, then the radical $A_i$ and the diradical $A_2$ cannot end with a nitrogen;

- the monoradicals $A_i$ corresponding to one of the formulae (IIa) to (XIIa) below:

(a) para-aminobenzoate:

$$\begin{align*}
\text{H} & \text{N} \\
\text{R}_2' & \text{X-R}^1 \\
\end{align*}$$

(w = 1; (IIIa))

(b) cinnamate, benzalmalonate or cyanoacrylate:

$$\begin{align*}
\text{H} & \text{N} \\
\text{R}_2' & \text{R}_3' \\
\text{X-R}^1 & \text{X-R}^1 \\
\end{align*}$$

(x = 0 or 1) (IVa)

it being understood that
q = w = x = 1 when $Z$ is not a covalent bond and
q = x = 0 when $Z$ is a covalent bond

c) benzophenone:
d) benzylidencamphor:

\[ \text{w} = 1; \]

\[ (\text{Vla}) \]

\[ \text{w} = 0; \]

\[ (\text{VIIa}) \]

\[ \text{w} = 0; \]

\[ (\text{VIIIa}) \]

e) benzotriazole:

\[ \text{q} = w = 1; \]

\[ (\text{IXa}) \]

\[ \text{q} = 0; \]

\[ (\text{Xa}) \]
with $X = 0$ or NH

$\text{Ak} = \text{saturated C}_1\text{-C}_6$ and preferably C$_2$ linear divalent alkyl radical.

\[
(R^2_p)_{\text{N-N}}(R'_{2p})_{\text{p}}\text{X} \quad (\text{XIIa})
\]

\[q = 1 \text{ and } w = 0;\]

\[
(R^5)_{\text{p}}\text{X} \quad (\text{XIIa})
\]

\(w = 0;\)

with the radicals $A_3$, which may be identical or different, representing the radicals $A_1$ of formula (IIa), (IVa), (Va), (Va) or (IXa);

- the diradicals $A_2$ corresponding to one of the formulae (Illb) to (Vlb) below:

\(w = 1;\)

\[
(A_2)_{\text{p}}\text{X} \quad (\text{Illb})
\]

with $X = O$ or NH

b/ cinnamate, benzalmaionate or cyanoacrylate:
with $X = O$ or NH

\[ \text{(IVb)} \]

with $X = O$ or NH

\[ \text{(Vb)} \]

\[ \text{(VIIlb)} \]

with $A_4$ representing a radical of formula (IIia), (IVa), (Va), (Via) or (IXa);

in which:

- $R^1$ represents a linear or branched C$_1$-C$_{30}$ alkyl or C$_3$-C$_{30}$ alkenyl radical, which may bear one or more hydroxyl substituents and which may contain in the carbon-based
chain an alkyl ring, one or more heteroatoms chosen from oxygen, nitrogen and silicon atoms, an optionally substituted \(C_6-C_{20}\) aryl radical;
- \(R^2\) and \(R_2'\) represent, independently, a linear or branched \(C_1-C_{10}\) alkoxy radical, a linear or branched \(C_1-C_{10}\) alkyl radical, a linear or branched \(C_2-C_{8}\) alkenyl radical or \(-\text{OSi}(\text{CH}_3)_3\), two adjacent radicals \(R^2\) together possibly forming an alkylidenedioxy group in which the alkylidene group contains 1 to 2 carbon atoms (i.e. a group \(-0-(\text{CH}_2)_t-0-\) with \(t = 1\) or 2),
- \(p\) and \(p'\) are, independently, 0, 1 or 2,
- \(R^3\) is hydrogen, a \(C_1-C_{4}\) alkyl radical, or a radical chosen from \(-(\text{C}=\text{O})XR^1\), \(-\text{CN}\), \(-(\text{C}=\text{O})R^1\), \(-\text{SO}_2R^4\) with \(R^1\) having the same definition as above, and
- \(R^4\) represents a linear or branched \(C_1-C_{12}\) alkyl radical or a \(C_5-C_{20}\) aryl radical, which is optionally substituted,
- \(R^5\) represents a divalent \(C_2-C_{8}\) alkyl radical,
- \(X\) represents oxygen or a radical \(-\text{NR}_6\) with \(R^6\) being a linear or branched \(C_i-C_s\) alkyl radical.

2. Compounds according to Claim 1, in which the compounds of formula (I) or (II) are chosen from those for which:
- \(n\) is 1;
- \(m\) is 0 or 1;
- \(R_i\) is H or \(-Z'_1-A'_1\);
- \(R_2\) is the linear or branched \(C_1-C_3\) alkyl radical;
- the radical \(Z\) (or \(Z_1\) and/or \(Z'_1\)) denotes a linear divalent \(C_1-C_{12}\) alkyl radical, the divalent \(C_3-C_8\) cycloalkyl radical optionally substituted with one or more identical or different linear or branched \(C_1-C_4\) alkyl radicals or the following divalent radicals:
Z also possibly denoting a covalent bond when \( n = 1 \) and \( q = 0 \),
\( Z_2 \) denotes a linear divalent \( C_2-C_{20} \) alkyl radical,
and in the radicals \( A_i \) and/or \( A_2 \),
- \( R^1 \) is a \( C_1-C_8 \) alkyl, optionally substituted with 1 or 2 hydroxyl groups,
- \( X \) is \(-0-\),
- \( p = p' = 0 \),
10 - \( R^3 \) is \(-\text{CN} \) or \(-\text{COOR}^1 \),
- \( R^5 \) is \(-\text{CH2CH2}^-\).

3. Compounds according to Claim 1 or 2, in which the compounds of formula (I) or (II) are chosen from those for which:
- \( n \) is \( 1 \);
- \( m \) is \( 0 \) or \( 1 \);
- \( R_i \) is \( H \) or \(-Z'_1-A_1\);
20 - \( R_2 \) is linear or branched \( C_1-C_3 \) alkyl radical;
- the radical \( Z \) (or \( Z_i \) and/or \( Z'_i \)) denotes a linear divalent \( C_1-C_{12} \) alkyl radical, preferably a radical 1,2-ethylene; \( 1,6\)-hexylene; \( 1,4\)-butylene, or a divalent radical:
25

Z also possibly denoting a covalent bond when \( n = 1 \) and \( q = 0 \),
Z\textsubscript{2} denotes a linear divalent C\textsubscript{2}-C\textsubscript{2}o alkyl radical, in particular a tetradecyl radical;
- R\textsubscript{1} is a Ci-Cg alkyl, optionally substituted with 1 or 2 hydroxyl groups,
- X is -0-,
- P = P' = 0,
- R\textsubscript{3} is -CN or -COOR\textsubscript{1},
- R\textsubscript{5} is -CH2CH2-.

4. Compounds according to any one of Claims 1 to 3, in which the compounds of formula (I) or (II) are para-aminobenzoate derivatives and are chosen from the following compounds:
5. Compounds according to any one of Claims 1 to 3, in which the compounds of formula (I) or (II) are cinnamate derivatives and are chosen from the following compounds:

![Chemical structure 6](image6)

![Chemical structure 7](image7)

![Chemical structure 8](image8)

6. Compounds according to any one of Claims 1 to 3, in which the compounds of formula (I) are benzalmalonate derivatives and are chosen from the following compounds:

![Chemical structure 9](image9)

![Chemical structure 10](image10)
7. Compounds according to any one of Claims 1 to 3, in which the compounds of formula (I) or (II) are cyanoacrylate derivatives and are chosen from the following compounds:

8. Compounds according to any one of Claims 1 to 3, in which the compound of formula (I) is the benzophenone derivative below:
9. Compounds according to any one of Claims 1 to 3, in which the compounds of formula (I) or (II) are benzylidenecamphor derivatives and are chosen from the following compounds:

![Chemical structures](16)

10. Compounds according to any one of Claims 1 to 3, in which the compounds of formula (I) are benzotriazole derivatives and are chosen from the following compounds:
11. Compounds according to any one of Claims 1 to 3, in which the compounds of formula (I) or (II) are \( \text{S-} \) triazine derivatives and are chosen from the following compounds:

(20)

(21)

(22)

(23)

(24)
12. Cosmetic use of at least one ureidopyrimidone of formula (I) or (II) as defined in any one of Claims 1 to 11, as an agent for screening out UV radiation.

13. Composition comprising, in a cosmetically acceptable medium, at least one ureidopyrimidone of formula (I) or (II) as defined in any one of Claims 1 to 11.
14. Composition according to Claim 13, characterized in that it also contains other UV-A-active and/or UV-B-active organic or mineral UV-screening agents, which are water-soluble or liposoluble, or else insoluble in the commonly used cosmetic solvents.

15. Composition according to either of Claims 13 and 14, also comprising at least one active agent chosen from:

- vitamins and derivatives or precursors thereof, alone or as mixtures;
- antiglycation agents;
- calmatives;
- NO-synthase inhibitors;
- agents for stimulating the synthesis of dermal or epidermal macromolecules and/or for preventing their degradation;
- agents for stimulating fibroblast proliferation;
- agents for stimulating keratinocyte proliferation;
- muscle relaxants;
- tensioning agents;
- matting agents;
- keratolytic agents;
- desquamating agents;
- moisturizers;
- anti-inflammatory agents;
- agents acting on the energy metabolism of cells;
- insect repellants;
- substance P or CGRP antagonists;
- hair-loss counteractants and/or hair restorers;
- anti-wrinkle agents.
A. CLASSIFICATION OF SUBJECT MATTER

INV. C07D239/47 C07D403/12 C07D403/14 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)
C07D A61K A61Q

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BEI LSTEIN Data, CHEM ABS Data, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>EP 0 841 341 AI (L’OREAL [FR]) 13 May 1998 (1998-05-13) pages 2-7; claims 1-3, 11-15; examples</td>
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<td>A</td>
<td>EP 0 652 210 AI (L’OREAL [FR]) 10 May 1995 (1995-05-10) page 2; claims 1-3, 6-14; examples</td>
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<td>A</td>
<td>EP 1 310 533 A2 (AGFA GEVAERT [BE]) 14 May 2003 (2003-05-14) claim 16; examples; table 1</td>
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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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

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"K" document member of the same patent family

Date of the actual completion of the international search: 11 February 2011

Date of mailing of the international search report: 28/02/2011

Name and mailing address of the ISA/Authorized officer:

European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk
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Ladenburger, Claude
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