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Stabilization of body-care and household products against degradation by UV radiation using merocyanine derivatives

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WO 2007/014848 A3

(54) Title: STABILIZATION OF BODY-CARE AND HOUSEHOLD PRODUCTS AGAINST DEGRADATION BY UV RADIATION USING MEROCYANINE DERIVATIVES

(57) Abstract: Desribed is the use of specific merocyanine derivatives for protecting body-care and household products from photolytic and oxidative degradation. These compounds perform outstanding UV absorber properties.

Stabilization of body-care and household products

The present invention relates to the use of selected light stabilizers for protecting body-care and household products from photolytic and oxidative degradation.

The product trend of recent years towards increasingl use of natural substances based on oil and fat in cosmetic formulations and household products also increases the problem of the oxidative degradation of fats and oils, resulting in rancidity. Natural oils or unsaturated fatty acids are hardly ever absent from emulsions. Oxidative changes may sometimes produce reactive metabolites, for example ketones, aldehydes, acids, epoxides and lipoperoxides.

As a result there is on the one hand an undesirable change in the smell of the products and on the other hand substances may be obtained which may alter the skin tolerance. The uncontrolled formation of free radicals on the skin contributes primarily to the initiation and progression of a multitude of pathophysical modulations, for example inflammation, cancerogenesis and the like.

However, oxidative degradation processes are not only found in the case of natural substances based on oil and fat. They are also found in a number of other cosmetic ingredients, such as fragrances and odoriferous substances, vitamins, colourants and the like.

To prevent oxidative degradation processes (photooxidation, autooxidation), so-called antioxidants (AO) are therefore used in cosmetic and food products. These antioxidants may be classified into compounds which prevent oxidation (complex formers, reducing agents and the like) and into compounds which interrupt the free radical chain reactions, for example butylated hydroxytoluene (BHT), butylated hydroxyanisol (BHA), gallates, such as propylgallate (PG), or t-butylhydroquinone (TBHQ). However, the latter compounds often do not meet the requirements with respect to pH stability as well as to light and temperature stability.

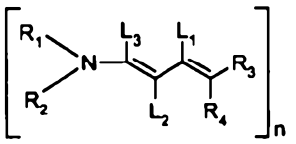
As a consequence the actives in such containers unadvantageously change their properties due to autoxidative processes. This results for example in a reduction of viscosity and changes in color or smell.

Furthermore, the growing product trend in the recent years has also resulted in an increased use of transparent (glass, PET etc.) containers for cosmetic formulations and household products. Although both glass and ordinary plastics have a certain inherent absorption in the UV-B-range the absorption in the UV-A range is very low.

Various stabilization techniques for clear package products by UV absorption are commonly used and well known. For example broad-band UV light stabilizers of the benzotriazole class enhance product stability and shelf live due to their very good UV-A and UV-B absorption properties compared to other absorbers such as benzophenones which mainly absorb UV-B. The most effective today known stabilizers for preventing or delaying light induced fading of transparent packaged products are e.g. benzotriazole derivativess known under the trade names Ciba TINOGARD HS or Ciba TINOGARD TL.

Surprisingly, it has been found that specific light stabilizers based on merocyanine derivatives perform outstanding UV absorber properties and are therefore suitable for product protection.

The present invention provides use of stabilizers of formula

(1)  , wherein

L_1, L_2 or L_3 independently of each other are hydrogen;

R_4 is CN; $-COR_7$; $-COOR_7$; $-SO_2R_7$; $-CONR_7R_8$; C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkynyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; C_1-C_1alkylcarbonylamino-C_6-C_{20}aryl; C_4-C_9heteroaryl;

R_5, R_6, R_7 and R_8 are independently of each other hydrogen; C_1-C_{22}alkyl, C_2-C_{22}alkenyl, C_2-C_{22}alkynyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; COR_9; -(CO)-COO-R_9; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; C_1-C_5alkoxy-C_6-C_{20}aryl; $-(CH_2)_t-SO_3H$;

-$(CH_2)_t$-CO)-OR_9; -$(CH_2)_t$-O-C_6-C_{10}aryl; -$(CH_2)_V$COO-R_9; C_4-C_9heteroaryl; -$(CH_2)_u$-$SiR_{15}R_{16}R_{17}$; or a radical -X-Sil;

R_9 is hydrogen; C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkynyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; or C_4-C_9heteroaryl; or

R_3 and R_4, R_1 and R_2, R_7 and R_8, R_5 and R_6 may be linked together to form 1, 2, 3 or 4 carbocyclic or N, O and/or S-heterocyclic rings, which may be further fused with other aromatic rings and each N in a N-heterocyclic ring may be unsubstituted or substituted by R_{10},

and each alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkylene group may be unsubstituted or substituted by one or more R_{11};

and each aryl, heteroaryl, aralkyl, arylene, heteroarylene or aralkylene may be unsubstituted or substituted by one or more R_{12};

R_{10} is R_{13}; COR_{13}; $COOR_{13}$; or $CONR_{13}R_{14}$;

R_{11} is halogen, OH; $NR_{15}R_{16}$; O-R_{15}; S-R_{15}; O-CO-R_{15}; CO-R_{15}; oxo; thiono; CN; $COOR_{15}$; $CONR_{15}R_{16}$; $SO_2NR_{15}R_{16}$; SO_2R_{15}; SO_3R_{15}; $SiR_{15}R_{16}R_{17}$; $OSiR_{15}R_{16}R_{17}$; $POR_{15}R_{16}$; or a radical -X-Sil;

R_{12} is C_1-C_{12}alkylthio; C_3-C_{12}cycloalkylthio; C_1-C_{12}alkenylthio; C_3-C_{12}cycloalkenylthio; C_1-C_{12}alkoxy; C_3-C_{12}cycloalkoxy; C_1-C_{12}alkenyloxy; or C_3-C_{12}cycloalkenyloxy which may be unsubstituted or substituted by one or more R_{11}; halogen; CN; SH; OH; CHO; R_{18};OR_{18}; SR_{18}; $C(R_{18})=CR_{19}R_{20}$; O-CO-R_{19}; $NR_{18}R_{19}$; $CONR_{18}R_{19}$; $SO_2NR_{18}R_{19}$; SO_2R_{18}; $COOR_{18}$, $OCOOR_{18}$; $NR_{18}COR_{19}$; $NR_{19}COOR_{20}$; $SiR_{15}R_{16}R_{17}$; $OSiR_{15}R_{16}R_{17}$; $P(=O)R_{19}R_{20}$; or a radical -X-Sil;

R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, R_{19} and R_{20} independently of each other are hydrogen; C_1-C_{22}alkyl; C_3-C_{12}cycloalkyl; C_2-C_{12}alkenyl; C_3-C_{12}cycloalkenyl; C_6-C_{14}aryl; C_4-C_{12}heteroaryl; C_7-C_{18}aralkyl; or C_5-C_{16}heteroaralkyl; or

R_{13} and R_{14}, R_{15} and R_{16}, R_{16} and R_{17} and/or R_{18} and R_{19} may be linked together to form unsubstituted or C_1-C_4alkyl-substituted pyrrolidine, piperidine, piperazine or morpholine;

X is a linker; and

Sil is a silane-, oligosiloxane or polysiloxane moiety;

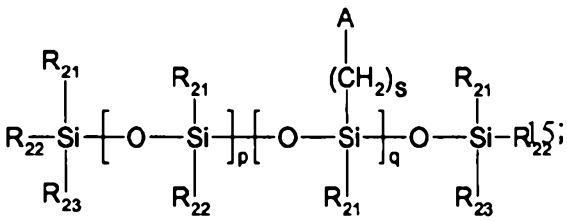
t is a number from 0 to 12;

u is a number from 1 to 12;

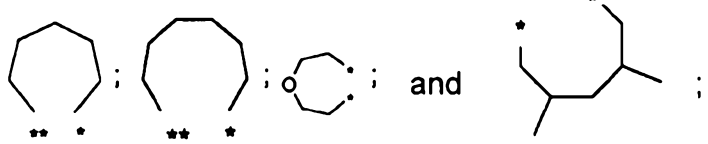
v is a number from 0 to 12;

if n = 1

R_1 and R_2 independently of each other hydrogen; C_1-C_{22}alkyl; hydroxy-C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkynyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_6-C_{20}aryl; C_5-C_{11}heteroaralkyl; C_4-C_9heteroaryl; or a radical of formula



; or R_1 and R_2 together form a bivalent radical selected from



;

R_{21}, R_{22}, R_{23} independently from each other are C_1-C_{22}alkyl; or C_1-C_{22}alkoxy;

A is the bond to the linker X;

R_3 is CN; NR_5R_6; $-COR_5$; $-COOR_5$; $-SO_2R_5$; $-CONR_5R_6$; C_6-C_{20}aryl; or C_4-C_9heteroaryl;

p is a number from 0 to 100

q is a number from 1 to 20;

s is a number from 0 to 4;

if n = 2

R_1 and R_2 are each a bivalent radical selected from C_1-C_5alkylene which may be interrupted by one or more oxygen atoms; or

R_1 and R_2 together with the nitrogen atoms form a six-membered heterocyclic ring; and simultaneously R_3 is defined as for n = 1; or

R_3 is a bivalent radical of formula $-CO-V_1-C_1-C_{12}$alkylene-W_1-*, wherein the asterix indicates the bond to the second R_3

V_1 is -O-; or -NR_7-; or the direct bond;

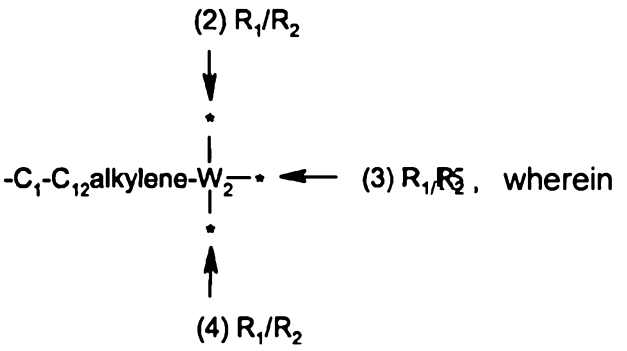
W_1 is the linkage to the second R_3, wherein W_1 is the direct bond; or selected from C_1-C_{12}alkylene; or phenylene; and

R_1 and R_2 simultaneously are defined as for n = 1;

if n = 3

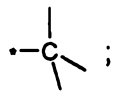
one of R_1, R_2 or R_3 is a trivalent radical;

if n = 4

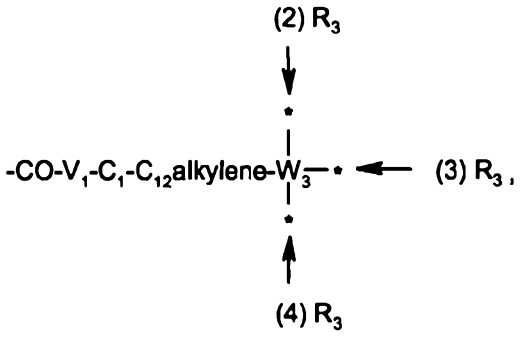
R_1 or R_2 is a radical of formula 

, wherein

the asterices indicate the bond to the second, third and fourth R_1/R_2;

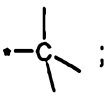
W_2 is  ;

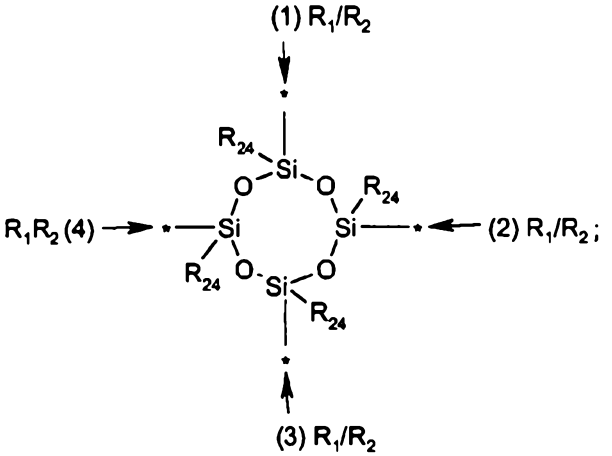
R_3 is defined as for n = 1; or

R_3 is a radical of formula 

,

wherein the asterices indicate the bond to the second (2), third (3) and fourth (4) R_3; and

W_3 is  ; or

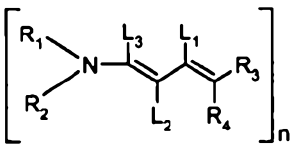
R_1 or R_2 is a radical of formula 

the asterices indicate the bond to the second, third and fourth R_1/R_2;

R_{24} is C_1-C_{22}alkyl; or C_1-C_{22}alkoxy;

for protecting body-care and household products from photolytic and oxidative degradation.

Disclosed herein is the use of merocyanine derivatives of

formula (1)  , wherein

L_1, L_2 or L_3 independently of each other hydrogen; hydroxy; C_1-C_{22}alkyl; C_1-C_{22}alkoxy; C_2-C_{22}alkenyl; C_2-C_{22}alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1- C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl, C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; C_6-C_{20}aryl-C_1-C_5alkenylene; C_4-C_9heteroaryl; CN; $-(CH_2)_t-OR_9$; or $COOR_9$;

R_4 is CN; $-COR_7$; $-COOR_7$; $-SO_2R_7$; $-CONR_7R_8$; C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; C_1-C_1alkylcarbonylamino-C_6-C_{20}aryl; C_4-C_9heteroaryl;

R_5, R_6, R_7 and R_8 are independently of each other hydrogen; C_1-C_{22}alkyl, C_2-C_{22}alkenyl, C_2-C_{22}alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; COR_9; $-(CO)-COO-R_9$; C_1-C_{20}heteroalkyl; C_3-

C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; C_1-C_5alkoxy-

C_6-C_{20}aryl; -$(CH_2)_t$-SO_3H; -$(CH_2)_t$-(CO)-OR_9; -$(CH_2)_t$-O-C_6-C_{10}aryl; -$(CH_2)_v$COO-R_9; C_4-C_9heteroaryl; -$(CH_2)_u$-$SiR_{15}R_{16}R_{17}$; or a radical -X-Sil;

R_9 is hydrogen; C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20} aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; or C_4-C_9heteroaryl; or

L_1 and L_2, L_1 and L_3, L_2 and L_3, L_1 and R_4, L_2 and R_4, L_1 and R_1, L_2 and R_1, L_3 and R_1, L_3 and R_5, R_3 and R_4, R_1 and R_2, R_7 and R_8, R_5 and R_6 may be linked together to form 1, 2, 3 or 4 carbocyclic or N, O and/or S-heterocyclic rings, which may be further fused with other aromatic rings and each N in a N-heterocyclic ring may be unsubstituted or substituted by R_{10};

and each alkyl, alkenyl, alkinyl, cycloalkyl or cycloalkylene group may be unsubstituted or substituted by one or more R_{11};

and each aryl, heteroaryl, aralkyl, arylene, heteroarylene or aralkylene may be unsubstituted or substituted by one or more R_{12};

R_{10} is R_{13}; COR_{13}; $COOR_{13}$; or $CONR_{13}R_{14}$;

R_{11} is halogen, OH; $NR_{15}R_{16}$; O-R_{15}; S-R_{15}; O-CO-R_{15}; CO-R_{15}; oxo; thiono; CN; $COOR_{15}$; $CONR_{15}R_{16}$; $SO_2NR_{15}R_{16}$; SO_2R_{15}; SO_3R_{15}; $SiR_{15}R_{16}R_{17}$; $OSiR_{15}R_{16}R_{17}$; $POR_{15}R_{16}$; or a radical -X-Sil;

R_{12} is C_1-C_{12}alkylthio; C_3-C_{12}cycloalkylthio; C_1-C_{12}alkenylthio; C_3-C_{12}cycloalkenylthio; C_1-C_{12}alkoxy; C_3-C_{12}cycloalkoxy; C_1-C_{12}alkenyloxy; or C_3-C_{12}cycloalkenyloxy which may be unsubstituted or substituted by one or more R_{11}; halogen; CN; SH; OH; CHO; R_{18}; OR_{18}; SR_{18}; $C(R_{18})=CR_{19}R_{20}$; O-CO-R_{19}; $NR_{18}R_{19}$; $CONR_{18}R_{19}$; $SO_2NR_{18}R_{19}$; SO_2R_{18}; $COOR_{18}$, $OCOOR_{18}$; $NR_{18}COR_{19}$; $NR_{19}COOR_{20}$; $SiR_{15}R_{16}R_{17}$; $OSiR_{15}R_{16}R_{17}$; $P(=O)R_{19}R_{20}$; or a radical -X-Sil;

R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, R_{19} and R_{20} independently of each other are hydrogen; C_1-C_{22}alkyl; C_3-C_{12}cycloalkyl; C_2-C_{12}alkenyl; C_3-C_{12}cycloalkenyl; C_6-C_{14}aryl; C_4-C_{12}heteroaryl; C_7-C_{18}aralkyl; or C_5-C_{16}heteroaralkyl; or

R_{13} and R_{14}, R_{15} and R_{16}, R_{16} and R_{17} and/or R_{18} and R_{19} may be linked together to form unsubstituted or C_1-C_4alkyl-substituted pyrrolidine, piperidine, piperazine or morpholine;

X is a linker; and

Sil is a silane-, oligosiloxane or polysiloxane moiety;

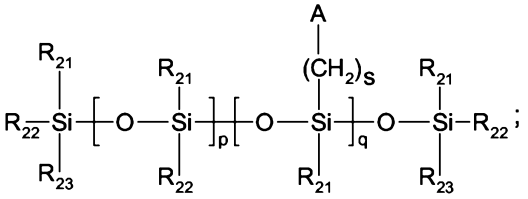
t is a number from 0 to 12;

u is a number vfrom 1 to 12;

v is a number from 0 to 12;

if n = 1

R_1 and R_2 independently of each other hydrogen; C_1-C_{22} alkyl; hydroxy-C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22} alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_6-C_{20}aryl; C_5-C_{11}heteroaralkyl; C_4-C_9heteroaryl; or a radical of formula



;

R_{21}, R_{22}, R_{23} independently form each other are C_1-C_{22}alkyl; or C_1-C_{22}alkoxy;

a is the bond to the linker X;

R_3 is CN; NR_5R_6; $-COR_5$; $-COOR_5$; $-SO_2R_5$; $-CONR_5R_6$; C_6-C_{20}aryl; or C_4-C_9heteroaryl;

p is a number from 0 to 100

q is a number from 1 to 20;

s is a number from 0 to 4;

if n = 2

R_1 and R_2 are each a bivalent radical selected from C_1-C_5alkylene which may be interrupted by one or more oxygen atoms; or

R_1 and R_2 together with the nitrogen atoms form a six-membered heterocyclic ring; and simultaneously R_3 is defined as for n = 1; or

R_3 is a bivalent radical of formula $-CO-V_1-C_1$-C_{12}alkylene-W_1-*, wherein

the asterix indicates the bond to the second R_3

V_1 is -O-; or $-NR_7$-; or the direct bond;

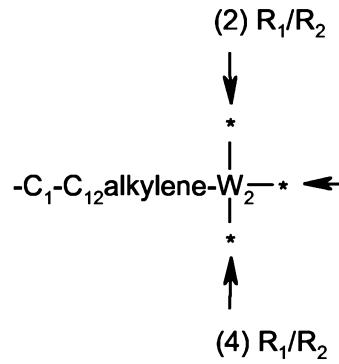
W_1 is the linkage to the second R_3, wherein W_1 is the direct bond; or selected from C_1-C_{12}alkylene; or phenylene; and

R_1 and R_2 simultaneously are defined as for n = 1;

if n = 3

one of R_1, R_2 or R_3 is a trivalent radical;

if n = 4

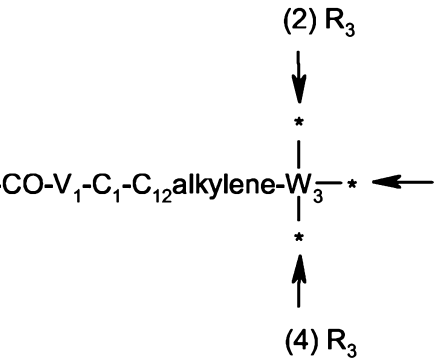
R_1 or R_2 is a radical of formla 

, wherein

the asterices indicate the bond to the second, third and fourth R_1/R_2;

W_2 is  ;

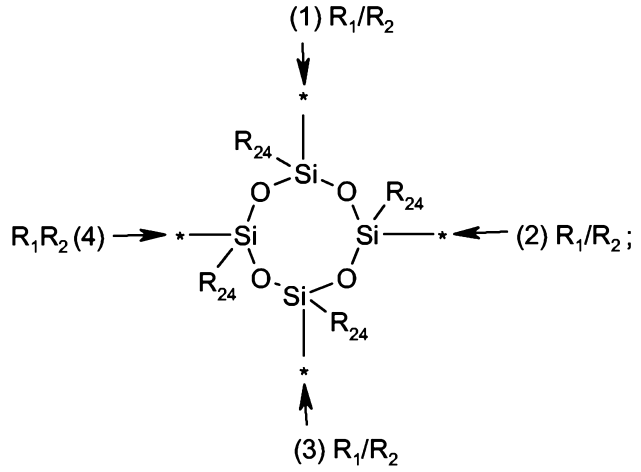
R_3 is defined as for n = 1; or

R_3 is a radical of formula 

, wherein the

asterices indicate the bond to the second (2), third (3) and fourth (4) R_3; and

W_3 is  ; or

R_1 or R_2 is a radical of formla 

the asterices indicate the bond to the second, third and fourth R_1/R_2;

R_{24} is C_1-C_{22}alkyl; or C_1-C_{22}alkoxy;

for protecting body-care and household products from photolytic and oxidative degradation.

The term „oligosiloxane" denotes a group of the general formula

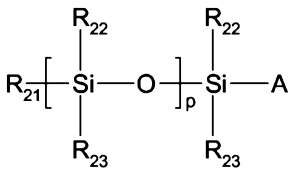
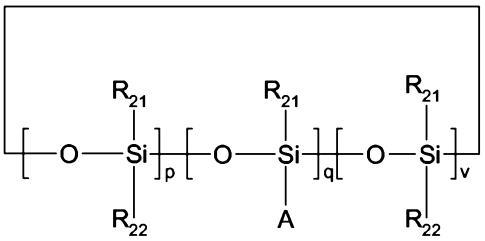
$Si(R_{21})_m[OSi(R_{22})]_o$; wherein

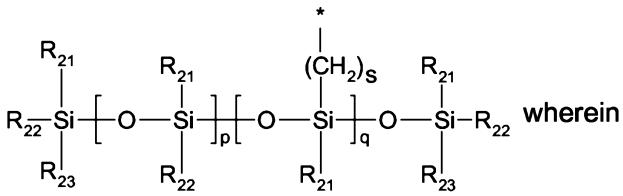
m is 0; 1; or 2,

o is 3, 2 or 1; and

m and o are 3; or

„oligosiloxane" is a group of formula

(3a)  ; or (3b)  ; or (3c)

 wherein

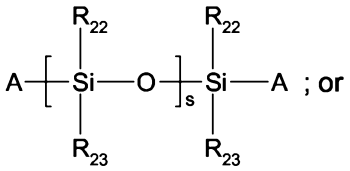
A is a bond to the linker X;

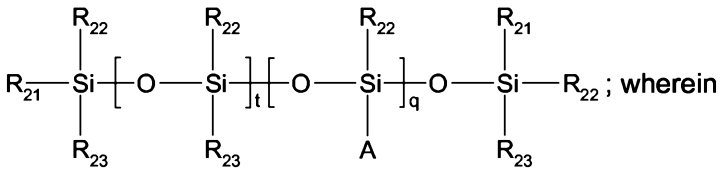
p is a number from 0 to 10,

q is a number from 1 to 10; and

v is a number from 0 to 1.

The term „polysiloxane" in this context refers to groups of the general formula

(4a)  ; or

(4b)  ; wherein

R_{21}, R_{22} and R_{23}, independently from each other are C_1-C_{22}alkyl or C_1-C_{22}alkoxy;

A is a bond to the linker X;

s is a number from 4 to 250;

t is a number from 5 to 250; and

q is a number from 1 to 30;

Halogen is chloro, bromo, fluoro or iodo, preferably a fluoro, more preferably fluoro alkyl like trifluormethyl, α,α,α-trifluorethyl or perfluorinated alkyl groups like heptafluorpropyl.

Alkyl, cycloalkyl, alkenyl, alkylidene or cycloalkenyl residues can be straight-chain or branched, or also monocyclic or polycyclic.

Alkenyl is for example straight-chain C_2-C_{12}alkenyl or preferably branched C_3-C_{12}alkenyl.

C_1-C_{22}alkyl is for example methyl, ethyl, n-propyl, isopropyl, n-butyl, sec.-butyl, isobutyl, tert.-butyl, n-pentyl, 2-pentyl, 3-pentyl, 2,2-dimethylpropyl, n-hexyl, n-octyl, 1,1,3,3-tetramethylbutyl, 2-ethylhexyl, nonyl, decyl, n-octadecyl, eicosyl, oder dodecyl.

C_3-C_{12}cycloalkyl is for example cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, trimethylcyclohexyl, menthyl, thujyl, bornyl, 1-adamantyl or 2-adamantyl.

C_2-C_{12}alkenyl or C_3-C_{12}cycloalkenyl refers to unsaturated hydrocarbon residues containing one or multiple double bonds such vinyl, allyl, 2-propen-2-yl, 2-buten-1-yl, 3-buten-1-yl, 1,3-butadiene-2-yl, 2-cyclobutene-1-yl, 2-pentene-1-yl, 3-pentene-2-yl, 2-methyl-1-butene-3-yl, 2-methyl-3-butene-2-yl, 3-methyl-2-butene-1-yl, 1,4-pentadiene-3-yl, 2-cyclopentene-1-yl, 2-cyclohexene-1-yl, 3-cyclohexene-1-yl, 2,4-cyclohexadiene-1-yl, 1-*p*-menthene-8-yl, 4(10)-thujene-10-yl, 2-norbornene-1-yl, 2,5-norbornadiene-1-yl, 7,7-dimethyl-2,4-norcaradiene-3-yl or different isomers selected from hexenyl, octenyl, nonenyl, decenyl or dodecenyl.

C_7-C_{18}Aralkyl is for example benzyl, 2-benzyl-2-propyl, β-phenyl-ethyl, 9-fluorenyl, α,α-dimethylbenzyl, ω-phenyl-butyl, ω-phenyl-octyl, ω-phenyl-dodecyl or 3-methyl-5-(1',1',3',3'-tetramethyl-butyl)-benzyl.

The C_7-C_{18}aralkyl moiety may be unsubstituted or substituted on the alkyl- as well at the aryl-moiety of the aralkyl-group, but preferably is substituted on the aryl-moiety..

(C_1-C_6)-Alkylidene is for example methylene, ethyl-1-ene or propyl-2-ene.

C_6-C_{14}aryl is for example phenyl, naphthyl, biphenylyl, 2-fluorenyl, phenanthryl, anthracenyl or terphenylyl.

C_4-C_{12}heteroaryl is for example an unsaturated or aromatic radical with 4n+2 conjugated π-electrons, such as 2-thienyl, 2-furyl, 2-pyridyl, 2-thiazolyl, 2-oxazolyl, 2-imidazolyl, isothiazolyl, triazolyl or any other ringsystem consisting of thiophene-, furan-, pyridine, thiazol, oxazol, imidazol, isothiazol, triazol, pyridine- and phenyl rings, which are unsubstituted or substituted by 1 to 6 ethyl, methyl, ethylene and/or methylene groups, such as benzotriazolyl.

C_5-C_{16}heteroaralkyl is for example a C_1-C_8 alkyl moiety which is substituted by a C_4-C_8heteroaryl group.

Preferably compounds of formula (1) are used, wherein

L_1, L_2 or L_3, independently from each other are hydrogen; hydroxy; C_1-C_5alkyl, which may be interrupted by one or more oxgen; $COOR_9$; phenyl, which may be substituted by one or more halogen, C_1-C_5alkyl, C_1-C_5alkoxy, trifluoroalkyl, C_2-C_5alkenyl; C_4-C_9heteroaryl; and

R_9 is defined as in claim 1; and

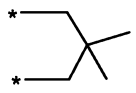
n is 1; and more preferably compounds of formula (1), wherein

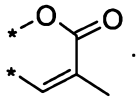
L_1, L_2 and L_3, independently from each other are hydrogen, methyl, phenyl; or -$COOR_9$; wherein

R_9 is C_1-C_5alkyl; and

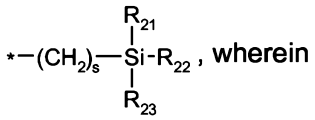
n is 1.

Furthermore, compounds of formula (1) are used, wherein

L_1 and L_2 or L_1 and L_3 or L_2 and L_3 togeher form a bivalent radical selected from 

;  ;  ;  ; or  .

Furthermore, compounds of formula (1) are preferably used, wherein

R_1 and R_2 independently from each other are C_1-C_{12}alkyl; hydroxy- C_1-C_{12}alkyl; phenyl or phenyl-C_1-C_5alkyl, which may be substituted by one or more C_1-C_5alkyl, or SO_3M; or a radical of formula  , wherein

n is 1; and more preferably compounds of formula (1), wherein

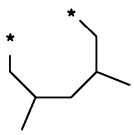
R_1 and R_2, independently form each other are C_1-C_4alkyl;

M is hydrogen; or metal ion; and

n is 1.

Furthermore, compounds of formula (1) are preferably used, wherein

R_1 and R_2 together form a bivalent radical selected from 

and 

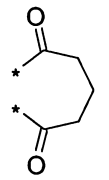
Furthermore, compounds of formula (1) are preferably used, wherein

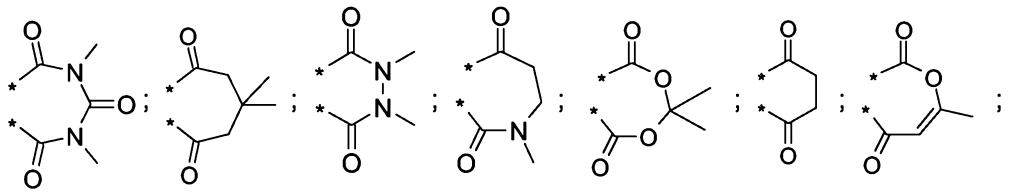
R_3 and R_4, independently from each other are CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7; wherein

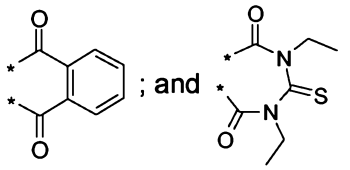
R_7 and R_8, independently from each other are C_1-C_{22}alkyl; phenyl; or a radical -X-Sil;

n is 1; and

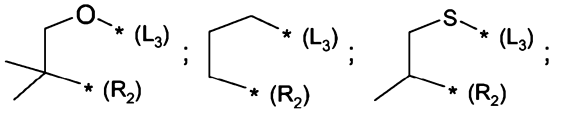
X and Sil are defined as in claim 1; and more preferably compounds of formula (1), wherein

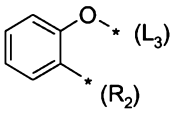
R_3 and R_4 together form a carboyclic or heterocyclic biradical selected from  ;



 ; and .

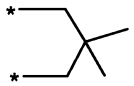
Preferred is also the use of compounds of formula (1), wherein

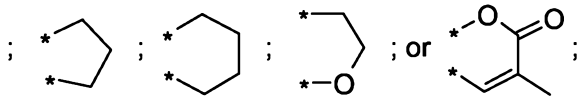
R_2 and L_3 form a bivalent radical selected from 

and  .

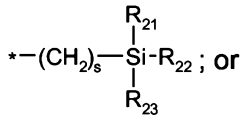
Most preferred is the use of compounds of formula (1), wherein

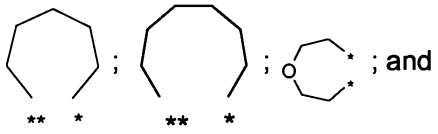
L_1, L_2 or L_3, independently from each other are hydrogen; hydroxy; C_1-C_5alkyl, which may be interrupted by one or more oxgen; $COOR_9$; phenyl, which may be substituted by one or more halogen, C_1-C_5alkyl, C_1-C_5alkoxy, trifluoroalkyl, C_2-C_5alkenyl; C_4-C_9heteroaryl; or

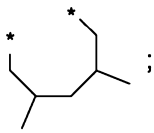
L_1 and L_2 or L_1 and L_3 or L_2 and L_3 togeher form a bivalent radical selected from 



R_1 and R_2 independently from each other are C_1-C_{12}alkyl; hydroxy- C_1-C_{12}alkyl; phenyl or phenyl-C_1-C_5alkyl, which may be substituted by one or more C_1-C_5alkyl, or SO_3M; or a

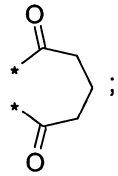
radical of formula  ; or

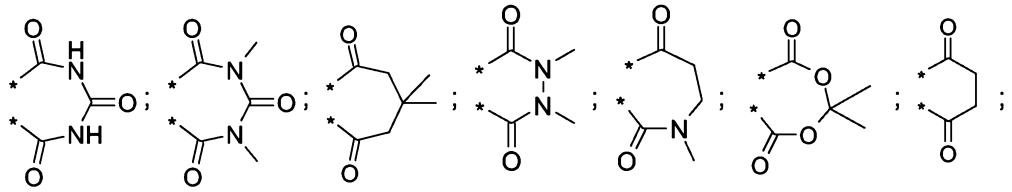
R_1 and R_2 together form a bivalent radical selected from  ; and

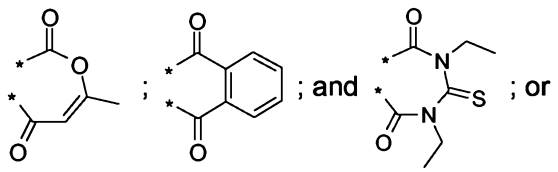
 ;

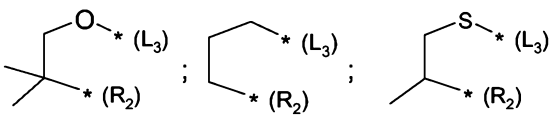
R_3 and R_4, independently from each other are CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7;

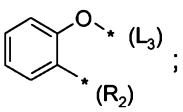
R_7 and R_8, independently from each other are C_1-C_{22}alkyl; phenyl; or a radical -X-Sil; or

R_3 and R_4 together form a carbyclic or heterocyclic biradical selected from  ;



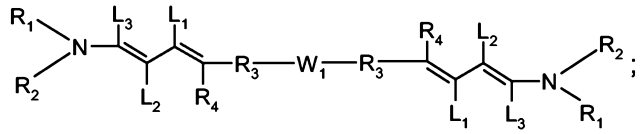
 ; and ; or

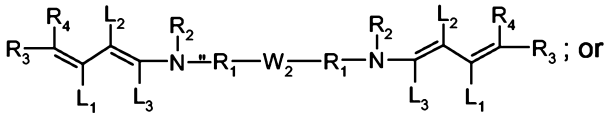
R_2 and L_3 form a bivalent radical selected from 

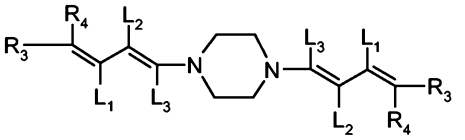
; and  ; and

R_9, R_{21}, R_{22}, R_{23}, X and Sil are defined as in claim 1.

Furthermore, compounds of formula (1) are preferred, wherein the stabilizers correspond to formula

(2a)  ;

(2b)  ; or

(2c)  , wherein

R_1, R_2, R_3, R_4, L_1, L_2, L_3, W_1 and W_2 are defined as in formula (1).

Preferably compounds of formula (2a) are used, wherein

R_3 is a radical of formula -CO-V_1-C_1-C_{12}alkylene-**, wherein

V_1 is -O; or -NH-;

W_1 is the direct bond; C_1-C_4alkylene; or phenylene;

R_1 and R_2, independently from each other are C_1-C_{12}alkyl;

L_1, L_2 and L_3 independently form each other are hydrogen; or C_1-C_5alkyl; or

L_3 and R_2 together form a heterocyclic ring;

R_4 is CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7; and

R_7 is C_1-C_{22}alkyl; or phenyl.

Preferred compounds of formula (2b) are those, wherein

R_1 is C_1-C_3alkylene;

L_1, L_2 and L_3 independently form each other are hydrogen; or C_1-C_5alkyl; or

L_1 and L_3 together form a carbocyclic ring;

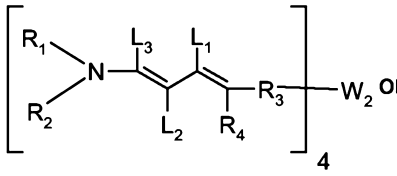
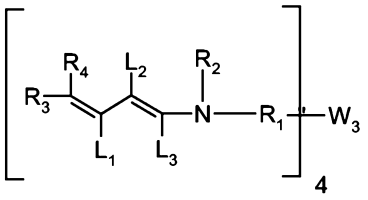
R_2 is hydrogen; or C_1-C_5alkyl;

W_1 is C_1-C_3alkylene; or the direct bond;

R_3 and R_4 independently from each other are CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7; and

R_7 and R_8, independently from each other are C_1-C_{22}alkyl; or phenyl.

Furthermore, the use of compounds of formula

(3a)  or (3b)  is preferred,

wherein

R_1, R_2, R_3, R_4, L_1, L_2, L_3, W_2 and W_3 are defined as in claim 1.

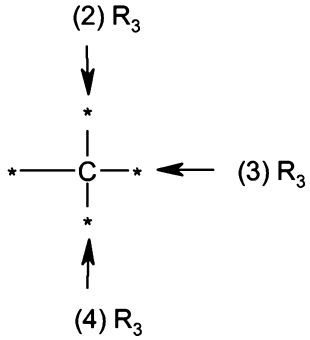
More preferred compounds of formula (3a) are those, wherein

L_1, L_2 and L_3 independently from each other are hydrogen; hydroxy; C_1-C_5alkyl; or L_1 and L_3 together form a carbocyclic ring;

R_1 and R_2 independently from each other are hydrogen; or C_1-C_{12}alkyl;

R_3 is *-CO-V_1-C_1-C_{12}alkylene-**;

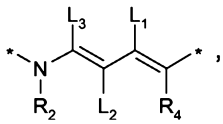
V_1 is -O; or -NH-;

W_2 is a tetravalent radical of formula 

R_4 is CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7; and

R_7 and R_8, independently from each other are C_1-C_{22}alkyl; or phenyl.

Futher preference is given to the use of polymeric or oligomeric compounds comprising structural elements of formula

(4)  , wherein

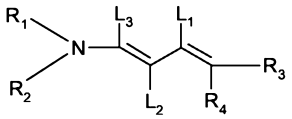
at least one of the asterix-marked radicals may be bound to the oligomeric or polymeric radical; and

L_1, L_2, L_3, R_2 and R_4 are defined as in formula (1).

Compounds of formula (4) are known and examples are disclosed in DE 3531383 on the pages 8-11.

Examples of merocyanine derivatives which are useful for the present invention are listed in the table below:

Table MC1a



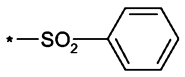
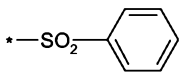
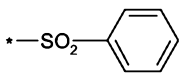
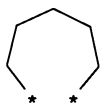
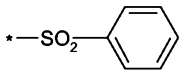
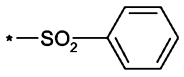
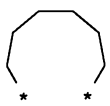
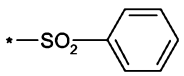
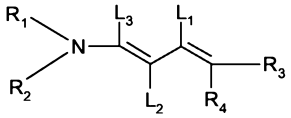
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC01	CH_3	CH_3	H	H	H	-$COOCH_3$	-$COOCH_3$
MC02	C_2H_5	C_2H_5	H	H	H	-COO C_2H_5	-$COOSi(CH_3)_3$
MC03	C_2H_5	C_2H_5	H	H	H	$COOC_8H_{17}$-(n)	$SO_2C_6H_5$
MC04	C_2H_5	C_2H_5	H	H	H	CN	$COOC_8H_{17}$-(i)
MC05	C_4H_9	C_4H_9	H	H	H	$COOC_6H_{13}$-(n)	$SO_2C_6H_5$
MC06	C_4H_9	C_4H_9	H	H	H	-COO C_4H_9-(n)	$SO_2C_6H_5$
MC07	C_4H_9	C_4H_9	H	H	H	-COO C_4H_9-(t)	
MC08	n-C_6H_{13}	n-C_6H_{13}	H	H	H	CN	CN
MC09	i-C_8H_{17}	i-C_8H_{17}	H	H	H	CN	CN
MC10	C_2H_5	C_2H_5	CH_3	H	H	-$COOC_2H_5$	-$COOSi(CH_3)_3$
MC11	C_2H_5	C_2H_5	CH_3	H	H	-$CONHC_2H_5$	-$CONHC_2H_5$
MC12	C_2H_5	C_2H_5	CH_3	H	CH_3	-$CON(C_2H_5)_2$	-$CON(C_2H_5)_2$
MC13	C_2H_5	C_2H_5	CH_3	H	H	CN	$COOC_8H_{17}$-(i)
MC14	C_2H_5	C_2H_5	CH_3	H	CH_3	CN	$COOCH_3$
MC15	C_2H_5	C_2H_5	CH_3	H	H	$SO_2C_6H_5$	$COOC_8H_{17}$-(n)
MC16	C_2H_5	C_2H_5	CH_3	H	H		$COOC_2H_5$
MC17	C_2H_5	C_2H_5	CH_3	H	CH_3	-$CONHC_2H_5$	-$CONHC_2H_5$
MC18	C_2H_5	C_2H_5	CH_3	H	CH_3	-$CON(C_2H_5)_2$	-$CON(C_2H_5)_2$
MC19	CH_3	CH_3	CH_3	H	CH_3	CN	$COOC_8H_{17}$-(i)
MC20	CH_3	CH_3	CH_3	H	CH_3	CN	-$CON(C_2H_5)_2$
MC21	CH_3	CH_3	CH_3	H	CH_3		-$CONHC_2H_5$
MC22			H	H	H		$COOC_2H_5$
MC23			CH_3	H	H	CN	$COOC_8H_{17}$-(i)
MC24			CH_3	H	CH_3		$COOC_2H_5$
MC25			CH_3	H	H	$SO_2C_6H_5$	-COO C_2H_5
MC26			CH_3	H	H		-$COOSi(CH_3)_3$
MC27			CH_3	CH_3	CH_3	CN	$COOC_8H_{17}$-(i)
MC28			CH_3	CH_3	CH_3	CN	$SO_2C_6H_5$

Table MC1a



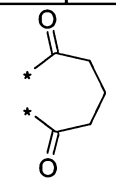
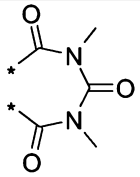
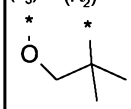
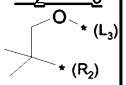
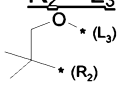
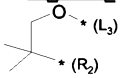
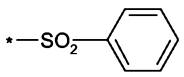
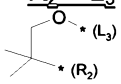
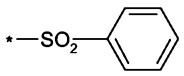
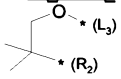
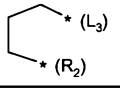
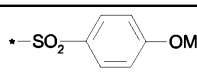
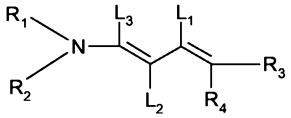
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC29			CH_3	H	H	CN	$COOC_8H_{17}$-(i)
MC30	i-propyl	i-propyl	CH_3	H	H		
MC31	CH_3	CH_3	CH_3	H	H		
MC32	CH_3	$R_2 + L_3$ 	H	H	-	SO_2-C_6H_5	COO-n-C_6H_{13}
MC33	CH_3	$R_2 + L_3$ 	H	H	-	CN	COO-n-$C_{12}H_{25}$
MC34	n-$C_{12}H_{25}$	$R_2 + L_3$ 	H	H	-	CN	CN
MC35	n-$C_{10}H_{21}$	$R_2 + L_3$ 	H	H	-		$COOC_2H_5$
MC36	CH_3	$R_2 + L_3$ 	H	H	-		COO-n-$C_{10}H_{21}$
MC37	C_2H_5	$R_2 + L_3$ 	H	H	-	CONH-n-$C_{12}H_{25}$	CN
MC38	n-$C_{10}H_{21}$	$R_2 + L_3$ 	H	H	-		$COOC_2H_5$

Table MC1a



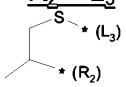
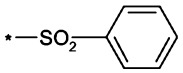
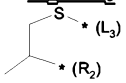
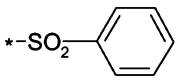
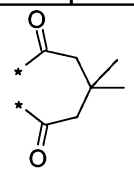
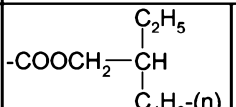
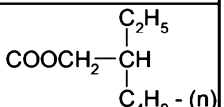
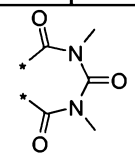
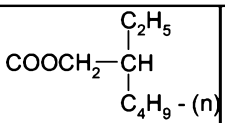
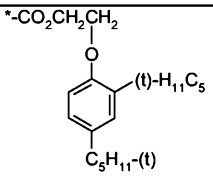
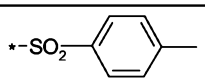
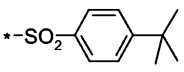
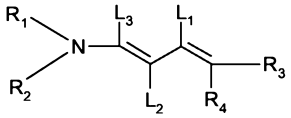
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC39	n-$C_{10}H_{21}$	$R_2 + L_3$ 	H	H	-		$COOC_6H_{13}$-(n)
MC40	n-$C_{10}H_{21}$	$R_2 + L_3$ 	H	H	-	*-SO_2-n-C_6H_{13}	COOH
MC41	n-C_6H_{13}	n-C_6H_{13}	H	H	H	-$COOC_2H_5$	
MC42	n-C_4H_9	n-C_4H_9	H	H	H		
MC43	CH_3	CH_3	H	H	H		
MC44	n-C_6H_{13}	n-C_6H_{13}	H	H	H	$COCH_3$	$COCH_3$
MC45	n-C_6H_{13}	n-C_6H_{13}	H	H	H	CN	CN
MC46	n-C_6H_{13}	n-C_6H_{13}	H	H	H		
MC47			H	H	H		$COCH_3$
MC48	n-C_6H_{13}	n-C_6H_{13}	H	H	H		
MC49	n-C_4H_9	n-C_4H_9	H	H	H	CO_2CH_3	

Table MC1a



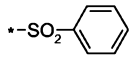
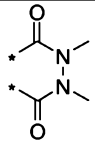
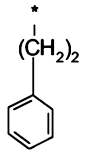
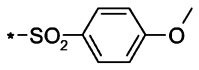
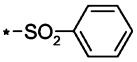
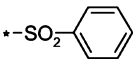
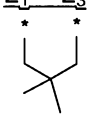
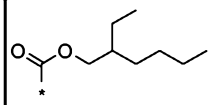
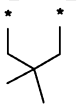
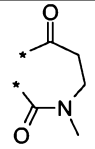
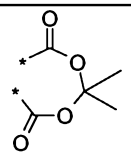
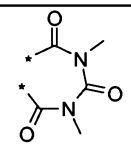
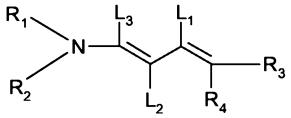
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC50			H	H	H	$COCH_3$	
MC51	$n\text{-}C_6H_{13}$	$n\text{-}C_6H_{13}$	H	H	H		
MC52		$n\text{-}C_{16}H_{33}$	H	H	H	$CO_2C_4H_9\text{-}(n)$	
MC53	C_2H_5	C_2H_5	H	H	H	$COOC_{12}H_{25}\text{-}(n)$	
MC54	$n\text{-}C_4H_9$	$n\text{-}C_4H_9$	H	H	H	$COOC_{14}H_{29}\text{-}(n)$	
MC55	H	sec-butyl	$L_1 + L_3$ 	H	-		CN
MC56	H	n-hexyl	$L_1 + L_3$ 	H	-	$COOC_2H_5$	CN
MC57	CH_3	CH_3	CH_3	H	H		
MC58			CH_3	H	H		
MC59	CH_3	R_2+L_3 	CH_3	H	-		
MC60	H	CH_3	CH_3	H	CH_3	$-COOCH_3$	$-COOCH_3$

Table MC1a



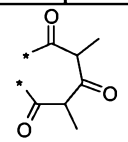
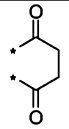
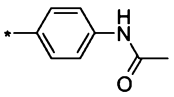
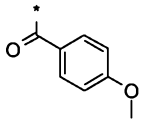
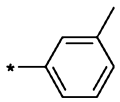
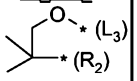
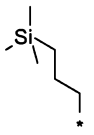
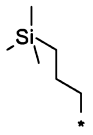
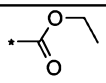
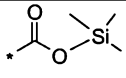
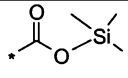
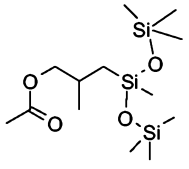
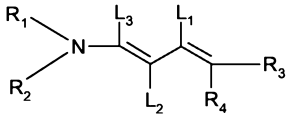
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC61			H	CH_3	H		
MC62	CH_3	n-butyl	CH_3	H	CH_3	$-COOC_2H_5$	$-COOC_2H_5$
MC63	CH_3	CH_3	H	H	CH_3		
MC64	CH_3	CH_3	H			CN	$COCH_3$
MC65	CH_3	CH_3	CH_3	H	H		
MC66			CH_3	H	CH_3		$COCOOC_2H_5$
MC67	CH_3	R_2+L_3 	t-butyl	H	-	$CON(C_2H_5)_2$	$COCH_3$
MC68	i-propyl	i-propyl			H	CN	CN
MC69	CH_3	CH_3			H	CN	CN
MC70			CH_3	H	H		
MC71			H	CH_3	H		
MC72	n-propyl	n-propyl	CH_3	H	H	CO-t-butyl	

Table MC1a



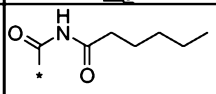
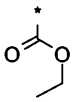
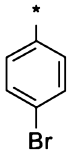
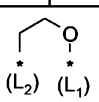
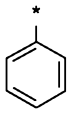
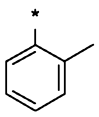
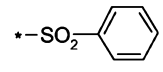
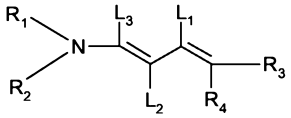
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC73	CH_3	CH_3	C_2H_5	H	H		CN
MC74	C_2H_5	C_2H_5	CH_3	CH_3	CH_3	$COOC_2H_5$	$COOC_2H_5$
MC75	CH_3	CH_3		H	CH_3	$COOC_2H_5$	$COOC_2H_5$
MC76	CH_3	CH_3	H		CH_3	$COOC_2H_5$	CN
MC77	CH_3	CH_3		H		$COOC_2H_5$	$COOC_2H_5$
MC78	CH_3	CH_3		H	CH_3	CN	$COOC_2H_5$
MC79	CH_3	CH_3		H	CH_3	CN	$COOC_2H_5$
MC80	CH_3	CH_3			H	$COOC_2H_5$	CN
MC81	CH_3	CH_3		H	CH_3	CN	$COOC_2H_5$
MC82		CH_3	H	H		CN	$COOC_2H_5$
MC83	n-butyl	n-butyl	CH_3	H	H	$COOCH_3$	

Table MC1a



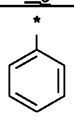
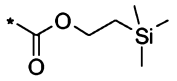
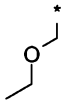
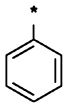
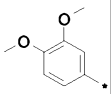
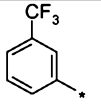
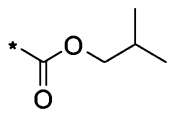
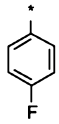
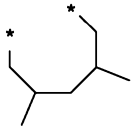
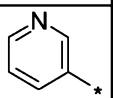
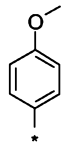
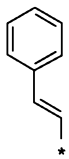
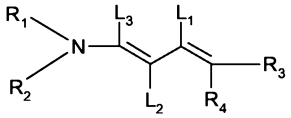
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC84	CH_3	CH_3	H	H		$COCH_3$	
MC85	CH_3	CH_3	H	H		CN	$COOCH_3$
MC86	CH_3	CH_3		H	H	$COOCH_3$	$COOCH_3$
MC87	CH_3	CH_3	H	H		CN	COO-t-butyl
MC88	n-butyl	n-butyl	H	H		CN	COO-t-butyl
MC89	C_2H_5	C_2H_5	H	H		CN	
MC90	CH_3	CH_3		H	CH_3	CN	COO-i-propyl
MC91			H	H		CN	COO-t-butyl
MC92	C_2H_5	C_2H_5	H	H		CN	$COO-C_2H_5$
MC93	CH_3	CH_3	H	H	CN	CN	$COO-CH_3$
MC94	C_2H_5OH	C_2H_5OH	H	H		CN	$COO-C_2H_5$

Table MC1a



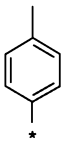
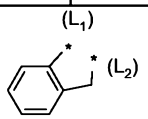
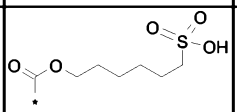
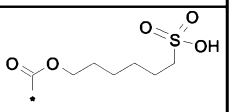
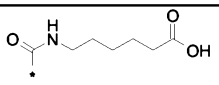
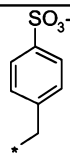
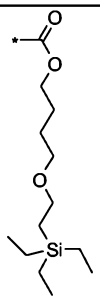
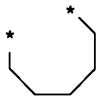
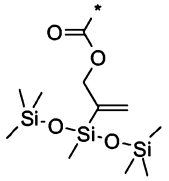
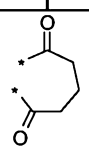
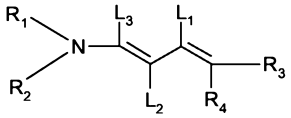
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC95	H	C_2H_5	H	H		CN	$COO\text{-}C_2H_5$
MC96	C_2H_5	n-propyl			H	CN	CN
MC97	C_2H_5	C_2H_5	C_2H_5	H	H		
MC98	C_2H_5O H	C_2H_5OH	CH_3	CH_3	H		CN
MC99	H		CH_3	H	H		$COCH_3$
MC100			C_2H_5	H	H		CN
MC101			C_2H_5	H	H	$COOSi(CH_3)_3$	
MC102	i-propyl	i-propyl	OH	H	H		

Table MC1a



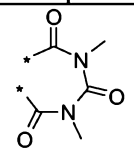
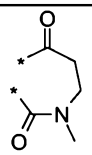
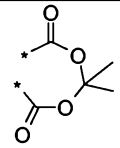
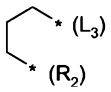
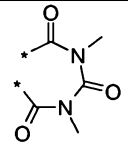
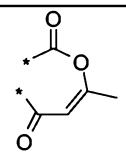
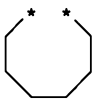
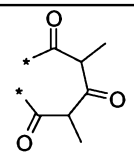
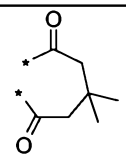
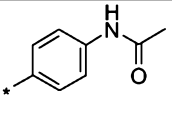
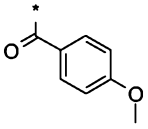
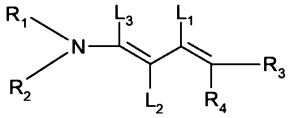
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC103	CH_3	CH_3	OH	H	H		
MC104	CH_3	CH_3	OH	H	H		
MC105	CH_3	CH_3	OH	H	H		
MC106	CH_3	R_2+L_3  (L_3) (R_2)	OH	H	-		
MC107	CH_3	CH_3	OH	H	H		
MC108			OH	H	H		
MC109	CH_3	n-butyl	OH	H	H		
MC110	CH_3	CH_3	OH			CN	$COCH_3$
MC111	CH_3	CH_3	CH_3	H	H		

Table MC1a



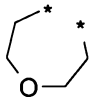
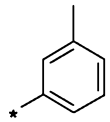
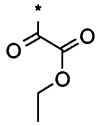
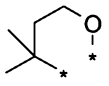
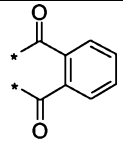
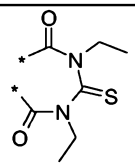
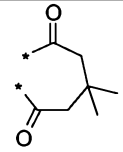
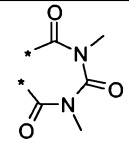
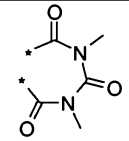
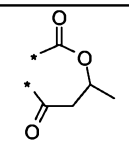
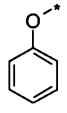
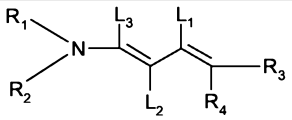
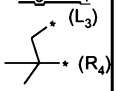
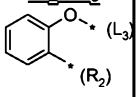
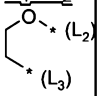
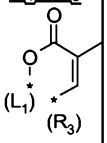
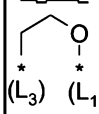
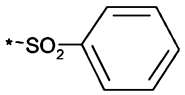
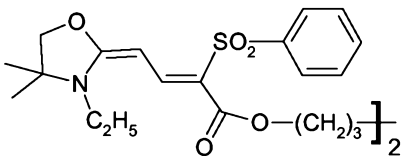
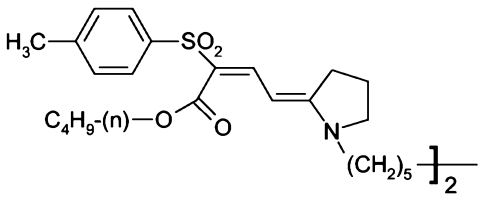
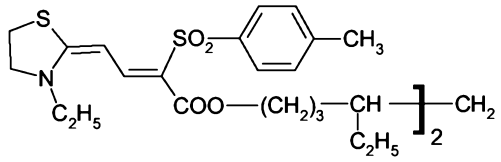
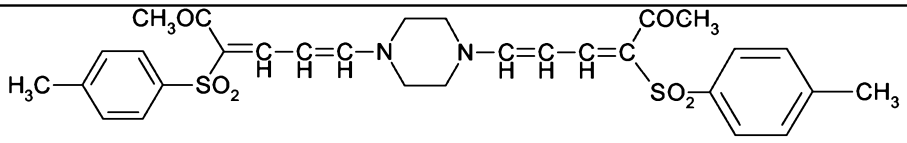
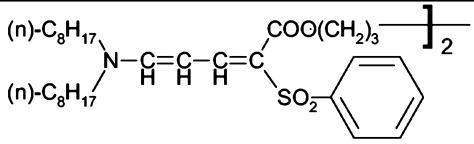
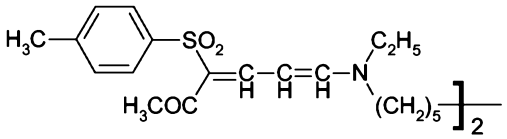
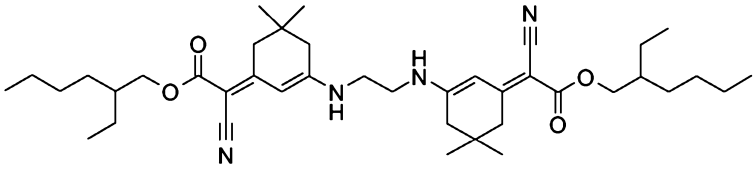
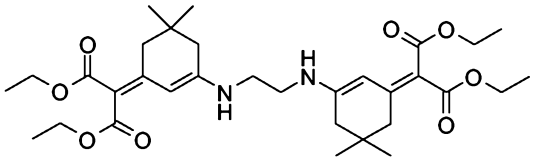
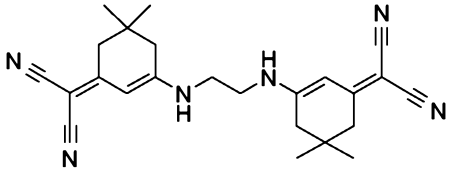
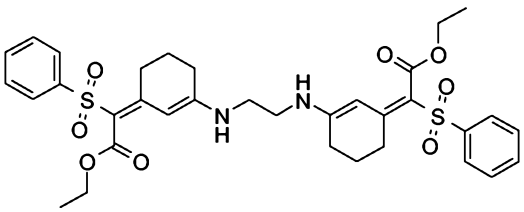
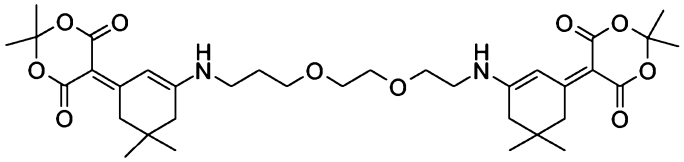
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC112			OH	H	H		
MC113	CH_3	R_2+L_3 	OH	H	-	$CON(C_2H_5)_2$	$COCH_3$
MC114			OH	H	H		
MC115	CH_3	CH_3	OH	H	H		
MC116	CH_3	n-butyl	OH	H	H		
MC117	i-propyl	i-propyl	OH	H	H		
MC118	CH_3	CH_3	OH	H	H		
MC119	CH_3	CH_3	OH	H	H		
MC120	CH_3	CH_3		H	H	$COOCH_3$	CN
MC121	CH_3	CH_3	OCH_3	H	H	$COOCH_3$	CN

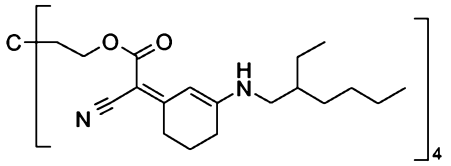
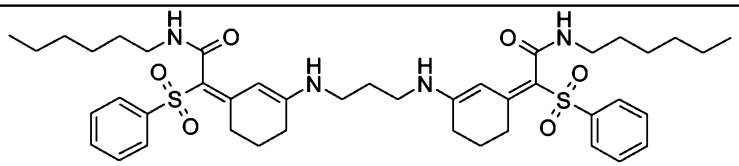
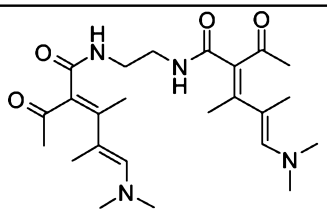
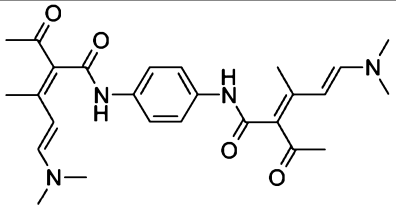
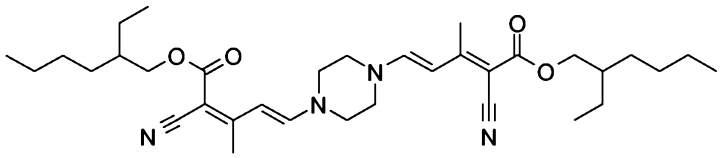
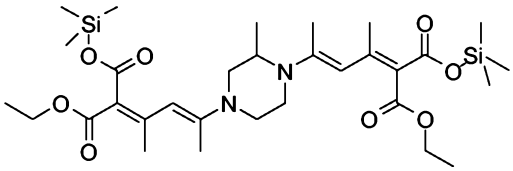
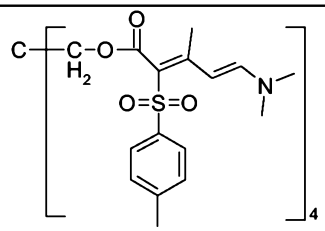
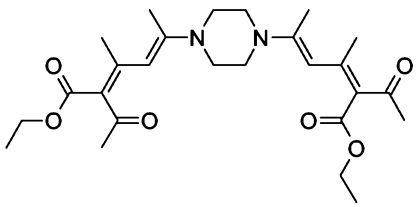
Table MC1a

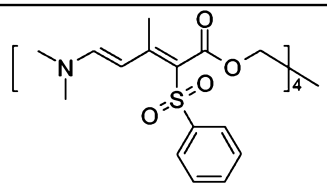
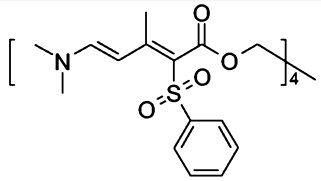
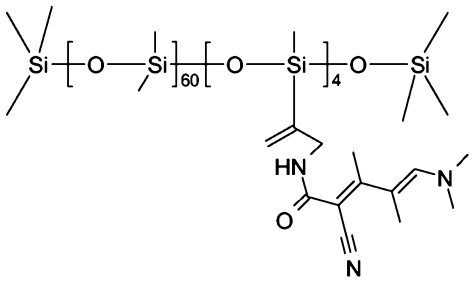
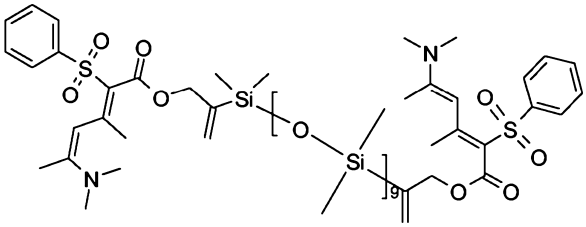
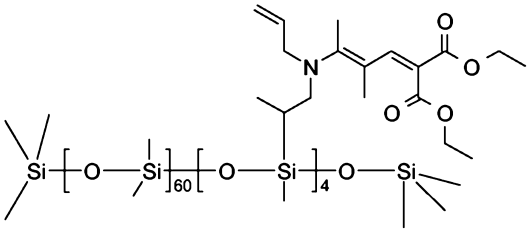
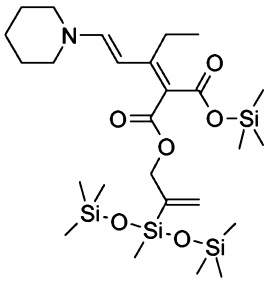


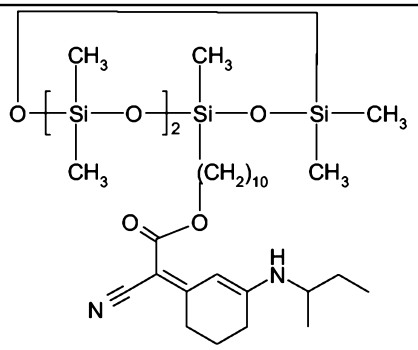
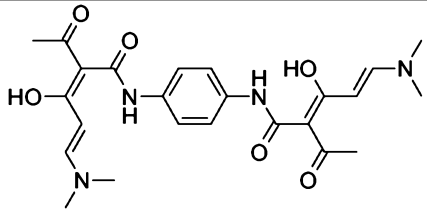
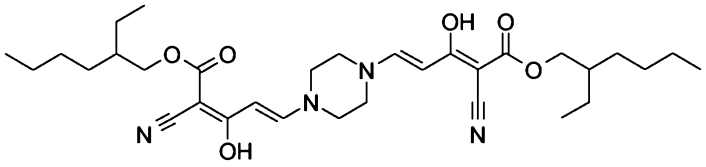
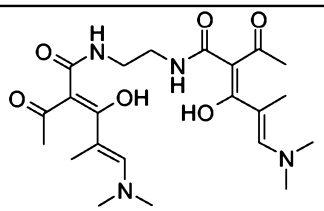
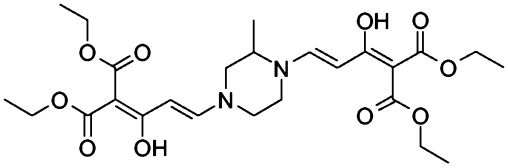
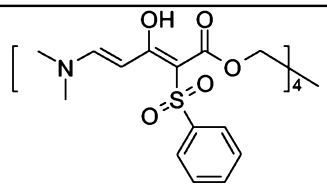
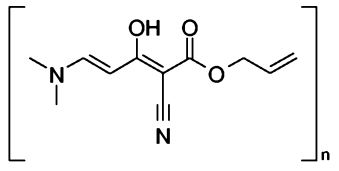
	R_1	R_2	L_1	L_2	L_3	R_3	R_4
MC122			OC_2H_5	H	L_3+R_4 	$COOCH_3$	-
MC123	C_2H_5	R_2+L_3 	OC_2H_5	H	-	$COOC_2H_5$	$COOC_2H_5$
MC124	CH_3	CH_3	L_1+L_2 	-	H	$COOC_2H_5$	CN
MC125	CH_3	CH_3	L_1+R_3 	H	H	-	$COOC_2H_5$
MC126	CH_3	CH_3	L_1+L_3 	H	-	$COOCH_3$	CN
MC127	C_2H_5	C_2H_5	H	H	H	n-$COOC_6H_{13}$	

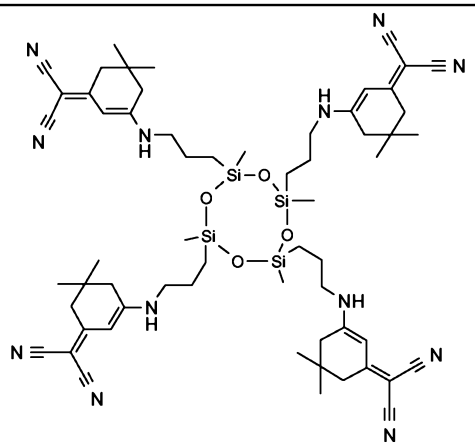
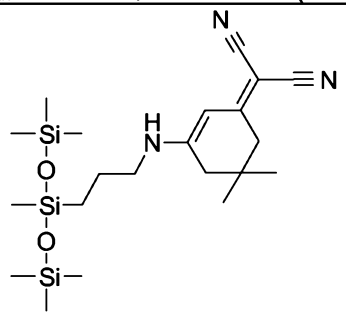
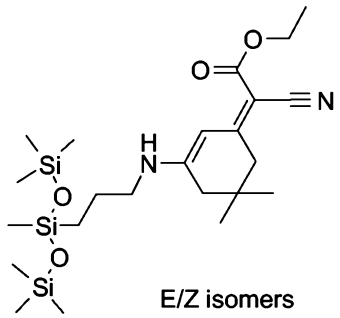
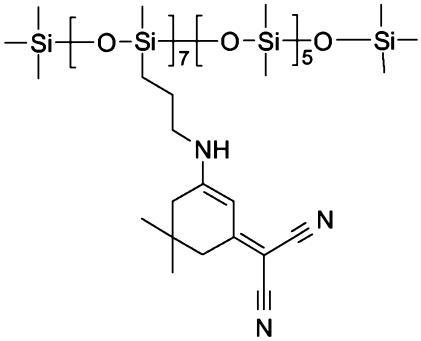
MC128	
MC129	

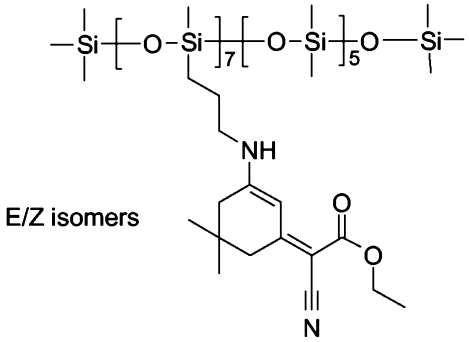
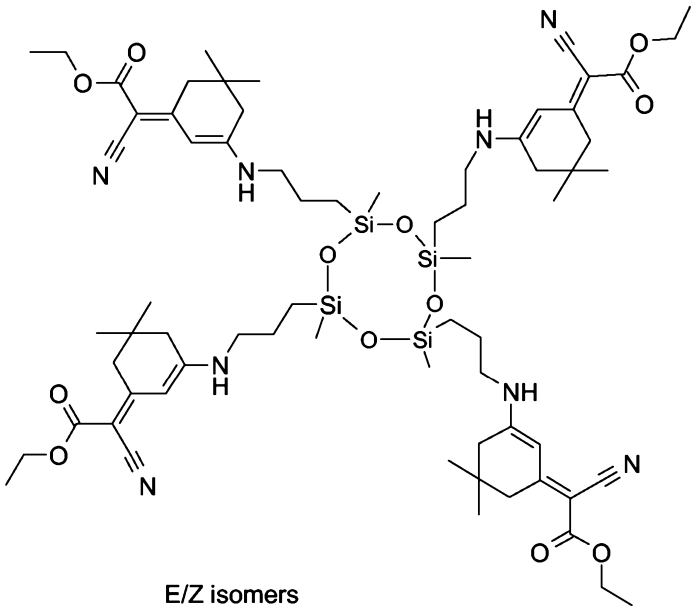
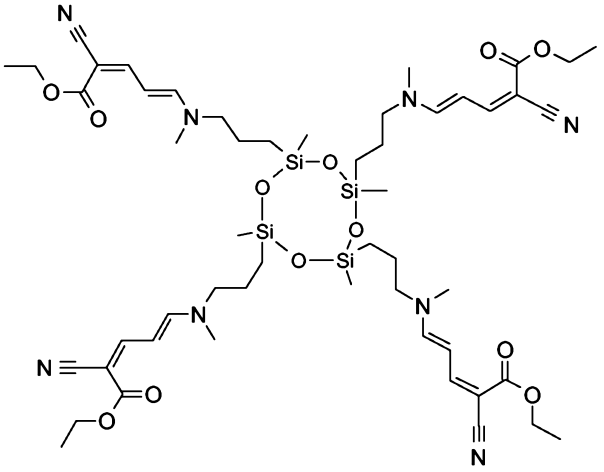
MC130	
MC131	
MC132	
MC133	
MC134	
MC135	
MC136	
MC137	
MC138	

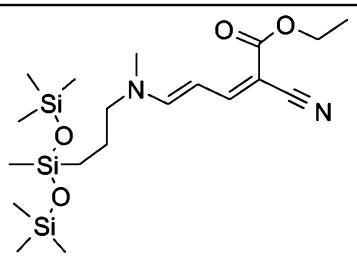
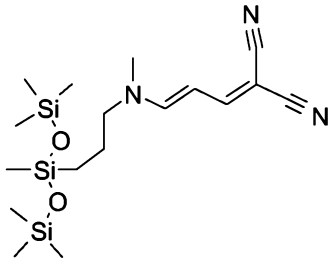
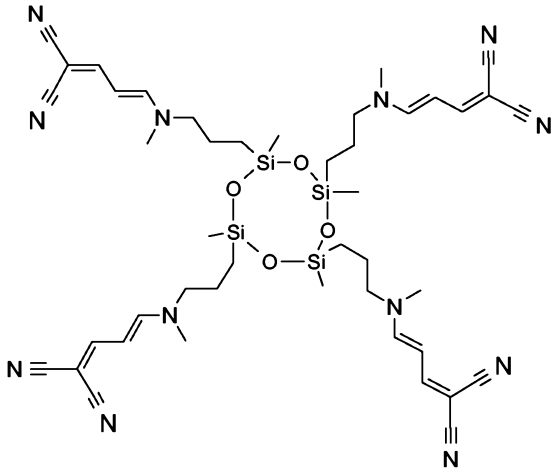
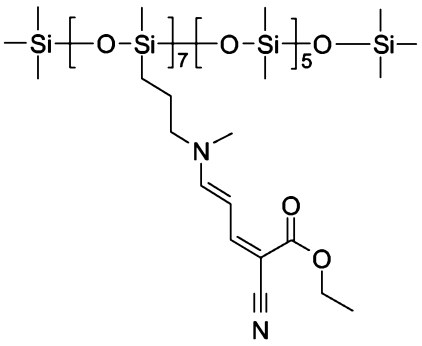
MC139	
MC140	
MC141	
MC142	
MC143	
MC144	
MC145	
MC146	

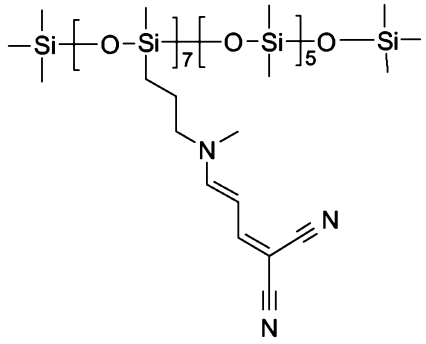
MC147	
MC148	
MC149	
MC150	
MC151	
MC152	

MC153	
MC154	
MC155	
MC156	
MC157	
MC158	
MC159	

MC160	 λ_{max} = 381 nm, ε = 175603 (EtOH)
MC 161	 λ_{max} = 382 nm (CH_3CN/H_2O)
MC 162	 E/Z isomers λ_{max} = 388 nm, ε = 49921 (EtOH)
MC 163	 λ_{max} = 381 nm, ε = 120534 (EtOH)

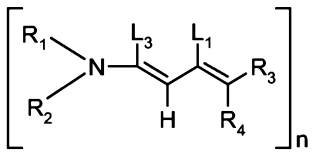
MC 164	 E/Z isomers λ_{max} = 388 nm, ε = 134304 (EtOH)
MC 165	 E/Z isomers λ_{max} = 388 nm, ε = 180128 (EtOH)
MC 166	 λ_{max} = 381 nm (CH_3CN, H_2O)

MC 167	 λ_{max} = 381 nm (CH_3CN, H_2O)
MC 168	
MC 169	
MC 170	 λ_{max} = 382 nm (CH_3CN, H_2O)

MC 171	

The compounds of formula (1) are known, for example from WO04/006878

Compounds however, which correspond to the formula

(1')  , wherein

R_3 is CN; NR_5R_6; $-COR_5$; $-COOR_5$; $-SO_2R_5$; $-CONR_5R_6$; C_6-C_{20}aryl; or C_4-C_9heteroaryl;

R_4 is CN; $-COR_7$; $-COOR_7$; $-CONR_7R_8$; C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22} alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20} aryl; C_1-C_1alkylcarbonylamino-C_6-C_20aryl; C_4-C_9heteroaryl;

R_5, R_6, R_7 and R_8 are independently of each other hydrogen; C_1-C_{22}alkyl, C_2-C_{22}alkenyl, C_2-C_{22}alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20} aralkyl; COR_9; -(CO)-COO-R_9; C_1-C_{20} heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20} aryl; C_1-C_5alkoxy-C_6-C_{20}aryl; $-(CH_2)_t$-SO_3H; $-(CH_2)_t$-(CO)-OR_9; $-(CH_2)_t$-O-C_6-C_{10}aryl; $-(CH_2)_v$COO-R_9; C_4-C_9heteroaryl; $-(CH_2)_u$-$SiR_{15}R_{16}R_{17}$; or a radical -X-Sil;

R_9 is hydrogen; C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20} aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; or C_4-C_9heteroaryl; or

L_1 and L_3, are H or may be linked together to form 1, 2, 3 or 4 carbocyclic or N, O and/or S-heterocyclic rings, which may be further fused with other aromatic rings and each N in a N-heterocyclic ring may be unsubstituted or substituted by R_{10};
and each alkyl, alkenyl, alkinyl, cycloalkyl or cycloalkylene group may be unsubstituted or substituted by one or more R_{11};

and each aryl, heteroaryl, aralkyl, arylene, heteroarylene or aralkylene may be unsubstituted or substituted by one or more R_{12};

R_{10} is R_{13}; COR_{13}; $COOR_{13}$; or $CONR_{13}R_{14}$;

R_{11} is halogen, OH; $NR_{15}R_{16}$; O-R_{15}; S-R_{15}; CO-R_{15}; oxo; thiono; CN; $COOR_{15}$; $CONR_{15}R_{16}$; $SO_2NR_{15}R_{16}$; SO_2R_{15}; SO_3R_{15}; $SiR_{15}R_{16}R_{17}$; $OSiR_{15}R_{16}R_{17}$; $POR_{15}R_{16}$; or a radical -X-Sil;

R_{12} is C_1-C_{12}alkylthio; C_3-C_{12}cycloalkylthio; C_1-C_{12}alkenylthio; C_3-C_{12}cycloalkenylthio; C_1-C_{12}alkoxy; C_3-C_{12}cycloalkoxy; C_1-C_{12}alkenyloxy; or C_3-C_{12}cycloalkenyloxy which may be unsubstituted or substituted by one or more R_{11}; halogen; CN; SH; OH; CHO; R_{18}; OR_{18}; SR_{18}; $C(R_{18})=CR_{19}R_{20}$; O-CO-R_{19}; $NR_{18}R_{19}$; $CONR_{18}R_{19}$; $SO_2NR_{18}R_{19}$; SO_2R_{18}; $COOR_{18}$, $OCOOR_{18}$; $NR_{18}COR_{19}$; $NR_{19}COOR_{20}$; $SiR_{15}R_{16}R_{17}$; $OSiR_{15}R_{16}R_{17}$; $P(=O)R_{19}R_{20}$; or a radical -X-Sil;

R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, R_{19} and R_{20} independently of each other are hydrogen; C_1-C_{22}alkyl; C_3-C_{12}cycloalkyl; C_2-C_{12}alkenyl; C_3-C_{12}cycloalkenyl; C_6-C_{14}aryl; C_4-C_{12}heteroaryl; C_7-C_{18}aralkyl; or C_5-C_{16}heteroaralkyl; or

R_{13} and R_{14}, R_{15} and R_{16}, R_{16} and R_{17} and/or R_{18} and R_{19} may be linked together to form unsubstituted or C_1-C_4alkyl-substituted pyrrolidine, piperidine, piperazine or morpholine;

X is a linker; and

Sil is a silane-, oligosiloxane or polysiloxane moiety;

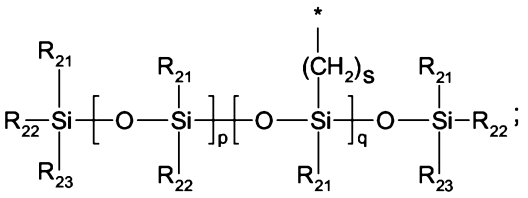
t is a number from 0 to 12;

u is a number vfrom 1 to 12;

v is a number from 0 to 12;

if n = 1

R_1 and R_2 independently of each other hydrogen; C_1-C_{22} alkyl; hydroxy-C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22} alkinyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_6-C_{20}aryl; C_5-C_{11}heteroaralkyl; C_4-C_9heteroaryl; or a radical of formula



;

R_{21}, R_{22}, R_{23} independently form each other are C_1-C_{22}alkyl; or C_1-C_{22}alkoxy;

p is a number from 0 to 100

q is a number from 1 to 20;

s is a number from 0 to 4;

R_3 is CN; NR_5R_6; -COR_5; -$COOR_5$; -SO_2R_5; -$CONR_5R_6$; C_6-C_{20}aryl; or C_4-C_9heteroaryl;

if n = 2

R_1 and R_2 are each a bivalent radical selected from C_1-C_5alkylene which may be interrupted by one or more oxygen atoms; or

R_1 and R_2 together with the nitrogen atoms form a six-membered heterocyclic ring; and simultaneously R_3 is defined as for n = 1; or

R_3 is a bivalent radical of formula -CO-V_1-C_1-C_{12}alkylene-W_1-*, wherein

the asterix indicates the bond to the second R_3

V_1 is -O-; or -NR_7-; or the direct bond;

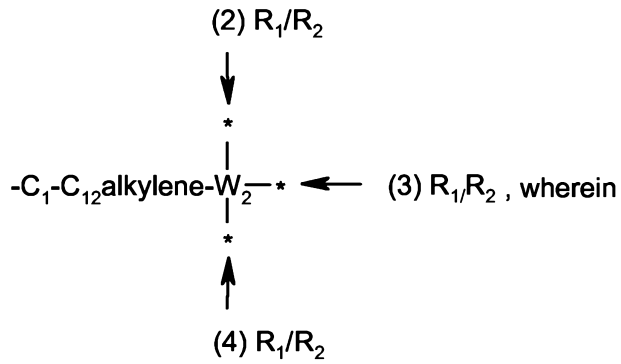
W_1 is the linkage to the second R_3, wherein W_1 is the direct bond; or selected from C_1-C_{12}alkylene; or phenylene; and

R_1 and R_2 simultaneously are defined as for n = 1;

if n = 3

one of R_1, R_2 or R_3 is a trivalent radical;

if n = 4

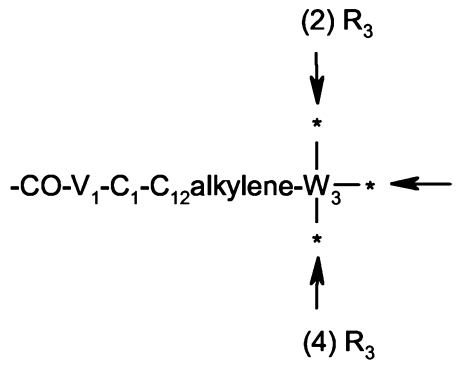
R_1 or R_2 is a radical of formla 

, wherein

the asterices indicate the bond to the second, third and fourth R_1/R_2;

W_2 is  ;

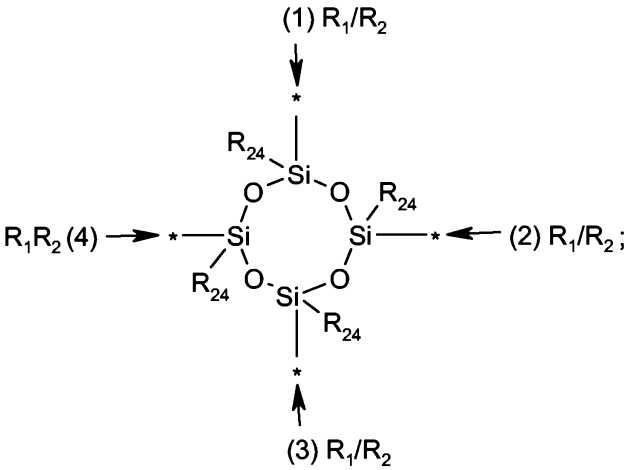
R_3 is defined as for n = 1; or

R_3 is a radical of formula 

asterices indicate the bond to the second (2), third (3) and fourth (4) R_3; and

W_3 is  ;

or

R_1 or R_2 is a radical of formla 

the asterices indicate the bond to the second, third and fourth R_1/R_2;

R_{24} is C_1-C_{22}alkyl; or C_1-C_{22}alkoxy;

wherein at least one of the radicals R_1, R_2, R_3 or R_4 is a silicon organic compound,

are novel and represent a further object of the present invention.

The light stabilizers of formula (1) as well as mixtures of these compounds with other UV absorbers as listed in Tables 1-3, phenolic or non-phenolic antioxidants or with complex formers are particularly suitable for protecting body-care and household products against photolytic degradation.

Examples of organic UV filters that can be used in admixture with the compounds of formula (1) are listed in the following Table:

Table 1: Suitable UV filter substances which can be additionally used with the compounds of formula (1)
p-aminobenzoic acid derivatives, for example 4-dimethylaminobenzoic acid 2-ethylhexyl ester;
salicylic acid derivatives, for example salicylic acid 2-ethylhexyl ester;
benzophenone derivatives, for example 2-hydroxy-4-methoxybenzophenone and its 5-sulfonic acid derivative;
diphenylacrylates, for example 2-ethylhexyl 2-cyano-3,3-diphenylacrylate, and 3-(benzo-furanyl) 2-cyanoacrylate;
3-imidazol-4-ylacrylic acid and esters;
benzofuran derivatives, especially 2-(p-aminophenyl)benzofuran derivatives, described in EP-A-582 189, US-A-5 338 539, US-A-5 518 713 and EP-A-613 893;
polymeric UV absorbers, for example the benzylidene malonate derivatives described in EP-A-709 080;
camphor derivatives, for example 3-(4'-methyl)benzylidene-bornan-2-one, 3-benzylidene-bornan-2-one, N-[2(and 4)-2-oxyborn-3-ylidene-methyl)-benzyl]acrylamide polymer, 3-(4'-trimethylammonium)-benzylidene-bornan-2-one methyl sulfate, 3,3'-(1,4-phenylenedi-methine)-bis(7,7-dimethyl-2-oxo-bicyclo[2.2.1]heptane-1-methanesulfonic acid) and salts, 3-(4'-sulfo)benzylidene-bornan-2-one and salts; camphorbenzalkonium methosulfate;
hydroxyphenyltriazine compounds, for example 2-(4'-methoxyphenyl)-4,6-bis(2'-hydroxy-4'-n-octyloxyphenyl)-1,3,5-triazine; 2,4-bis{[4-(3-(2-propyloxy)-2-hydroxy-propyloxy)-2-hydroxy]-phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine; 2,4-bis{[4-(2-ethyl-hexyloxy)-2-hydroxy]-phenyl}-6-[4-(2-methoxyethyl-carboxyl)-phenylamino]-1,3,5-triazine; 2,4-bis{[4-(tris-(trimethylsilyloxy-silylpropyloxy)-2-hydroxy]-phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine; 2,4-bis{[4-(2"-methylpropenyloxy)-2-hydroxy]-phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine; 2,4-bis{[4-(1',1',1',3',5',5',5'-heptamethyltrisilyl-2"-methyl-propyloxy)-2-hydroxy]-phenyl}-6-(4-methoxyphenyl)-1,3,5-triazine; 2,4-bis{[4-(3-(2-propyloxy)-2-hydroxy-propyloxy)-2-hydroxy]-phenyl}-6-[4-ethylcarboxy)-phenylamino]-1,3,5-triazine;
benzotriazole compounds, for example 2,2'-methylene-bis(6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)-phenol;
trianilino-s-triazine derivatives, for example 2,4,6-trianiline-(p-carbo-2'-ethyl-1'-oxy)-1,3,5-triazine and the UV absorbers disclosed in US-A-5 332 568, EP-A-517 104, EP-A-507 691, WO 93/17002 and EP-A-570 838;
2-phenylbenzimidazole-5-sulfonic acid and salts thereof;
menthyl o-aminobenzoates;
physical sunscreens coated or not as titanium dioxide, zinc oxide, iron oxides, mica, MnO, Fe_2O_3, Ce_2O_3, Al_2O_3, ZrO_2. (surface coatings: polymethylmethacrylate, methicone (methylhydrogenpolysiloxane as described in CAS 9004-73-3), dimethicone, isopropyl titanium triisostearate (as described in CAS 61417-49-0), metal soaps as magnesium stearate (as described in CAS 4086-70-8), perfluoroalcohol phosphate as C9-15 fluoroalcohol phosphate (as described in CAS 74499-44-8; JP 5-86984 , JP 4-330007)). The primary particle size is an average of 15nm–35nm and the particle size in dispersion is in the range of 100nm – 300nm.
aminohydroxy-benzophenone derivatives disclosed in DE 10011317, EP 1133980 and EP 1046391
phenyl-benzimidazole derivatives as disclosed in EP 1167358
the UV absorbers described in “Sunscreens”, Eds. N.J. Lowe, N.A.Shaath, Marcel Dekker, Inc. , New York and Basle or in Cosmetics & Toiletries (107), 50ff (1992) also can be used as additional UV protective substances.

Table 2. Suitable UV filter substances which can be additionally used with the UV absorbers according to the present invention

(Abbreviations T: Table, R: row, Comp: compound, Ex: compound(s) of Patent Example, p: page; the generic scope of the UV absorbers is described in the left-hand column; specific compounds are indicated in the right-hand column)

DE 10013318	T 1 pp 8-9, all Examples pp 10-13, T 2 pp 13-14, all Examples p 14, Ex A, B, C, D, E, F pp 19-20
DE102004038485A1	Formula 1 on p 2; Ex 1-4 on p 13;
DE102004039281A1	Formulas I-II on p 1; Ex Ia-Iae on pp 7-12; Ex IIa-IIm on pp 14-15; Ex 1-25 on pp 42-56;
DE 10206562 A1	Ex 1-3 p 10, Ex 4-7 p 11, Ex 8-15 pp 12-14
DE 10238144 A1	Ex on p 3-5;
DE 10331804	T 1 p 4, T 2 + 3 p 5
DE 19704990 A1	Ex 1-2 on pp 6-7;
EP 613 893	Ex 1-5 + 15, T 1, pp 6-8
EP 0 998 900 A1	Ex on pp 4-11
EP 1 000 950	Comp. In Table 1, pp 18-21
EP 1 005 855	T 3, p 13
EP 1 008 586	Ex 1-3, pp 13-15
EP 1 008 593	Ex 1-8, pp 4-5
EP 1 027 883	Compound VII, p 3
EP 1 027 883	Comp I-VI, p 3
EP 1 028 120	Ex 1-5, pp 5-13
EP 1 059 082	Ex 1; T 1, pp 9-11
EP 1 060 734	T 1-3, pp 11-14
EP 1 064 922	Compounds 1-34, pp 6-14
EP 1 077 246 A2	Ex 1-16 on pp 5-11;
EP 1 081 140	Ex 1-9, pp 11-16
EP 1 103 549	Compounds 1-76, pp 39-51
EP 1 108 712	4,5-Dimorph olino-3-hydroxypyridazine
EP 1 123 934	T 3, p 10
EP 1 129 695	Ex 1-7, pp 13-14
EP 1 167 359	Ex 1, p 11 and Ex 2, p 12
EP 1 232 148 B1	Ex 4-17 on pp 3-5;
EP 1 258 481	Ex 1, pp 7,8
EP 1 310 492 A1	Ex 1-16 on pp 22-30
EP 1 371 654 A1	Ex on pp 5-7
EP 1 380 583 A2	Ex 1, p 6;
EP 1 423 351 A2	Ex 1-16 on pp 31-37;
EP 1 423 371 A1	T 1 on pp 4-8, Ex on p 9, Ex 1-9 on pp 36-42;
EP 1 454 896 A1	Ex 1-5 on pp 10-13, Examples on pp 4-5;
EP 1 471 059 A1	Ex 1-5 on pp 4-5;
EP 1484051 A2	Formula III-VII on pp18-19, Ex 7-14 on pp 7-9, Ex 18-23 on pp 11-12, Ex 24-40 on pp 14-17;
EP 1648849 A2	Formula 1 on p 4; Ex 1-2 on pp 13-17; Ex C10 and O10 on pp15-16;
EP 420 707 B1	Ex 3, p 13 (CAS Reg. No 80142-49-0)
EP 503 338	T 1, pp 9-10

Table 2. Suitable UV filter substances which can be additionally used with the UV absorbers according to the present invention

(Abbreviations T: Table, R: row, Comp: compound, Ex: compound(s) of Patent Example, p: page; the generic scope of the UV absorbers is described in the left-hand column; specific compounds are indicated in the right-hand column)

EP 517 103	Ex 3,4,9,10 pp 6-7
EP 517 104	Ex 1, T 1, pp 4-5; Ex 8, T 2, pp 6-8
EP 626 950	all compounds
EP 669 323	Ex 1-3, p 5
EP 743 309 A1	Ex 1-12 on pp 18-24;
EP 780 382	Ex 1-11, pp 5-7
EP 823 418	Ex 1-4, pp 7-8
EP 826 361	T 1, pp 5-6
EP 832 641	Ex 5+6 p 7; T 2, p 8
EP 832 642	Ex 22, T 3, pp 10-15; T 4, p 16
EP 848944 A2	Formulas I and II on p 1; Ex on p 8; Examples on p 10;
EP 852 137	T 2, pp 41-46
EP 858 318	T 1, p 6
EP 863 145	Ex 1-11, pp 12-18
EP 878 469 A1	T 1, pp 5-7;
EP 895 776	Comp. In rows 48-58, p 3; R 25+33, p 5
EP 911 020	T 2, pp 11-12
EP 916 335	T 2-4, pp 19-41
EP 924 246	T 2, p 9
EP 933 376	Ex 1-15, pp 10-21
EP 944 624	Ex 1+2, pp 13-15
EP 945 125	T 3 a+b, pp 14-15
EP 95 097	Ex 1, p 4
EP 967 200	Ex 2; T 3-5, pp 17-20
EP 969 004	Ex 5, T 1, pp 6-8
FR 2842806 A1	Ex I p 10, Ex II p 12
FR 2861075 A1	Ex 1-3 on pp 12-14;
FR 2862641	Formula 3 on p4; Ex A-J on pp 7-9;
FR 2869907 A1	Formula 1 on p 6; T 1 on p 7-8; Ex 4-39 on pp 12-35;
KR 2004025954	all kojyl benzoate derivatives
JP 06135985 A2	Formula 1 on p 2; Ex 1-8 on pp 7-8;
JP 2000319629	CAS Reg Nos. 80142-49-0, 137215-83-9, 307947-82-6
JP 2003081910 A	Ex on p 1;
JP 2005289916 A	Formula I on p 1; Ex Ia-Id on pp 2-3;
JP 2005290240 A	Formulas I on p 2, Ex II on p 2;
US 2003/0053966A1	Ex on pp 3-6
US 2004057912 A1	Ex on p 7-9, Ex 1 on p 10;
US 2004057914 A1	Ex on p 8-12, Ex 1 on p 12;
US 2004/0057911A1	Formula I and II on p 1; formula III and IV on p3; Ex 1-3 on pp 5-6;
US 2004/0071640A1	Ex 1-12 on pp 4-7;
US 2004/0091433A1	Ex 1-6 on pp 14-16;
US 2004/0136931A1	Ex 1-3 on p 7;
US 2004/0258636A1	Ex 1-11 on pp 9-15;
US 2005/0019278A1	Ex 1-9 on pp 6-8;

Table 2. Suitable UV filter substances which can be additionally used with the UV absorbers according to the present invention

(Abbreviations T: Table, R: row, Comp: compound, Ex: compound(s) of Patent Example, p: page; the generic scope of the UV absorbers is described in the left-hand column; specific compounds are indicated in the right-hand column)

US 2005/0136012A1	Formula 1 on p 2;
US 2005/0136014A1	Formula a-c on p 2; Examples on p 3;
US 2005/0201957A1	Formula 1 on p1; Ex A, B, C, D, E, F, G on pp 2-3;
US 2005/0249681A1	all compounds on pp 2-3, Ex 1 on p 6;
US 2005186157A1	Formula 1 on p 1; Ex 1-6 on pp 2-4;
US 2005260144A1	Formula I on p1; Formula II on p 3; Ex 1-10 on pp 8-11;
US 2006018848A1	Ex a-p on pp 3-4;
US 2006045859A1	Formula 1 on p 1; Ex 1-10 on pp 2-4;
US 5 635 343	all compounds on pp 5-10
US 5 332 568	Ex 1, p 5, T 1+2, pp 6-8
US 5 338 539	Ex 1-9, pp 3+4
US 5 346 691	Ex 40, p 7; T 5, p 8
US 5 801 244	Ex 1-5, pp 6-7
US 6613340	Ex I, II pp 9-11, Examples on rows 28-53 p 6
US 6 800 274 B2	Formulas I-VI and IX-XII on pp 14-18;
US 6 890 520 B2	Ex 1-10 on pp 6-9;
US 6926887 B2	Ex A on pp5/6; Formulas I – VIII on pp 27-29;
US 6936735 B2	Formulas 1-2 on p 2; formula 3-4 on p 6;
US 6962692 B2	Formulas VII and VIII on p 6; Formulas I, II, IV-VI, IX, X on pp 14-16; Formula III on p 19;
WO 0149686	Ex 1-5, pp 16-21
WO 0168047	Tables on pp 85-96
WO 0181297	Ex 1-3, pp 9-11
WO 0191695	Formula I on p 4, T on p 8
WO 0202501 A1	Ex Ia-c, p 5
WO 02069926 A1	Ex on p 9, Ex on pp 17-23
WO 02072583	T on pp 68-70
WO 02080876	Ex 1 on pp 7-9
WO 0238537	All compounds p 3, compounds on rows 1-10 p 4
WO 03004557 A1	Ex A1-A29 on pp 36-57;
WO 03007906	Ex I-XXIII, pp 42-48
WO 03086341 A2	Formula 2-21, pp 4-6;
WO 03092643 A1	T on pp 34-35, compounds listed on p 16
WO 03097577 A1	Ex on pp 6-8; Ex 1-3 on pp 15-18;
WO 03104183 A1	Formula I-IV on p 1; Ex 1-5 on pp 27-28;
WO 04000256 A1	Ex 1-10 on pp 18-24
WO 04020398 A1	Ex 1-3 on pp 14-17
WO 04020398 A1	Formulas I-VI on pp 21-24, Formula IX on p 25;
WO 04075871	Ex 1-3 on pp 17-18; Ex 7-9 on pp 21-22;
WO 05009938 A2	Formula I on p 1; Ex 1-2 on pp 14-15;
WO 05065154 A2	Formula a-c on pp 5-6;
WO 05080341 A1	Formula 1 on p 3; Examples on pp 9-13;
WO 05107692 A1	Formula 1 on p 2; Ex 1-9 on pp 27-29;
WO 05118562 A1	Formula I on p 4; Ex Ia-Ig on p 5;

Table 2. Suitable UV filter substances which can be additionally used with the UV absorbers according to the present invention

(Abbreviations T: Table, R: row, Comp: compound, Ex: compound(s) of Patent Example, p: page; the generic scope of the UV absorbers is described in the left-hand column; specific compounds are indicated in the right-hand column)

WO 05121108 A1	Formula I on p 3; Formula Ia on p 5; T 1 on p 7; Ex 3-22 on pp 11-23;
WO 06009451	T 1 on pp 5-8; Formulas III and UV0 on p 9;
WO 06016806	T 1 on pp 6-7; T 2 on p 10; T 3 on p 11; T 4 on p 15;
WO 06032741	Formulas 1-3 on p 1; Ex a-k on pp 5-7; Ex 1-4 on pp 18-20;
WO 9217461	Ex 1-22, pp 10-20
WO 9220690	Polymeric Comp in Examples 3-6
WO 9301164	T 1+2, pp 13-22
WO 9714680	Ex 1-3, p 10

Table 3: Suitable UV filter substances and adjuvants which can be additionally used with the compounds of formula (1)

No.	Chemical Name	CAS No.
1	(+/-)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]-heptan-2-one; p-methyl benzylidene camphor	36861-47-9
2	1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one; benzylidene camphor	15087-24-8
3	(2-Hydroxy-4-methoxyphenyl)(4-methylphenyl)methanone	1641-17-4
4	2,4-dihydroxybenzophenone	131-56-6
5	2,2',4,4'-tetrahydroxybenzophenone	131-55-5
6	2-Hydroxy-4-methoxy benzophenone	131-57-7
7	2-Hydroxy-4-methoxy benzophenone-5-sulfonic acid	4065-45-6
8	2,2'-dihydroxy-4,4'-dimethoxybenzophenone	131-54-4
9	2,2'-Dihydroxy-4-methoxybenzophenone	131-53-3
10	Alpha-(2-oxoborn-3-ylidene)toluene-4-sulphonic acid and its salts; Mexoryl SL	56039-58-8
11	1-[4-(1,1-dimethylethyl)phenyl]-3-(4-methoxyphenyl)propane-1,3-dione; avobenzone	70356-09-1
12	Methyl N,N,N-trimethyl-4-[(4,7,7-trimethyl-3-oxobicyclo[2,2,1]hept-2-ylidene)methyl]anilinium sulphate; Mexoryl SO	52793-97-2
22	3,3,5-Trimethyl cyclohexyl-2-hydroxy benzoate; homosalate	118-56-9
27	Menthyl-o-aminobenzoate	134-09-8
28	Menthyl salicylate	89-46-3
29	2-Ethylhexyl 2-cyano,3,3-diphenylacrylate; Octocrylene	6197-30-4
30	2- ethylhexyl 4- (dimethylamino)benzoate	21245-02-3
32	2- ethylhexyl salicylate	118-60-5
33	Benzoic acid, 4, 4', 4''- (1, 3, 5- triazine- 2, 4, 6- triyltriimino)tris-, tris(2-ethylhexyl)ester; 2,4,6-Trianilino-(p-carbo-2'-ethylhexyl-1'-oxi)-1,3,5-triazine; octyl triazone	88122-99-0
34	4- aminobenzoic acid	150-13-0
35	Benzoic acid, 4-amino-, ethyl ester, polymer with oxirane	113010-52-9
38	2- phenyl- 1H- benzimidazole- 5- sulphonic acid; phenylbenzimidazolsulfonic acid	27503-81-7

Table 3: Suitable UV filter substances and adjuvants which can be additionally used with the compounds of formula (1)		
No.	Chemical Name	CAS No.
39	2-Propenamide, N-[[4-[(4,7,7-trimethyl-3-oxobicyclo[2.2.1]hept-2-ylidene)methyl]phenyl]methyl]-, homopolymer	147897-12-9
40	Triethanolamine salicylate	2174-16-5
41	3, 3'-(1,4-phenylenedimethylene)bis[7, 7-dimethyl- 2-oxo-bicyclo[2.2.1]heptane-1 methanesulfonic acid]; Cibafast H	90457-82-2
42	Titanium dioxide	13463-67-7
44	Zinc oxide	1314-13-2
45	2,2'-Methylene-bis-[6-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethyl-butyl)-phenol]; Tinosorb M	103597-45-1
46	2,4-bis{[4-(2-ethylhexyloxy)-2-hydroxy]-phenyl}-6-(4-methoxyphe-nyl)-(1,3,5)-triazine; Tinosorb S	187393-00-6
47	1H-Benzimidazole-4,6-disulfonic acid, 2,2'-(1,4-phenylene)bis-, disodium salt	180898-37-7
48	Benzoic acid, 4,4'-[[6-[[4-[[(1,1-dimethylethyl)amino]carbonyl]phenyl]-amino]1,3,5-triazine-2,4-diyl]diimino]bis-, bis(2-ethylhexyl)ester; di-ethylhexyl butamido triazone; Uvasorb HEB	154702-15-5
49	Phenol, 2-(2H-benzotriazol-2-yl)-4-methyl-6-[2-methyl-3-[1,3,3,3-tetramethyl-1-[(trimethylsilyl)oxy]disiloxanyl]propyl]-; drometrizole trisiloxane; Mexoryl XL	155633-54-8
50	Dimethicodiethylbenzalmalonate; Polysilicone 15; Parsol SLX	207574-74-1
51	Benzenesulfonic acid, 3-(2H-benzotriazol-2-yl)-4-hydroxy-5-(1-methylpropyl)-, monosodium salt ; Tinogard HS	92484-48-5
53	1-Dodecanaminium, N-[3-[[4-(dimethylamino)benzoyl]amino]propyl]-N,N-dimethyl-, salt with 4-methylbenzenesulfonic acid (1:1); Escalol HP610	156679-41-3
54	1-Propanaminium, N,N,N-trimethyl-3-[(1-oxo-3-phenyl-2-propenyl)-amino]-, chloride	177190-98-6
55	1H-Benzimidazole-4,6-disulfonic acid, 2,2'-(1,4-phenylene)bis-	170864-82-1
56	1,3,5-Triazine, 2,4,6-tris(4-methoxyphenyl)-	7753-12-0
57	1,3,5-Triazine, 2,4,6-tris[4-[(2-ethylhexyl)oxy]phenyl]-	208114-14-1
58	1-Propanaminium, 3-[[3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethyl-ethyl)-4-hydroxyphenyl]-1-oxopropyl]amino]-N,N-diethyl-N-methyl-, methyl sulfate (salt)	340964-15-0
59	2-Propenoic acid, 3-(1H-imidazol-4-yl)-	104-98-3
60	Benzoic acid, 2-hydroxy-, [4-(1-methylethyl)phenyl]methyl ester	94134-93-7
61	1,2,3-Propanetriol, 1-(4-aminobenzoate); glyceryl PABA	136-44-7
62	Benzeneacetic acid, 3,4-dimethoxy-a-oxo-	4732-70-1
63	2-Propenoic acid, 2-cyano-3,3-diphenyl-, ethyl ester	5232-99-5
64	Anthralinic acid, p-menth-3-yl ester	134-09-8
65	2,2'-bis(1,4-phenylene)-1H-benzimidazole-4,6-disulphonic acid mo-no sodium salt or Disodium phenyl dibenzimidazole tetrasulfonate or Neoheliopan AP	349580-12-7,
66	1,3,5-Triazine-2,4,6-triamine, N,N'-bis[4-[5-(1,1-dimethylpropyl)-2-benzoxazolyl]phenyl]-N''-(2-ethylhexyl)- or Uvasorb K2A	288254-16-0
68	sterols (cholesterol, lanosterol, phytosterols), as described in	

Table 3: Suitable UV filter substances and adjuvants which can be additionally used with the compounds of formula (1)		
No.	Chemical Name	CAS No.
	WO0341675	
69	mycosporines and/or mycosporine-like amino acids as described in WO2002039974, e.g. Helioguard 365 from Milbelle AG, isolated mycosporine like amino acids from the red alga porphyra umbilicalis (INCI: Porphyra Umbilicalis) that are encapsulated into liposomes,)	
70	alpha-lipoic-acid as described in DE 10229995	
71	synthetic organic polymers as described in EP 1371358, [0033]-[0041]	
72	phyllosilicates as described in EP 1371357 [0034]-[0037]	
73	silica compounds as described in EP1371356, [0033]-[0041]	
74	inorganic particles as described in DE10138496 [0043]-[0055]	
75	latex particles as described in DE10138496 [0027]-[0040]	
76	1H-Benzimidazole-4,6-disulfonic acid, 2,2'-(1,4-phenylene)bis-, disodium salt ; Bisimidazylate; Neo Heliopan APC	180898-37-7
77	Pentanenitrile, 2-[2,3-dihydro-5-methoxy-3,3-dimethyl-6-[(2-methyl-2-propenyl)oxy]-1H-inden-1-ylidene]-4,4-dimethyl-3-oxo-	425371-15-9
78	Pentanenitrile, 2-(2,3-dihydro-6-hydroxy-5-methoxy-3,3-dimethyl-1H-inden-1-ylidene)-4,4-dimethyl-3-oxo-	425371-14-8
79	Benzenepropanenitrile, α-(2,3-dihydro-3,3,5-trimethyl-1H-inden-1-ylidene)-β-oxo-	425371-11-5
80	Cyclohexanepropanenitrile, α-[5-(1,1-dimethylethyl)-2,3-dihydro-3,3-dimethyl-1H-inden-1-ylidene]-1-methyl-β-oxo-	425371-10-4
81	Pentanenitrile, 2-[6-(acetyloxy)-2,3-dihydro-5-methoxy-3,3-dimethyl-1H-inden-1-ylidene]-4,4-dimethyl-3-oxo-	425371-09-1
82	Pentanenitrile, 2-[2,3-dihydro-5-methoxy-3,3-dimethyl-6-[2-methyl-3-[1,3,3,3-tetramethyl-1-[(trimethylsilyl)oxy]disiloxanyl]propoxy]-1H-inden-1-ylidene]-4,4-dimethyl-3-oxo-	425371-08-0
83	Pentanenitrile, 2-(2,3-dihydro-5-methoxy-3,3,6-trimethyl-1H-inden-1-ylidene)-4,4-dimethyl-3-oxo-	425371-07-9
84	Pentanenitrile, 4,4-dimethyl-3-oxo-2-(2,3,7,8-tetrahydro-8,8-dimethyl-6H-indeno[5,6-b]-1,4-dioxin-6-ylidene)-	425371-06-8
85	Pentanenitrile, 2-(2,3-dihydro-3,3,6-trimethyl-1H-inden-1-ylidene)-4,4-dimethyl-3-oxo-	425371-05-7
86	Pentanenitrile, 2-(2,3-dihydro-3,3,5,6-tetramethyl-1H-inden-1-ylidene)-4,4-dimethyl-3-oxo-	425371-04-6
87	Pentanenitrile, 2-(2,3-dihydro-5-methoxy-3,3,4,6-tetramethyl-1H-inden-1-ylidene)-4,4-dimethyl-3-oxo-	425371-03-5
88	Pentanenitrile, 2-(2,3-dihydro-5,6-dimethoxy-3,3-dimethyl-1H-inden-1-ylidene)-4,4-dimethyl-3-oxo-	261356-13-2

The compounds of formula (1) may also be used in admixture with phenolic or lactone-type antioxidants as disclosed for example in WO00/25731.

The compounds of formula (1) may also be used in admixture with hindered amine light stabilizers as disclosed in WO 03/103622, e,g, hindered nitroxyl, hydroxylamine and hydroxylamine salt compounds.

Personal Care Uses

The merocyanines of formula (1) may be used as single component or in mixture with other stabilizers in particular for skin-care products, bath and shower additives, preparations containing fragrances and odoriferous substances, hair-care products, dentifrices, deodorizing and antiperspirant preparations, decorative preparations, light protection formulations and preparations containing active ingredients.

Skin-care products are, in particular, body oils, body lotions, body gels, treatment creams, skin protection ointments, shaving preparations, such as shaving foams or gels, skin powders, such as baby powder, moisturizing gels, moisturizing sprays, revitalizing body sprays, cellulite gels and peeling preparations.

Suitable bath and shower additives are shower gels, bath-salts, bubble baths and soaps.

Preparations containing fragrances and odoriferous substances are in particular scents, perfumes, toilet waters and shaving lotions (aftershave preparations).

Suitable hair-care products are, for example, shampoos for humans and animals, in particular dogs, hair conditioners, products for styling and treating hair, perming agents, hair sprays and lacquers, hair gels, hair fixatives and hair dyeing or bleaching agents.

Suitable dentifrices are in particular tooth creams, toothpastes, mouth-washes, mouth rinses, anti-plaque preparations and cleaning agents for dentures.

Suitable decorative preparations are in particular lipsticks, nail varnishes, eye shadows, mascaras, dry and moist make-up, rouge, powders, depilatory agents and suntan lotions.

Suitable cosmetic formulations containing active ingredients are in particular hormone preparations, vitamin preparations, vegetable extract preparations and antibacterial preparations.

The mentioned body-care products may be in the form of creams, ointments, pastes, foams, gels, lotions, powders, make-ups, sprays, sticks or aerosols.

They preferably contain the light stabilizers of formulae (1) and, optionally, other UV absorbers, sterically hindered amines, complexing agents and phenolic or non-phenolic antioxidants.

The present invention therefore also relates to a body-care product comprising at least one compound of formula (1).

The compounds o formula (1) are present in the body care and household products in a concentration of about 5 to about 10000 ppm, based on the total formulation, preferably from about 10 to about 5000 ppm, and most preferably from about 100 to about 1000 ppm.

The cosmetic compositions according to the present invention may also contain one or one more additional compounds as described below.

Fatty alcohols

Guerbet alcohols based on fatty alcohols having from 6 to 18, preferably from 8 to 10 carbon atoms including cetyl alcohol, stearyl alcohol, cetearyl alcohol, oleyl alcohol, octyldodecanol, benzoate of C12-C15 alcohols, acetylated lanolin alcohol, etc..

Esters of fatty acids

Esters of linear C_6–C_{24} fatty acids with linear C_3-C_{24} alcohols, esters of branched C_6-C_{13}carboxylic acids with linear C6-C_{24} fatty alcohols, esters of linear C_6-C_{24}fatty acids with branched alcohols, especially 2-ethylhexanol, esters of hydroxycarboxylic acids with linear or branched C_6-C_{22} fatty alcohols, especially dioctyl malates, esters of linear and/or branched fatty acids with polyhydric alcohols (for example propylene glycol, dimer diol or trimer triol) and/or Guerbet alcohols, for example caproic acid, caprylic acid, 2-ethylhexanoic acid, capric acid, lauric acid, isotridecanoic acid, myristic acid, palmitic acid, palmitoleic acid, stearic acid, isostearic acid, oleic acid, elaidic acid, petroselinic acid, linoleic acid, linolenic acid, elaeostearic acid, arachidic acid, gadoleic acid, behenic acid and erucic acid and technical-grade mixtures thereof (obtained, for example, in the pressure removal of natural fats and

oils, in the reduction of aldehydes from Roelen's oxosynthesis or in the dimerisation of unsaturated fatty acids) with alcohols, for example, isopropyl alcohol, caproic alcohol, capryl alcohol, 2-ethylhexyl alcohol, capric alcohol, lauryl alcohol, isotridecyl alcohol, myristyl alcohol, cetyl alcohol, palmoleyl alcohol, stearyl alcohol, isostearyl alcohol, oleyl alcohol, elaidyl alcohol, petroselinyl alcohol, linoyl alcohol, linolenyl alcohol, elaeostearyl alcohol, arachidyl alcohol, gadoleyl alcohol, behenyl alcohol, erucyl alcohol and brassidyl alcohol and technical-grade mixtures thereof (obtained, for example, in the high-pressure hydrogenation of technical-grade methyl esters based on fats and oils or aldehydes from Roelen's oxosynthesis and as monomer fractions in the dimerisation of unsaturated fatty alcohols).

Examples of such ester oils are isopropylmyristate, isopropylpalmitate, isopropylstearate, isopropyl isostearate, isopropyloleate, n-butylstearate, n-hexyllaurate, n-decyloleate, iso-octylstearate, iso-nonylstearate, isononyl isononanoate, 2-ethylhexylpalmitate, 2-hexyl-laurate, 2-hexyldecylstearate, 2-octyldodecylpalmitate, oleyloleate, oleylerucate, erucyl-leate, erucylerucate, cetearyl octanoate, cetyl palmitate, cetyl stearate, cetyl oleate, cetyl behenate, cetyl acetate, myristyl myristate, myristyl behenate, myristyl oleate, myristyl stearate, myristyl palmitate, myristyl lactate, propylene glycol dicaprylate/caprate, stearyl heptanoate, diisostearyl malate, octyl hydroxystearate, etc..

Natural or synthetic triglycerides including glyceryl esters and derivatives

Di- or tri-glycerides, based on C6-C18 fatty acids, modified by reaction with other alcohols (caprylic/capric triglyceride, wheat germ glycerides, etc.). Fatty acid esters of polyglycerin (polyglyceryl-n such as polyglyceryl-4 caprate, polyglyceryl-2 isostearate, etc. or castor oil, hydrogenated vegetable oil, sweet almond oil, wheat germ oil, sesame oil, hydrogenated cottonseed oil, coconut oil, avocado oil, corn oil, hydrogenated castor oil, shea butter, cocoa butter, soybean oil, mink oil, sunflower oil, safflower oil, macadamia nut oil, olive oil, hydrogenated tallow, apricot kernel oil, hazelnut oil, borago oil, etc.

Waxes

including esters of long-chain acids and alcohols as well as compounds having wax-like properties, e.g., carnauba wax, beeswax (white or yellow), lanolin wax, candellila wax, ozokerite, japan wax, paraffin wax, microcrystalline wax, ceresin, cetearyl esters wax, synthetic beeswax,etc. Also, hydrophilic waxes as Cetearyl Alcohol or partial glycerides.

Pearlescent waxes

Ikylene glycol esters, especially ethylene glycol distearate; fatty acid alkanolamides, especially coco fatty acid diethanolamide; partial glycerides, especially stearic acid monoglyceride; esters of polyvalent, unsubstituted or hydroxy-substituted carboxylic acids with fatty alcohols having from 6 to 22 carbon atoms, especially long-chained esters of tartaric acid; fatty substances, for example fatty alcohols, fatty ketones, fatty aldehydes, fatty ethers and fatty carbonates, which in total have at least 24 carbon atoms, especially laurone and distearyl ether; fatty acids, such as stearic acid, hydroxystearic acid or behenic acid, ring-opening products of olefin epoxides having from 12 to 22 carbon atoms with fatty alcohols having from 12 to 22 carbon atoms and/or polyols having from 2 to 15 carbon atoms and from 2 to 10 hydroxy groups, and mixtures thereof.

Hydrocarbon oils

Mineral oil (light or heavy), petrolatum (yellow or white), microcrystalline wax, paraffinic and isoparaffinic compounds, hydrogenated isoparaffinic molecules as polydecenes and polybutene, hydrogenated polyisobutene, squalane, isohexadecane, isododecane and others from plant and animal kingdom.

Silicones or siloxanes (organosubstituted polysiloxanes)

Dimethylpolysiloxanes, methylphenylpolysiloxanes, cyclic silicones, and also amino-, fatty acid-, alcohol-, polyether-, epoxy-, fluorine-, glycoside- and/or alkyl-modified silicone compounds, which at room temperature may be in either liquid or resinous form. Linear polysiloxanes, dimethicone (Dow Corning 200 fluid, Rhodia Mirasil DM), dimethiconol, cyclic silicone fluids, cyclopentasiloxanes volatiles (Dow Corning 345 fluid), phenyltrimethicone (Dow Corning 556 fluid). Also suitable are simethicones, which are mixtures of dimethicones having an average chain length of from 200 to 300 dimethylsiloxane units with hydrogenated silicates. A detailed survey by Todd et al. of suitable volatile silicones may in addition be found in Cosm. Toil. 91, 27 (1976).

Fluorinated or perfluorinated oils

Perfluorhexane, dimethylcyclohexane, ethylcyclopentane, polyperfluoromethylisopropyl ether.

Emulsifiers

Any conventionally usable emulsifier can be used for the compositions. Emulsifier systems may comprise for example: carbocyclic acids and their salts: alkaline soap of sodium, potassium and ammonium, metallic soap of calcium or magnesium, organic basis soap such as Lauric, palmitic, stearic and oleic acid etc.. Alkyl phosphates or phosphoric acid esters, acid phosphate, diethanolamine phosphate, potassium cetyl phosphate. Ethoxylated carboxylic acids or polyethyleneglycol esters, PEG-n acylates. Linear fatty alcohols having from 8 to 22 carbon atoms, branched from 2 to 30 mol of ethylene oxide and/or from 0 to 5 mol propylene oxide with with fatty acids having from 12 to 22 carbon atoms and with alkyl-phenols having from 8 to 15 carbon atoms in the alkyl group. Fatty alcohol polyglycolether such as laureth-n, ceteareth-n, steareth-n, oleth-n. Fatty acid polyglycolether such as PEG-n stearate, PEG-n oleate, PEG-n cocoate. Monoglycerides and polyol esters. C12-C22 fatty acid mono- and di-esters of addition products of from 1 to 30 mol of ethylene oxide with polyols. Fatty acid and polyglycerol ester such as monostearate glycerol, diisostearoyl polyglyceryl-3-diisostearates, polyglyceryl-3-diisostearates, triglyceryl diisostearates, polyglyceryl-2-sesquiisostearates or polyglyceryl dimerates. Mixtures of compounds from a plurality of those substance classes are also suitable. Fatty acid polyglycolesters such as monostearate diethylene glycol, fatty acid and polyethylene glycol esters, fatty acid and saccharose esters such as sucro esters, glycerol and saccharose esters such as sucro glycerides. Sorbitol and sorbitan, sorbitan mono- and di-esters of saturated and unsaturated fatty acids having from 6 to 22 carbon atoms and ethylene oxide addition products. Polysorbate-n series, sorbitan esters such as sesquiisostearate, sorbitan, PEG-(6)-isostearate sorbitan, PEG-(10)-sorbitan laurate, PEG-17-dioleate sorbitan, glucose derivatives, C_8-C_{22} alkyl-mono and oligo-glycosides and ethoxylated analogues with glucose being preferred as the sugar component. O/W emulsifiers such as methyl gluceth-20 sesquistearate, sorbitan stearate/sucrose cocoate, methyl glucose sesquistearate, cetearyl alcohol/cetearyl glucoside. W/O emulsifiers such as methyl glucose dioleate/ methyl glucose isostearate. Sulfates and sulfonated derivatives, dialkylsulfosuccinates, dioctyl succinate, alkyl lauryl sulfonate, linear sulfonated parafins, sulfonated tetraproplyne sulfonate, sodium lauryl sulfates, amonium and ethanol-amine lauryl sulfates, lauyl ether sulfates, sodium laureth sulfates, sulfosuccinates, aceyl isothionates, alkanolamide sulfates, taurines, methyl taurines, imidazole sulfates. Amine derivatives, amine salts, ethoxylated amines, oxide amine with chains containing an heterocycle such as alkyl imidazolines, pyridine derivatives, isoquinoteines, cetyl pyridinium chlorure, cetyl pyridinium bromide, quaternary ammonium such as cetyltrimethylbroide amonium

broide (CTBA), stearylalkonium. Amide derivatives, alkanolamides such as acylamide DEA, ethoxylated amides such as PEG-n acylamide, oxydeamide. Polysiloxane/polyalkyl/polyether copolymers and derivatives, dimethicone, copolyols, silicone polyethylene oxide copolymer, silicone glycol copolymer. Propoxylated or POE-n ethers (Meroxapols), Polaxamers or poly-(oxyethylene)m-block-poly(oxypropylene)n-block(oxyethylene). Zwitterionic surfactants that carry at least one quaternary ammonium group and at least one carboxylate and/or sulfonate group in the molecule. Zwitterionic surfactants that are especially suitable are betaines, such as N–alkyl-N,N dimethylammonium glycinates, cocoalkyldimethylammonium glycinate, N–acylaminopropyl–N,N–dimethylammonium glycinates, cocoacylaminopropyldimethyl-ammonium glycinate and 2 alkyl-3-carboxymethyl-3-hydroxyethylimidazolines each having from 8 to 18 carbon atoms in the alkyl or acyl group and also cocoacylaminoethylhydroxy-ethylcarboxymethylglycinate, N-alkylbetaine, N-alkylaminobetaines. Alkylimidazolines, alkylopeptides, lipoaminoacides, self emulsifying bases and the compounds as described in K.F.DePolo, A short textbook of cosmetology, Chapter 8, Table 8-7, p250-251.

Non ionic emulsifiers such as PEG-6 beeswax (and) PEG-6 stearate (and) polyglyceryl–2–isostearate [Apifac], glyceryl stearate (and) PEG-100 stearate. [Arlacel 165], PEG-5 glyceryl stearate [arlatone 983 S], sorbitan oleate (and) polyglyceryl-3 ricinoleate.[Arlacel 1689], sorbitan stearate and sucrose cocoate [arlatone 2121], glyceryl stearate and laureth-23 [Cerasynth 945], cetearyl alcohol and ceteth-20 [Cetomacrogol Wax], cetearyl alcohol and colysorbate 60 and PEG-150 and stearate-20[Polawax GP 200, Polawax NF], cetearyl alcohol and cetearyl polyglucoside [Emulgade PL 1618], cetearyl alcohol and ceteareth-20 [Emulgade 1000NI, Cosmowax], cetearyl alcohol and PEG-40 castor oil [Emulgade F Special], cetearyl alcohol and PEG-40 castor oil and sodium cetearyl sulfate [Emulgade F], stearyl alcohol and steareth-7 and steareth-10 [Emulgator E 2155], cetearyl alcohol and szeareth-7 and steareth-10 [Emulsifying wax U.S.N.F], glyceryl stearate and PEG-75 stearate [Gelot 64], propylene glycol ceteth-3 acetate .[Hetester PCS], propylene glycol isoceth-3 acetate [Hetester PHA], cetearyl alcohol and ceteth-12 and oleth-12 [Lanbritol Wax N 21], PEG –6 stearate and PEG-32 stearate [Tefose 1500], PEG-6 stearate and ceteth-20 and steareth-20 [Tefose 2000], PEG-6 stearate and ceteth-20 and glyceryl stearate and steareth-20 [Tefose 2561], glyceryl stearate and ceteareth-20 [Teginacid H, C, X].

Anionic emulsifiers such as PEG-2 stearate SE, glyceryl stearate SE [Monelgine, Cutina KD], propylene glycol stearate [Tegin P], cetearyl Alcohol and Sodium cetearyl sulfate [Lanette N,

Cutina LE, Crodacol GP], cetearyl alcohol and sodium lauryl sulfate [Lanette W], trilaneth-4 phopshate and glycol stearate and PEG-2 stearate [Sedefos 75], glyceryl stearate and sodium lauryl Sulfate [Teginacid Special]. Cationic acid bases such as cetearyl alcohol and cetrimonium bromide.

The emulsifiers may be used in an amount of, for example, from 1 to 30 % by weight, especially from 4 to 20 % by weight and preferably from 5 to 10 % by weight, based on the total weight of the composition.

When formulated in O/W emulsions, the preferably amount of such emulsifier system could represent 5% to 20% of the oil phase.

Super-fatting agents

Substances suitable for use as super-fatting agents are, for example, lanolin and lecithin and also polyethoxylated or acrylated lanolin and lecithin derivatives, polyol fatty acid esters, monoglycerides and fatty acid alkanolamides, the latter simultaneously acting as foam stabilisers.

Surfactants

Examples of suitable mild surfactants, that is to say surfactants especially well tolerated by the skin, include fatty alcohol polyglycol ether sulfates, monoglyceride sulfates, mono- and/or di-alkyl sulfosuccinates, fatty acid isethionates, fatty acid sarcosinates, fatty acid taurides, fatty acid glutamates, α-olefin sulfonates, ethercarboxylic acids, alkyl oligoglucosides, fatty acid glucamides, alkylamidobetaines and/or protein fatty acid condensation products, the latter preferably being based on wheat proteins.

Consistency regulators/thickeners and rheology modifiers

silicon dioxide, magnesium silicates, aluminium silicates, polysaccharides or derivatives thereof for example hyaluronic acid, xanthan gum, guar-guar, agar-agar, alginates, carraghenan, gellan, pectines, or modified cellulose such as hydroxycellulose, hydroxypropylmethylcellulose. In addition polyacrylates or homopolymer of reticulated acrylic acids and polyacrylamides, carbomer (carbopol types 980, 981, 1382, ETD 2001, ETD2020, Ultrez 10) or Salcare range such as Salcare SC80(steareth-10 allyl ether/acrylates copolymer), Salcare SC81(acrylates copolymer), Salcare SC91 and Salcare AST(sodium acrylates copoly-

mer/PPG-1 trideceth-6), sepigel 305(polyacrylamide/laureth-7), Simulgel NS and Simulgel EG (hydroxyethyl acrylate / sodium acryloyldimethyl taurate copolymer), Stabilen 30 (acrylates / vinyl isodecanoate crosspolymer), Pemulen TR-1(acrylates / C10-30 alkyl acrylate crosspolymer), Luvigel EM (sodium acrylates copolymer), Aculyn 28 (acrylates/beheneth-25 methacrylate copolymer), etc.

Polymers

Suitable cationic polymers are, for example, cationic cellulose derivatives, for example a quaternised hydroxymethyl cellulose obtainable under the name Polymer JR 400 from Amerchol, cationic starches, copolymers of diallylammonium salts and acrylamides, quaternised vinylpyrrolidone/vinyl imidazole polymers, for example Luviquatâ (BASF), condensation products of polyglycols and amines, quaternised collagen polypeptides, for example lauryldimonium hydroxypropyl hydrolyzed collagen (LamequatâL/Grünau), quaternised wheat polypeptides, polyethyleneimine, cationic silicone polymers, for example amidomethicones, copolymers of adipic acid and dimethylaminohydroxypropyldiethylenetriamine (Cartaretin/Sandoz), copolymers of acrylic acid with dimethyldiallylammonium chloride (Merquat 550 / Chemviron), polyaminopolyamides, as described, for example, in FR-A-2 252 840, and the crosslinked water-soluble polymers thereof, cationic chitin derivatives, for example of quaternised chitosan, optionally distributed as microcrystals; condensation products of dihaloalkyls, for example dibromobutane, with bisdialkylamines, for example bisdimethylamino-1,3-propane, cationic guar gum, for example Jaguar C-17, Jaguar C-16 from Celanese, quaternised ammonium salt polymers, for example Mirapol A-15, Mirapol AD-1, Mirapol AZ-1 from Miranol. As anionic, zwitterionic, amphoteric and non-ionic polymers there come into consideration, for example, vinyl acetate / crotonic acid copolymers, vinylpyrrolidone / vinyl acrylate copolymers, vinyl acetate / butyl maleate / isobornyl acrylate copolymers, methyl vinyl ether / maleic anhydride copolymers and esters thereof, uncrosslinked polyacrylic acids and polyacrylic acids crosslinked with polyols, acrylamidopropyl-trimethylammonium chloride /acrylate copolymers, octyl acrylamide/methyl methacrylatetert. butylaminoethyl methacrylate/2-hydroxypropyl methacrylate copolymers, polyvinylpyrrolidone, vinylpyrrolidone/vinyl acetate copolymers, vinylpyrrolidone/dimethylaminoethyl methacrylate/vinyl caprolactam terpolymers and also optionally derivatised cellulose ethers and silicones. Furthermore the polymers as described in EP 1093796 (pages 3-8, paragraphs 17-68) may be used.

Cationic surfactants

cetyl trimethyl ammonium bromide (CTAB), dimethicone copolyols, amidomethicones, acrylamidopropyltrimonium chloride/Acrylamide copolymer, guar hydroxypropyl trimonium chloride, hydroxycetyl hydroxyethyl dimonium chloride quaternium compounds as listed in International Cosmetic Ingredient Dictionary and Handbook, 7th Edition 1997, for example Quaternium-80, polyquaternium compounds, as listed in International Cosmetic Ingredient Dictionary and Handbook, 7th Edition 1997, for example polyquaternium- 5, polyquaternium-6, polyquaternium-7, polyquaternium-10, polyquaternium-11, polyquaternium-17, polyquaternium-18, polyquaternium-24 or polyquaternium-27, polyquaternium-28, polyquaternium-32, polyquaternium-37.

Biogenic active ingredients

Biogenic active ingredients are to be understood as meaning, for example, tocopherol, tocopherol acetate, tocopherol palmitate, ascorbic acid, deoxyribonucleic acid, retinol, bisabolol, allantoin, phytantriol, panthenol, AHA acids, amino acids, ceramides, pseudoceramides, essential oils, plant extracts and vitamin complexes.

Deodorising active ingredients

As deodorising active ingredients are for example, antiperspirants, for example aluminium chlorohydrates (see J. Soc. Cosm. Chem. 24, 281 (1973)). Under the trade mark Locronâ of Hoechst AG, Frankfurt (FRG), there is available commercially, for example, an aluminium chlorohydrate corresponding to formula Al2(OH)5Cl x 2.5 H2O, the use of which is especially preferred (see J. Pharm. Pharmacol. 26, 531 (1975)). Besides the chlorohydrates, it is also possible to use aluminium hydroxyacetates and acidic aluminium/zirconium salts. Esterase inhibitors may be added as further deodorising active ingredients. Such inhibitors are preferably trialkyl citrates, such as trimethyl citrate, tripropyl citrate, triisopropyl citrate, tributyl citrate and especially triethyl citrate (Hydagen CAT, Henkel), which inhibit enzyme activity and hence reduce odour formation. Further substances that come into consideration as esterase inhibitors are sterol sulfates or phosphates, for example lanosterol, cholesterol, campesterol, stigmasterol and sitosterol sulfate or phosphate, dicarboxylic acids and esters thereof, for example glutaric acid, glutaric acid monoethyl ester, glutaric acid diethyl ester, adipic acid, adipic acid monoethyl ester, adipic acid diethyl ester, malonic acid and malonic acid diethyl ester and hydroxycarboxylic acids and esters thereof, for example citric acid, malic acid, tartaric acid or tartaric acid diethyl ester. Antibacterial active ingredients that

influence the germ flora and kill or inhibit the growth of sweat-decomposing bacteria can likewise be present in the preparations (especially in stick preparations). Examples include chitosan, phenoxyethanol and chlorhexidine gluconate. 5-chloro-2-(2,4-dichlorophenoxy)-phenol (Triclosan, Irgasan, Ciba Specialty Chemicals Inc.) has also proved especially effective.

Anti-dandruff agents

As anti-dandruff agents there may be used, for example, climbazole, octopirox and zinc pyrithione. Customary film formers include, for example, chitosan, microcrystalline chitosan, quaternised chitosan, polyvinylpyrrolidone, vinylpyrrolidone/vinyl acetate copolymers, polymers of quaternary cellulose derivatives containing a high proportion of acrylic acid, collagen, hyaluronic acid and salts thereof and similar compounds.

Hydrotropic agents

For improvemrnt of the flow behaviour it is also possible to employ hydrotropic agents, for example ethoxylated or non ethoxylated mono-alcohols, diols or polyols with a low number of carbon atoms or their ethers (e.g. ethanol, isopropanol, 1,2-dipropanediol, propyleneglycol, glyerin, ethylene glycol, ethylene glycol monoethylether, ethylene glycol monobutylether, propylene glycol monomethylether, propylene glycol monoethylether, propylene glycol monobutylether, diethylene glycol monomethylether; diethylene glycol monoethylether, diethylene glycol monobutylether and similar products). The polyols for that purpose comprise preferably 2 to 15 carbon atoms and at least two hydroxy groups. The polyols may also contain further functional groups, especially amino groups, and/or may be modified with nitrogen. Typical examples are as follows: glycerol, alkylene glycols, for example ethylene glycol, diethylene glycol, propylene glycol, butylene glycol, hexylene glycol and also polyethylene glycols having an average molecular weight of from 100 to 1000 Dalton; technical oligoglycerol mixtures having an intrinsic degree of condensation of from 1.5 to 10, for example technical diglycerol mixtures having a diglycerol content of from 40 to 50 % by weight; methylol compounds, such as, especially, trimethylolethane, trimethylolpropane, trimethylolbutane, pentaerythritol and dipentaerythritol; lower alkyl-glucosides, especially those having from 1 to 8 carbon atoms in the alkyl radical, for example methyl and butyl glucoside; sugar alcohols having from 5 to 12 carbon atoms, for example sorbitol or mannitol; sugars having from 5 to 12 carbon atoms, for example glucose or saccharose; amino sugars, for example glucamine; dialcohol amines, such as diethanolamine or 2-amino-1,3-propanediol.

Preservatives

Suitable preservatives include, for example methyl-, ethyl-, propyl-, butyl- parabens, benzalkonium chloride, 2-bromo-2-nitro-propane-1,3-diol, dehydroacetic acid, diazolidinyl urea, 2-dichloro-benzyl alcohol, dmdm hydantoin, formaldehyde solution, methyldibromoglutanitrile, phenoxyethanol, sodium hydroxymethylglycinate, imidazolidinyl urea, triclosan and further substance classes listed in the following reference: K.F.Depolo – A Short Textbook Of Cosmetology, Chapter 7, Table 7-2, 7-3, 7-4 And 7-5, P210-219.

Bacteria-inhibiting agents

Typical examples of bacteria-inhibiting agents are preservatives that have a specific action against gram-positive bacteria, such as 2,4,4'-trichloro-2'-hydroxydiphenyl ether, chlorhexidine (1,6-di(4-chlorophenyl-biguanido)hexane) or TCC (3,4,4'-trichlorocarbanilide). A large number of aromatic substances and ethereal oils also have antimicrobial properties. Typical examples are the active ingredients eugenol, menthol and thymol in clove oil, mint oil and thyme oil. A natural deodorising agent of interest is the terpene alcohol farnesol (3,7,11-trimethyl-2,6,10-dodecatrien-1-ol), which is present in lime blossom oil. Glycerol monolaurate has also proved to be a bacteriostatic agent. The amount of the additional bacteria-inhibiting agents present is usually from 0.1 to 2 % by weight, based on the solids content of the preparations.

Perfume oils

Mixtures of natural and/or synthetic aromatic substances. Natural aromatic substances are, for example, extracts from blossom (lilies, lavender, roses, jasmine, neroli, ylang-ylang), from stems and leaves (geranium, patchouli, petitgrain), from fruit (aniseed, coriander, carraway, juniper), from fruit peel (bergamot, lemons, oranges), from roots (mace, angelica, celery, cardamom, costus, iris, calmus), from wood (pinewood, sandalwood, guaiacum wood, cedarwood, rosewood), from herbs and grasses (tarragon, lemon grass, sage, thyme), from needles and twigs (spruce, pine, Scots pine, mountain pine), from resins and balsams (galbanum, elemi, benzoin, myrrh, olibanum, opoponax). Animal raw materials also come into consideration, for example civet and castoreum. Typical synthetic aromatic substances are, for example, products of the ester, ether, aldehyde, ketone, alcohol or hydrocarbon type. Aromatic substance compounds of the ester type are, for example, benzyl acetate, phenoxyethyl isobutyrate, p-tert-butylcyclohexyl acetate, linalyl acetate, dimethylbenzylcarbinyl

acetate, phenylethyl acetate, linalyl benzoate, benzyl formate, ethylmethylphenyl glycinate, allylcyclohexyl propionate, styrallyl propionate and benzyl salicylate. The ethers include, for example, benzyl ethyl ether; the aldehydes include, for example, the linear alkanals having from 8 to 18 hydrocarbon atoms, citral, citronellal, citronellyl oxyacetaldehyde, cyclamen aldehyde, hydroxycitronellal, lilial and bourgeonal; the ketones include, for example, the ionones, isomethylionone and methyl cedryl ketone; the alcohols include, for example, anethol, citronellol, eugenol, isoeugenol, geraniol, linalool, phenyl ethyl alcohol and terpinol; and the hydrocarbons include mainly the terpenes and balsams. It is preferable, however, to use mixtures of various aromatic substances that together produce an attractive scent. Ethereal oils of relatively low volatility, which are chiefly used as aroma components, are also suitable as perfume oils, e.g. sage oil, camomile oil, clove oil, melissa oil, oil of cinnamon leaves, lime blossom oil, juniper berry oil, vetiver oil, olibanum oil, galbanum oil, labolanum oil and lavandin oil. Preference is given to the use of bergamot oil, dihydromyrcenol, lilial, lyral, citronellol, phenyl ethyl alcohol, hexyl cinnamaldehyde, geraniol, benzyl acetone, cyclamen aldehyde, linalool, boisambrene forte, ambroxan, indole, hedione, sandelice, lemon oil, tangerine oil, orange oil, allyl amyl glycolate, cyclovertal, lavandin oil, muscatel sage oil, damascone, bourbon geranium oil, cyclohexyl salicylate, vertofix coeur, iso-E-Super, Fixolide NP, evernyl, iraldein gamma, phenylacetic acid, geranyl acetate, benzyl acetate, rose oxide, romillat, irotyl and floramat alone or in admixture with one another.

Other adjuvants

It is furthermore possible for the cosmetic preparations to contain, as adjuvants, anti-foams, such as silicones, structurants, such as maleic acid, solubilisers, such as ethylene glycol, propylene glycol, glycerol or diethylene glycol, opacifiers, such as latex, styrene/PVP or styrene/acrylamide copolymers, propellants, such as propane/butane mixtures, N2O, dimethyl ether, CO2, N2 or air, so-called coupler and developer components as oxidation dye precursors, reducing agents, such as thioglycolic acid and derivatives thereof, thiolactic acid, cysteamine, thiomalic acid or mercaptoethanesulfonic acid, or oxidising agents, such as hydrogen peroxide, potassium bromate or sodium bromate.

Suitable insect repellents are, for example, N,N-diethyl-m-toluamide, 1,2-pentanediol or insect repellent 3535; suitable self-tanning agents are, for example, dihydroxyacetone and/or erythrulose or dihydroxy acetone and/or dihydroxy acetone precursors as described in WO 01/85124 and/or erythrulose.

The present stabilizer systems are particularly suitable for stabilizing body care products, in particular:

- skin-care preparations, e.g. skin-washing and cleansing preparations in the form of tablet-form or liquid soaps, soapless detergents or washing pastes,
- bath preparations, e.g. liquid (foam baths, milks, shower preparations) or solid bath preparations, e.g. bath cubes and bath salts;
- skin-care preparations, e.g. skin emulsions, multi-emulsions or skin oils; body oils, body lotions, body gels; skin protection ointments;
- cosmetic personal care preparations, e.g. facial make-up in the form of day creams or powder creams, face powder (loose or pressed), rouge or cream make-up, eye-care preparations, e.g. eyeshadow preparations, mascara, eyeliner, eye creams or eye-fix creams; lip-care preparations, e.g. lipsticks, lip gloss, lip contour pencils, nail-care preparations, such as nail varnish, nail varnish removers, nail hardeners or cuticle removers;
- foot-care preparations, e.g. foot baths, foot powders, foot creams or foot balsams, special deodorants and antiperspirants or callus-removing preparations;
- light-protective preparations, such as sun milks, lotions, creams or oils, sunblocks or tropicals, pre-tanning preparations or after-sun preparations;
- skin-tanning preparations, e.g. self-tanning creams;
- depigmenting preparations, e.g. preparations for bleaching the skin or skin-lightening preparations;
- insect-repellents, e.g. insect-repellent oils, lotions, sprays or sticks;
- deodorants, such as deodorant sprays, pump-action sprays, deodorant gels, sticks or roll-ons;
- antiperspirants, e.g. antiperspirant sticks, creams or roll-ons;
- preparations for cleansing and caring for blemished skin, e.g. synthetic detergents (solid or liquid), peeling or scrub preparations or peeling masks;
- hair-removal preparations in chemical form (depilation), e.g. hair-removing powders, liquid hair-removing preparations, cream- or paste-form hair-removing preparations, hair-removing preparations in gel form or aerosol foams;
- shaving preparations, e.g. shaving soap, foaming shaving creams, non-foaming shaving creams, foams and gels, preshave preparations for dry shaving, aftershaves or aftershave lotions;

- fragrance preparations, e.g. fragrances and odoriferous substances containing preparations (scents, eau de Cologne, eau de toilette, eau de parfum, parfum de toilette, perfume), perfume oils or perfume creams;
- cosmetic hair-treatment preparations, e.g. hair-washing preparations in the form of shampoos and conditioners, hair-care preparations, e.g. pretreatment preparations, hair tonics, styling creams, styling gels, pomades, hair rinses, treatment packs, intensive hair treatments, hair-structuring preparations, e.g. hair-waving preparations for permanent waves (hot wave, mild wave, cold wave), hair-straightening preparations, liquid hair-setting preparations, hair foams, hairsprays, bleaching preparations, e.g. hydrogen peroxide solutions, lightening shampoos, bleaching creams, bleaching powders, bleaching pastes or oils, temporary, semi-permanent or permanent hair colourants, preparations containing self-oxidising dyes, or natural hair colourants, such as henna or camomile;
- dentifrices, in particular tooth creams, toothpastes, mouth-washes, mouth rinses, anti-plaque preparations and cleaning agents for dentures;
- decorative preparations, in particular lipsticks, nail varnishes, eye shadows, mascaras, dry and moist make-up, rouge, powders, depilatory agents and suntan lotions
- cosmetic formulations containing active ingredients, in particular hormone preparations, vitamin preparations, vegetable extract preparations and antibacterial preparations.

Suitable cosmetic formulations containing active ingredients are in particular hormone preparations, vitamin preparations, vegetable extract preparations and antibacterial preparations.

<u>Presentation forms</u>

The final formulations listed may exist in a wide variety of presentation forms, for example:

- in the form of liquid preparations as a W/O, O/W, O/W/O, W/O/W or PIT emulsion and all kinds of microemulsions,
- in the form of a gel,
- in the form of an oil, a cream, milk or lotion,
- in the form of a stick,
- in the form of a spray (spray with propellent gas or pump-action spray) or an aerosol,
- in the form of a foam, or
- in the form of a paste.

Of special importance as cosmetic preparations for the skin are light-protective preparations, such as sun milks, lotions, creams, oils, sunblocks or tropicals, pretanning preparations or after-sun preparations, also skin-tanning preparations, for example self-tanning creams. Of particular interest are sun protection creams, sun protection lotions, sun protection milk and sun protection preparations in the form of a spray.

Of special importance as cosmetic preparations for the hair are the above-mentioned preparations for hair treatment, especially hair-washing preparations in the form of shampoos, hair conditioners, hair-care preparations, e.g. pretreatment preparations, hair tonics, styling creams, styling gels, pomades, hair rinses, treatment packs, intensive hair treatments, hair-straightening preparations, liquid hair-setting preparations, hair foams and hairsprays. Of special interest are hair-washing preparations in the form of shampoos.

A shampoo has, for example, the following composition:
0.01 to 5 % by weight of the compound of formula (1),
12.0 % by weight of sodium laureth-2-sulfate,
4.0 % by weight of cocamidopropyl betaine,
3.0 % by weight of sodium chloride,
and water ad 100%.

For example, especially the following hair-cosmetic formulations may be used:

a1) spontaneously emulsifying stock formulation, comprising the compound of formula (1) according to the invention, optionally another stabilizer, PEG-6-C10oxoalcohol and sorbitan sesquioleate, to which water and any desired quaternary ammonium compound, for example 4 % minkamidopropyl dimethyl-2-hydroxyethylammonium chloride or Quaternium 80 is added;

a2) spontaneously emulsifying stock formulation comprising the compound of formula (1) according to the invention, optionally another stabilizer, tributyl citrate and PEG-20-sorbitan monooleate, to which water and any desired quaternary ammonium compound, for example 4 % minkamidopropyl dimethyl-2-hydroxyethylammonium chloride or Quaternium 80 is added;

b) quat-doped solutions comprising the compound of formula (1) according to the invention in butyl triglycol and tributyl citrate; and optionally another stabilizer;

c) mixtures or solutions comprising the compound of formula (1) according to the invention with alkylpyrrolidone; and optionally another stabilizer.

Examples of body care products of the present invention are listed in the Table below:

Body care product	Ingredients
moisturising cream	vegetable oil, emulsifier, thickener, perfume, water, antioxidant, UV absorbers
shampoo	surfactant, emulsifier, preservatives, perfume, antioxidant, UV absorbers
Toothpaste	cleaning agent, thickener, sweetener, flavor, colorant, antioxidant, water, UV absorbers
lip-care stick	vegetable oil, wax, TiO_2, antioxidant, UV absorbers

Household products

The stabilizer systems of the present invention are also used in household cleaning and treatment agents, for example in laundry products and fabric softeners, liquid cleansing and scouring agents, glass detergents, neutral cleaners (all-purpose cleaners), acid household cleaners (bath), bathroom cleaners, WC cleaners, for instance in washing, rinsing and dishwashing agents, kitchen and oven cleaners, clear rinsing agents, dishwasher detergents, shoe polishes, polishing waxes, floor detergents and polishes, metal, glass and ceramic cleaners, textile-care products, rug cleaners and carpet shampoos, agents for removing rust, color and stains (stain remover salt), furniture and multipurpose polishes and leather and vinyl dressing agents (leather and vinyl sprays) and air fresheners.

Household cleaning agents are aqueous or alcoholic (ethanol or isopropyl alcohol) solutions of one or more of the following components:

- anionic, nonionic, amphoteric and/or cationic surfactants
- soaps, prepared by saponification of animal and vegetable greases
- organic acids, like hydrochloric acid, phosphoric acid, or sulfuric acid,
- for basic products inorganic (NaOH or KOH) or organic bases;
- abrasives for improved cleaning of surfaces,
- waxes and/or silicones for maintenance and protection of surfaces,
- polyphosphates,
- substances which eliminate hypochlorite or halogens;
- peroxides comprising bleaching activators like TAED, for example sodium perborate or H_2O_2;

- enzymes;
- in washing detergents discoloration inhibitors, soil-release compounds, grey scale inhibitors, foam inhibitors, fluorescent whitening agents;
- cleaning agents based on wax may comprise solvents selected from benzine, turpentine and/or paraffines and emulsifiers based on wax;
- filling agents like silicates, polyphosphates, Zeolithes for powdery cleaning agents;
- pigments, lakes or soluble dyes;
- perfumes; and
- light stabilizers, antioxidants and chelating agents.

Colored cleaning agents and decorative cosmetic products can comprise the following dyes:

- inorganic pigments, for example iron oxide (Iron Oxide Red, Iron Oxide Yellow, Iron Oxide Black, etc.), Ultramarines, Chromium Oxide Green or Carbon Black;
- natural or synthetic orgnic pigments;
- disperse dyes which may be solubilzed in solvents like direct hair dyes of the HC type, for example HC Red No. 3, HC Blue No. 2 and all other hair dyes listed in International Cosmetic Ingredient Dictionary and Handbook, 7th edition 19997) or the dispersion dyes listed in Color Index International or Society of Dyers and Colourists;
- color varnishes (insoluble salts of soluble dyes, like many Ca-, Ba- or Al-salts of anionic dyes);
- soluble anionic or cationic dyes, like acid dyes (anionic), basic dyes (cationic), direct dyes, reactive dyes or solvent dyes.

Generally, for the coloration of household- and body care products all substances are suitable which have an absorption in the visible light of electromagnetic radiation (wave length of ca. 4000 to 700 nm). The absorption is often caused by the following chromophores:
Azo- (mono-, di, tris-, or poly-)stilbene-, carotenoide-, diarylmethan-, triarylmethan-, xanthen-, acridin-, quinoline, methin- (also polymethin-), thiazol-, indamin-, indophenol-, azin-, oxazin, thiazin-, anthraquinone-, indigoid-, phtalocyanine- and further synthetic, natural and/or inorganic chromophores.

The present invention also relates to home care and fabric care products such as drain cleaners, disinfectant solutions, upholstery cleaners, automotive care products (e.g., to clean

and/or polish and protect paint, tires, chrome, vinyl, leather, fabric, rubber, plastic and fabric), degreasers, polishes (glass, wood, leather, plastic, marble, granite, and tile, etc.), and metal polishes and cleaners. Antioxidants are suitable to protect fragrances in above products as well as in dryer sheets. The present invention also relates to home care products such as candles, gel candles, air fresheners and fragrance oils (for the home).

Typical examples of household cleaning and treating agents are listed in the table below:

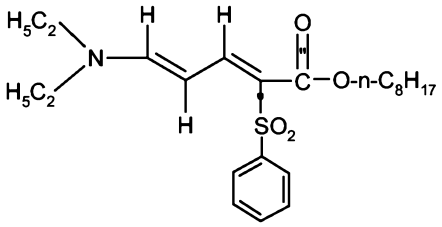
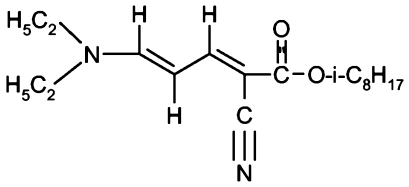
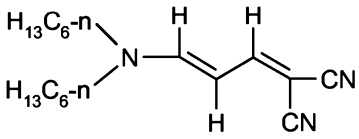
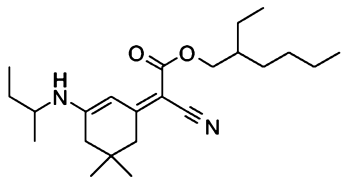
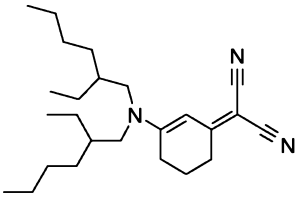
Household cleaners/household treating agents	Ingredients
detergent concentrate	surfactant mixture, ethanol, antioxidant, water, UV absorbers, antioxidants
shoe polishwax	wax emulsifier, antioxidant, water, preservative, UV absorbers, antioxidants
wax-containing floor cleaning agent	emulsifier, wax, sodium chloride, light stabiliser of formulae (1) and (2), water, preservative UV absorbers, antioxidant

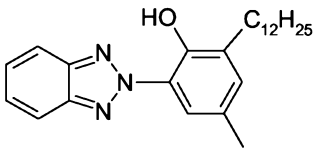
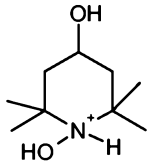
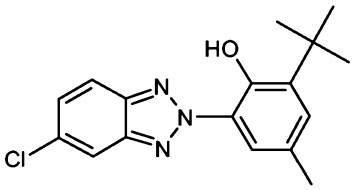
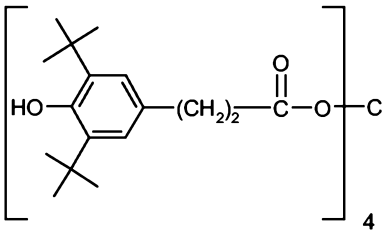
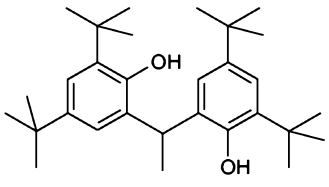
The stabilizers of formula (1) according to the present invention are for example incorporated by dissolution in an oil phase or alcoholic or water phase, where required at elevated temperature.

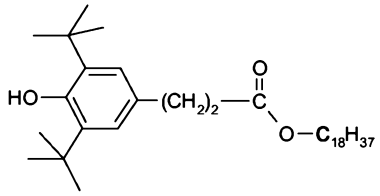
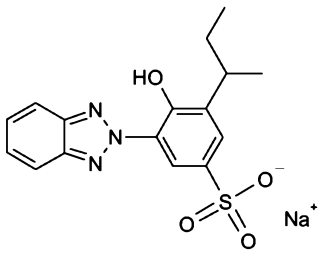
The present body care products and household products have high stability towards color changes and chemical degradation of the ingredients present in these products. For example, present compositions that comprise a dye are found to have excellent color stability.

The following Examples illustrate the invention.

In the following Examples the stabilizers listed in the Table below have been used:

Comp.of formula	Structure
(101)	
(102)	
(103)	
(104)	 E/Z isomers
(105)	

Comp.of formula	Structure
AO 01	
AO 02	 citrate
AO 03	
AO 04	
AO 05	

Comp.of formula	Structure
AO 06	
AO 07	

Efficacy comparison to state-of-the art stabilizers

Expample 1:

The following colored basic shampoo formulation is prepared:

Sodium Laureth Ether Sulfate	10%
Cocamidopropylbetaine	3%
Citric Acid	to pH 5
FD&C Blue No. 1	0.002%
Stabilizer	q.a.

The following stabilized und unstabilized samples of this formulation are prepared for light stability testing:

1. unstabilized basic shampoo formulation
2. basic shampoo formulation plus 0.05% of the compound of formula (AO 07)
3. basic shampoo formulation plus 0.05% of compound of formula (101)
4. basic shampoo formulation plus 0.05% of compound of formula (102)
5. basic shampoo formulation plus 0.05% of compound of formula (103)
6. basic shampoo formulation plus 0.05% of compound of formula (104)
7. basic shampoo formulation plus 0.05% of compound of formula (105)

The formulations were filled into 30 ml glass bottles and irradiated in an ATLAS Suntest XLS+ Xenon Lamp (light intensity 500W/m2, spectrum of light adjusted to indoor conditions, sample chamber temperature: 32°C).

The results are listed in the table below.

Sample	Irradiation Time until samples were significantly faded
1	8 hours (colorless)
2	15 hours (colorless)
3	21 hours (faded, but still colored)
4	70 hours (faded, but still colored)
5	70 hours (faded, but still colored)
6	70 hours (faded, but still colored)
7	40 hours (faded, but still colored)

Sample 3-7 comprising a stabilizer according to the present invention exhibits significantly better light stability compared to the state-of-the-art UV absorber of formula (AO 07).

Example 2:

The following colored basic shampoo formulation is prepared:

Sodium Laureth Ether Sulfate	10%
Cocamidopropylbetaine	3%
Citric Acid	to pH 5
FD&C Blue No. 1	0.002%
Stabilizer	q.a.

The following stabilized und unstabilized samples of this formulation are prepared for light stability testing:

1. unstabilized basic shampoo formulation
2. basic shampoo formulation plus 0.05% of the compound of formula (AO 07)
3. basic shampoo formulation plus 0.05% of the compound (AO 07) plus 0.003% or compound AO 02
4. basic shampoo formulation plus 0.05% of compound of formula (104).

The formulations were filled into 30 ml glass bottles and irradiated in an ATLAS Suntest XLS+ Xenon Lamp (light intensity 500W/m2, spectrum of light adjusted to indoor conditions, sample chamber temperature: 32°C).

The results are listed in the table below.

Sample	Irradiation Time until samples were significantly faded
1	8 hours
2	25 hours
3	45 hours
4	65 hours

Sample 4 comprises a stabilizer according to the present invention. It exhibits significantly better light stability compared to the state-of-the-art UV absorber of formula (AO 01), and performed even better than the highly effective stabilizer combination of sample 3.

Example 3:

The following stabilized and unstabilized samples were prepared for antioxidation testing:

1. pure linoleic acid
2. linoleic acid containing 0,05 % of compound of formula (104).

The samples were placed in a RACIMAT and heated to 80 °C. An airflow of 15 L/min was adjusted. The airstream bubbles through each heated sample and afterwards through a water reservoir. Thus all volatile organic compounds formed by the oxidation process are carried into the water reservoir by the airstream. The conductivity of the water reservoir is monitored online during the measurement. Once oxidation starts volatile organic compounds like formic acid are transported into the water reservoir which results in a rapid (exponential) increase of conductivity. The time until oxidation starts is called “induction time”.

The results are listed in the table below.

Sample	Induction Time
1	1,15 hours
2	1,98 hours

Sample 2 comprising a stabilizer according to the present invention exhibits better oxidation stability compared to the unstabilized sample.

Example 4-15: Preparation of body-care and household formulations

Example 4: Preparation of a sprayable hair styling gel		
Phase	Ingredients	(w/w) %
A	carbomer (1% dispersion)	0.30
	water, demin.	30.00
B	glycerol	2.00
	methylparaben	0.20
C	water, demin.	ad 100
	PVP/VA copolymer	8.00
	triethanolamine (88%)	0.12
	EDTA, disodium salt	0.01
	light stabilizer of formula (101)	0.10

Preparation:

The components (A) are dispersed at room temperature.

(B) is mixed under heating until the paraben is completely dissolved and then (B) is added with gentle stirring to (A).

(C) is blended until it is completely dissolved and is slowly added under stirring to the mixture of (A) and (B).

The transparency of the gel can be increased by adding small amounts of triethanolamine (pH=5.6-5.75).

Example 5: Preparation of a baby shampoo	
Ingredients	(w/w) %
cocoamidopropylbetaine	35.00
water, demin.	ad.100
citric acid	q.s. (pH)
polyquaternium-15	0.15
perfume oil	0.30
chlorophyll	0.20
light stabilizer of formula (102)	0.02
Compound of formula (AO 01)	0.02
colorant (D&C Yellow No.5)	0.02
sodium chloride	0.30

Preparation: Surfactant and water are blended until a homogeneous solution is obtained. The pH is adjusted to 6.0-6.5 with citric acid and the other components are added in the indicated sequence. The mixture is stirred until it is completely dissolved.

Example 6: Preparation of a perfumed toilet water	
Ingredients	(w/w) %
ethanol, 96%	60
d-limonene	5
cedrene	1.5
citronellol	0.5
savin	0.5
light stabilizer of formula (103)	0.05
light stabilizer of formala (AO 01)	0.05
light stabilizer of formula (AO 02)	0.03
Antioxidant of formula (AO 06)	0.02
S,S-EDDS	0.01
colorant (D&C Yellow No.5)	0.1
water	ad. 100

Preparation: The components are thoroughly mixed in the indicated sequence at 50°C. A clear homogeneous solution is obtained.

Example 7: Preparation of a lipstick, non-greasy	
Ingredients	(w/w) %
Carnauba wax	2.5
Beeswax, white	20.0
Ozekerite	10.0
Lanoline, anhydrous	5.0
Cetyl alcohol	2.0
Liquid paraffin	3.0
Isopropyl Myristate	3.0
Propylene glycol recinoleate	4.0
CI Pigment Red 4	9.0
CI Pigment Blue 15	1.0
Light stabilizer of formula (101)	0.1
Castor Oil	ad 100

Example 8: Preparation of a lipstick, transfer resistant	
Ingredients	(w/w) %
Cyclomethicone	41.50
Isodecane	10.00
D&C Red No. 7	8.00
Synthetic wax	6.00
Isostearyltrimethylpropane siloxysilicate	5.00

Example 8: Preparation of a lipstick, transfer resistant	
Ingredients	(w/w) %
Cetylstearate/acetylated lanolin, 90:10	5.00
Ceresin	4.00
Paraffin	3.00
Titanium dioxide	2.00
Methylparaben	0.30
Propylparaben	0.10
Antioxidant of formula (AO 04)	0.10
light stabilizer of formula (101)	0.10

Example 9: Preparation of a Rouge (powder)	
Ingredients	(w/w) %
Talcum	56
Zinc Stearate	15
Rice starch	15
Iron Oxide Red	12
Perfume	q.s.
light stabilizer of formula (101)	0.1

Example 10: Preparation of a Foundation cream	
Ingredients	(w/w) %
Titanium dioxide	12.79
Oleyl alcohol	4.57
Glyceryl stearate	3.65
Propylene glycol	3.65
Stearic acid	1.83
Magnesium aluminium silicate	0.91
Triethanolamine 99%	0.91
Iron Oxide Yellow	0.64
Iron Oxide Red	0.32
CI Pigment Brown 6	0.37
Carboxymethyl cellulose	0.10
light stabilizer of formula (101)	0.10
Water	ad 100

Example 11: Preparation of an Eyeliner	
Ingredients	(w/w) %
Polysaccharide resin (Kama KM 13, Kama)	8.00
Iron Oxide Black	6.50
Carnauba wax	1.00
Triethanolamin, 99%	1.00
Hydrogenated polyisobutane	1.00
Hydrogenated polydecene	1.00
Sorbitan sesquioleate	1.00
Xanthum gum	0.50

Example 11: Preparation of an Eyeliner	
Ingredients	(w/w) %
Polysaccharide resin (Kama KM 13, Kama)	8.00
Carboxymethyl cellulose	0.40
Magnesium aluminium silicate	0.40
Methyl paraben	0.35
Stearic acid	2.50
Lecithin	0.20
Imidazolidinyl urea	0.10
light stabilizer of formula (102)	0.10
Antioxidant of formula (AO 05)	0.05
Water	to 100

Example 12: Preparation of an Eyelash Makeup	
Ingredients	(w/w) %
Paraffin Wax	10.00
Starch	5.00
Polyethylene	5.00
Iron Oxide Black	7.00
Carbomer (Carbopol, BFGoodrich)	0.50
Hydroxyethylcellulose	0.50
Panthenol	2.00
Light stabilizer of formula (103)	0.05
Water	ad 100

Example 13: Preparation of a Nail Varnish	
Ingredients	(w/w) %
Poly(1-trimethylsilylpropylene)	0.30
Nitrocellulose	12.00
Alkyd resin	10.00
Dibutyl phthalate	4.00
Camphor	2.00
Butyl acetate	49.50
Toluene	20.00
Pigment Red 57.1	1.00
Quaternary bentonite	1.00
Light stabilizer of formula (101)	0.20
Light stabilizer of formula (AO 03)	0.10

Preparation of formulations of household products

Example 14: Preparation of a green-colored glass detergent:	
Ingredients	(w/w) %
anionic / amphoteric surfactants (Lumorol RK)	0.7
butyl glycol	5.0

Example 14: Preparation of a green-colored glass detergent	
isopropanol	20.0
d-limonene	4.00
colorant (D&C Green No.2)	0.05
light stabilizer of formula (AO 02)	0.05
light stabilizer of formula (102)	0.05
water, demin,	ad. 100

Preparation: The components are dissolved in the indicated sequence until a clear homogenous mixture is obtained.

Example 15: Preparation of a floor wax	
Ingredients	(w/w) %
wax mixture	12
white spirit	ad 100
d-limonene	4.00
light stabiliser of formula (103)	0.10

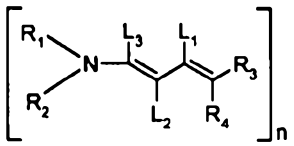
Preparation: The components are stirred in the indicated sequence until a homogenous mixture is obtained.

Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that the prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to which this specification relates.

The claims defining the invention are as follows:

1. Use of stabilizers of formula

(1)  , wherein

L_1, L_2 or L_3 independently of each other are hydrogen;

R_4 is CN; $-COR_7$; $-COOR_7$; $-SO_2R_7$; $-CONR_7R_8$; C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkynyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; C_1-C_1alkylcarbonylamino-C_6-C_{20}aryl; C_4-C_9heteroaryl;

R_5, R_6, R_7 and R_8 are independently of each other hydrogen; C_1-C_{22}alkyl, C_2-C_{22}alkenyl, C_2-C_{22}alkynyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; COR_9; -(CO)-COO-R_9; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; C_1-C_5alkoxy-C_6-C_{20}aryl; $-(CH_2)_t-SO_3H$; $-(CH_2)_t$-CO)-OR_9; $-(CH_2)_t$-O-C_6-C_{10}aryl; $-(CH_2)_vCOO-R_9$; C_4-C_9heteroaryl; $-(CH_2)_u-SiR_{15}R_{16}R_{17}$; or a radical -X-Sil;

R_9 is hydrogen; C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkynyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_5-C_{11}heteroaralkyl; C_6-C_{20}aryl; or C_4-C_9heteroaryl; or

R_3 and R_4, R_1 and R_2, R_7 and R_8, R_5 and R_6 may be linked together to form 1, 2, 3 or 4 carbocyclic or N, O and/or S-heterocyclic rings, which may be further fused with other aromatic rings and each N in a N-heterocyclic ring may be unsubstituted or substituted by R_{10},

and each alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkylene group may be unsubstituted or substituted by one or more R_{11};

and each aryl, heteroaryl, aralkyl, arylene, heteroarylene or aralkylene may be unsubstituted or substituted by one or more R_{12};

R_{10} is R_{13}; COR_{13}; $COOR_{13}$; or $CONR_{13}R_{14}$;

R_{11} is halogen, OH; $NR_{15}R_{16}$; O-R_{15}; S-R_{15}; O-CO-R_{15}; CO-R_{15}; oxo; thiono; CN; $COOR_{15}$; $CONR_{15}R_{16}$; $SO_2NR_{15}R_{16}$; SO_2R_{15}; SO_3R_{15}; $SiR_{15}R_{16}R_{17}$; $OSiR_{15}R_{16}R_{17}$; $POR_{15}R_{16}$; or a radical -X-Sil;

R_{12} is C_1-C_{12}alkylthio; C_3-C_{12}cycloalkylthio; C_1-C_{12}alkenylthio; C_3-C_{12}cycloalkenylthio; C_1-C_{12}alkoxy; C_3-C_{12}cycloalkoxy; C_1-C_{12}alkenyloxy; or C_3-C_{12}cycloalkenyloxy which may be unsubstituted or substituted by one or more R_{11}; halogen; CN; SH; OH; CHO; R_{18};OR_{18}; SR_{18}; $C(R_{18})=CR_{19}R_{20}$; O-CO-R_{19}; $NR_{18}R_{19}$; $CONR_{18}R_{19}$; $SO_2NR_{18}R_{19}$; SO_2R_{18}; $COOR_{18}$, $OCOOR_{18}$; $NR_{18}COR_{19}$; $NR_{19}COOR_{20}$; $SiR_{15}R_{16}R_{17}$; $OSiR_{15}R_{16}R_{17}$; $P(=O)R_{19}R_{20}$; or a radical -X-Sil;

R_{13}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, R_{19} and R_{20} independently of each other are hydrogen; C_1-C_{22}alkyl; C_3-C_{12}cycloalkyl; C_2-C_{12}alkenyl; C_3-C_{12}cycloalkenyl; C_6-C_{14}aryl; C_4-C_{12}heteroaryl; C_7-C_{18}aralkyl; or C_5-C_{16}heteroaralkyl; or

R_{13} and R_{14}, R_{15} and R_{16}, R_{16} and R_{17} and/or R_{18} and R_{19} may be linked together to form unsubstituted or C_1-C_4alkyl-substituted pyrrolidine, piperidine, piperazine or morpholine;

X is a linker; and

Sil is a silane-, oligosiloxane or polysiloxane moiety;

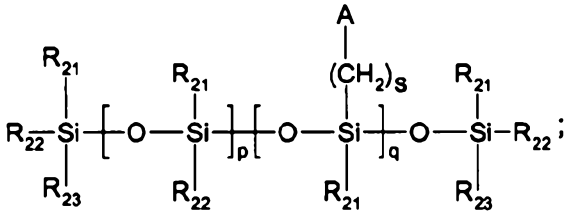
t is a number from 0 to 12;

u is a number from 1 to 12;

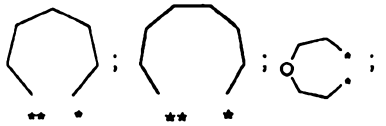
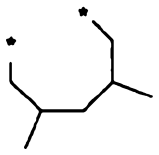
v is a number from 0 to 12;

if n = 1

R_1 and R_2 independently of each other hydrogen; C_1-C_{22}alkyl; hydroxy-C_1-C_{22}alkyl; C_2-C_{22}alkenyl; C_2-C_{22}alkynyl; C_3-C_{12}cycloalkyl; C_3-C_{12}cycloalkenyl; C_7-C_{20}aralkyl; C_1-C_{20}heteroalkyl; C_3-C_{12}cycloheteroalkyl; C_6-C_{20}aryl; C_5-C_{11}heteroaralkyl; C_4-C_9heteroaryl; or a radical of formula



; or R_1 and R_2 together form a bivalent

radical selected from  and  ;

R_{21}, R_{22}, R_{23} independently from each other are C_1-C_{22}alkyl; or C_1-C_{22}alkoxy;

A is the bond to the linker X;

R_3 is CN; NR_5R_6; $-COR_5$; $-COOR_5$; $-SO_2R_5$; $-CONR_5R_6$; C_6-C_{20}aryl; or C_4-C_9heteroaryl;

p is a number from 0 to 100

q is a number from 1 to 20;

s is a number from 0 to 4;

if n = 2

R_1 and R_2 are each a bivalent radical selected from C_1-C_5alkylene which may be interrupted by one or more oxygen atoms; or

R_1 and R_2 together with the nitrogen atoms form a six-membered heterocyclic ring; and simultaneously R_3 is defined as for n = 1; or

R_3 is a bivalent radical of formula $-CO-V_1-C_1-C_{12}$alkylene-W_1-*, wherein the asterix indicates the bond to the second R_3

V_1 is -O-; or $-NR_7$-; or the direct bond;

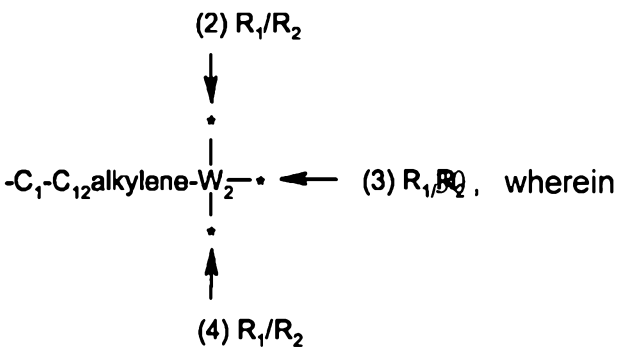
W_1 is the linkage to the second R_3, wherein W_1 is the direct bond; or selected from C_1-C_{12}alkylene; or phenylene; and

R_1 and R_2 simultaneously are defined as for n = 1;

if n = 3

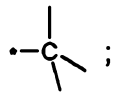
one of R_1, R_2 or R_3 is a trivalent radical;

if n = 4

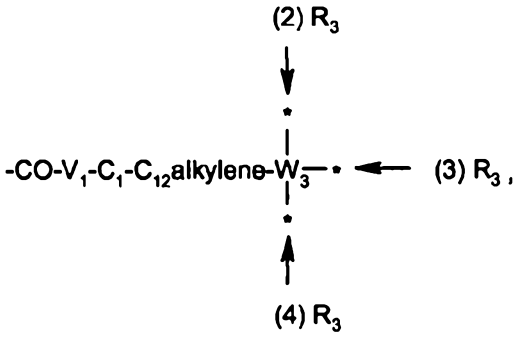
R_1 or R_2 is a radical of formula 

, wherein

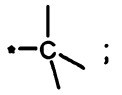
the asterices indicate the bond to the second, third and fourth R_1/R_2;

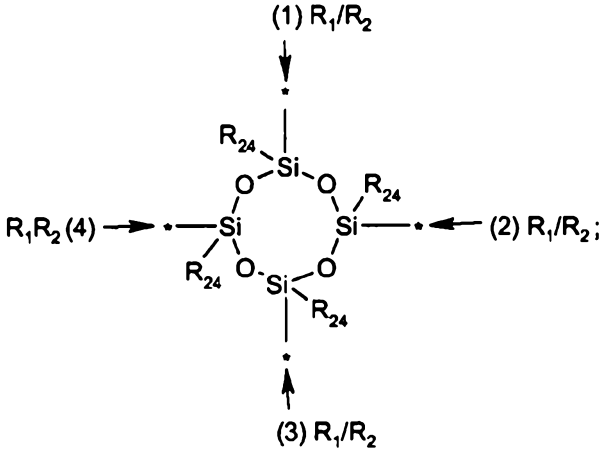
W_2 is  ;

R_3 is defined as for n = 1; or

R_3 is a radical of formula 

wherein the asterices indicate the bond to the second (2), third (3) and fourth (4) R_3; and

W_3 is  ; or

R_1 or R_2 is a radical of formula 

the asterices indicate the bond to the second, third and fourth R_1/R_2;

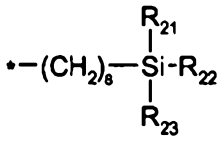
R_{24} is C_1-C_{22}alkyl; or C_1-C_{22}alkoxy;

for protecting body-care and household products from photolytic and oxidative degradation.

2. Use according to claim 1, wherein

R_1 and R_2 independently from each other are C_1-C_{12}alkyl; hydroxy-C_1-C_{12}alkyl;

phenyl or phenyl-C_1-C_5alkyl, which may be substituted by one or more C_1-C_5alkyl, or SO_3M; or a radical of formula



wherein

n is 1; and

R_{21}, R_{22}, R_{23} and s are defined as in claim 1.

3. Use according to claim 2, wherein

R_1 and R_2, independently from each other are C_1-C_4alkyl; and

n is 1.

4. Use according to any one of claims 1 to 3, wherein

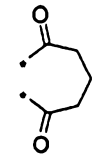
R_3 and R_4, independently from each other are CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7; wherein

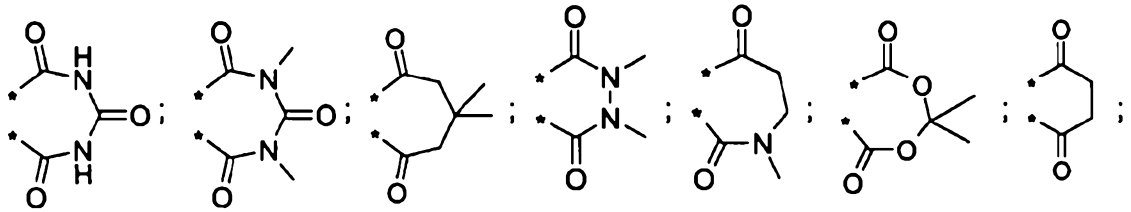
R_7 and R_8, independently from each other are C_1-C_{22}alkyl; phenyl; or a radical -X-Sil;

n is 1; and

X and Sil are defined as in claim 1.

5. Use according to any one of claims 1 to 3, wherein

R_3 and R_4 together form a carbocyclic or heterocyclic biradical selected from  ;



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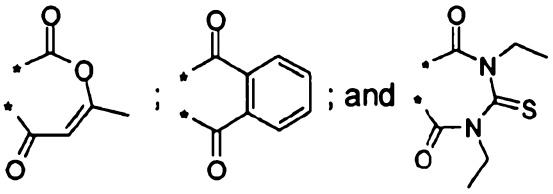
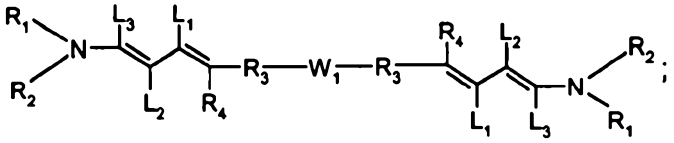
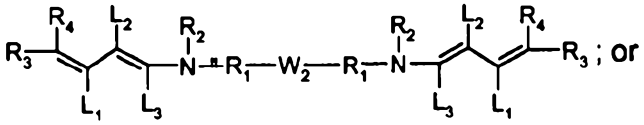
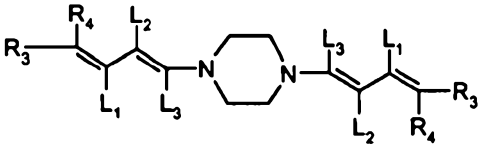


6. Use according to claim 1, wherein the stabilizers correspond to formula

(2a) 

(2b) 

(2c) 

, wherein

R_1, R_2, R_3, R_4, L_1, L_2, L_3 W_1 and W_2 are defined as in claim 1.

7. Use according to claim 6, wherein

in formula (2a)

R_3 is a radical of formula -CO-V_1-C_1-C_{12}alkylene-**, wherein

V_1 is -O; or -NH-;

W_1 is the direct bond; C_1-C_4alkylene; or phenylene;

R_1 and R_2, independently from each other are C_1-C_{12}alkyl;

L_1, L_2 and L_3 independently from each other are hydrogen; or C_1-C_5alkyl; or

L_3 and R_2 together form a heterocyclic ring;

R_4 is CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7; and

R_7 is C_1-C_{22}alkyl; or phenyl.

8. Use according to claim 6, wherein

in formula (2b)

R_1 is C_1-C_3alkylene;

L_1, L_2 and L_3 independently from each other are hydrogen; or C_1-C_5alkyl; or

L_1 and L_3 together form a carbocyclic ring;

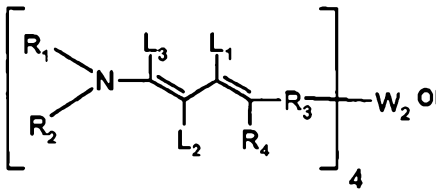
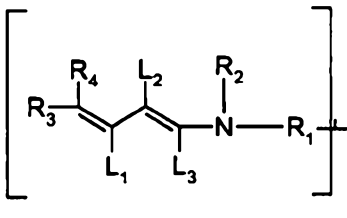
R_2 is hydrogen; or C_1-C_5alkyl;

W_1 is C_1-C_3alkylene; or the direct bond;

R_3 and R_4 independently from each other are CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7; and

R_7 and R_8, independently from each other are C_1-C_{22}alkyl; or phenyl.

9. Use according to claim 1, wherein the stabilizers correspond to the formula

(3a)  or (3b)  , wherein

R_1, R_2, R_3, R_4, L_1, L_2, L_3, W_2 and W_3 are defined as in claim 1.

10. Use according to claim 9, wherein

in formula (3a)

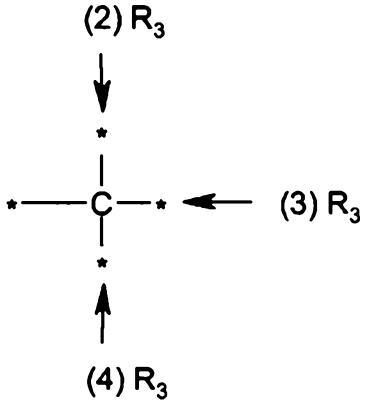
L_1, L_2 and L_3 independently from each other are hydrogen; hydroxy; C_1-C_5alkyl; or

L_1 and L_3 together form a carbocyclic ring;

R_1 and R_2 independently from each other are hydrogen; or C_1-C_{12}alkyl;

R_3 is *-CO-V_1-C_1-C_{12}alkylene-**;

V_1 is -O; or -NH-;

W is a tetravalent radical of formula 

R_4 is CN; COR_7; $COOR_7$; $CONR_7R_8$; SO_2R_7; and

R_7 and R_8, independently from each other are C_1-C_{22}alkyl; or phenyl.

11. Use of the light stabilizer according to any one of claims 1 to 10 in body-care products for the skin and its adnexa.

12. Use according to claim 11, wherein the body-care products are selected from skin-care products, bath and shower additives, preparations containing fragrances and odoriferous substances, hair-care products, dentifrices, deodorizing and antiperspirant preparations, decorative preparations, light protection formulations and preparations containing active ingredients.

13. Use according to claim 11, wherein the body-care products are selected from body oils, body lotions, body gels, treatment creams, skin protection ointments, shaving preparations and skin powders.

14. Use according to claim 11, wherein the preparations contain fragrances and odoriferous substances which are selected from scents, perfumes, toilet waters and shaving lotions (aftershave preparations).

15. Use according to claim 11, wherein the body-care products are hair-care products and are selected from shampoos, hair conditioners, products for styling and treating hair, perming agents, hair sprays and lacquers, hair gels, hair fixatives and hair dyeing or bleaching agents.

16. Use according to claim 11, wherein the body-care products are decorative preparations and are selected from lipsticks, nail varnishes, eye shadows, mascaras, dry and moist make-up, rouge, powders, depilatory agents and suntan lotions.

17. Use according to claim 11, wherein the cosmetic preparations contain active ingredients and are selected from hormone preparations, vitamin preparations, vegetable extract preparations and antibacterial preparations.

18. Use of the light stabilizer according to any one of claims 1 to 10 in household cleaning and treating agents.

19. Use according to claim 18 wherein the household cleaning and treating agents are selected from washing, rinsing and dishwashing agents, shoe polishes, polishing waxes, floor detergents and polishes, all purpose cleaners, bath and toilet cleaners, kitchen cleaners, car shampoos and waxes, neutral, acidic and alkaline cleaners, metal, glass and ceramic cleaners, textile care agents, agents for removing rust, color and stains (stain remover salt), bleaches, furniture and multipurpose polishes, surface protecting formulations, film forming formulations, air care formulations and candles.