

ESCOBAR - URIBE ASOCIADOS

A B O G A D O S

Carrera 11A No. 94-76 Of. 305 - P.O. Box 94948, Bogotá, Colombia, S.A.

Tels.: (571) 6162051 - 6162061 - 6161859 - 6161869

Fax: (571) 6161889

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO DIVISIÓN DE NUEVAS CREACIONES

E. S. D.

Re: Expediente No. 01.053.813
Solicitud de Patente en nombre de
CIBA SPECIALTY CHEMICALS HOLDING INC.

SUPERINDUSTRIA Y COMERCIO
Indicación: 01053813 00000031 Folios: 43
Fecha (Act): 2001-08-23 16:22:49
Trámite: 002 PATENTES D 1 REGISTRAR 329 COMPLETAR
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

Yo, JIMENA ESCOBAR URIBE, identificada como aparece al pie de mi firma, domiciliada en Bogotá, en la Carrera 11 A No. 94-76 Of. 305, obrando como apoderada de la sociedad CIBA SPECIALTY CHEMICALS HOLDING INC., solicitante de la patente de la referencia, anexo al presente memorial el siguiente documento:

Copia auténtica de la certificada de la solicitud de Patente Número 00810666.8 presentada en Alemania (Oficina de Patentes Europea) el día 26 de julio de 2000, con la debida traducción de lo pertinente, incluyendo el capítulo reivindicatorio.

A este mismo respecto, debe tenerse en cuenta que en la segunda página de la copia en mención la Oficina de Patentes correspondiente certificó la fecha de presentación de esa solicitud, cumpliéndose de esta forma todos y cada uno de los requisitos establecidos en el inciso segundo del artículo 10 de la Decisión 486 de la Comisión de la Comunidad Andina.

Señor Superintendente,


JIMENA ESCOBAR URIBE
C.C.39.779.452 de usaquén
T.P. 68228
Cód. 5376

Oficina de Patentes Europea

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Certificado

Los documentos adjuntos son copias exactas de la solicitud de patente Europea descrita en la página siguiente, tal cual fue originalmente presentada.

Solicitud de patente No. 00810666.8

Por el Presidente de la Oficina de Patentes Europea

(fdo) I.L.C. HATTEN-HECKMAN

La Haya, 03/05/01

Oficina de Patentes Europea

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página 2 del certificado

Solicitud No. 00810666.8

Fecha de presentación: 26/07/00

Solicitante: Ciba Specialty Chemical Holding, Inc
4057 Basilea
Suiza

Título de la invención:
Artículos transparentes de polímero de baja consistencia

Prioridad (es) reivindicada (s):

Estado: Fecha: No.:

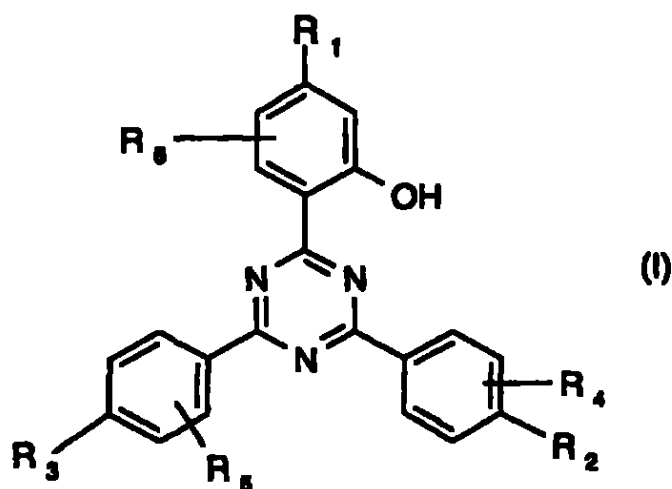
Clasificación Internacional:
C08K5/3492, C08K5/00, C08L23/02

Estados contratantes designados en la fecha de presentación:
AT/BE/CH/CY/DE/DK/ES/FI/FR/GB/GR/IE/IT/LI/LU/
MC/NL/PT/SE/TR

Notas:

LO QUE SE REIVINDICA ES:

1. Un artículo de poliolefina transparente, estabilizado contra los efectos de la luz, oxígeno, calor y químicos agresivos por la adición de 0.005 – 0.3% en peso de poliolefina, de un absorbente de rayos UV triazina hidroxifenil; dicho artículo se caracteriza por tener un espesor entre 1 y 500 μm .
2. Un artículo de poliolefina transparente de la Reivindicación 1 que incluye como estabilizante adicional una amina
3. El artículo de poliolefina transparente de la Reivindicación 2 que incluye la amina impedida estéricamente en una cantidad de 0.01 - 6 % por peso de poliolefina
4. Un artículo de poliolefina transparente de la Reivindicación 3 en donde la relación de amina impedida estéricamente al absorbente de UV triazina hidroxifenil esta en el rango de 2:1 hasta 20:1
5. El artículo de poliolefina transparente de la Reivindicación 2 en donde la amina impedida estéricamente pertenece al grupo de éteres de hidroxilamina
6. El artículo de poliolefina transparente de la Reivindicación 1 en donde el absorbente de UV triazina hidroxifenil esta representado por la Fórmula I



En donde

R_1 es H o OR_7 ;

R_2 y R_3 son independientemente , OR_9 ;

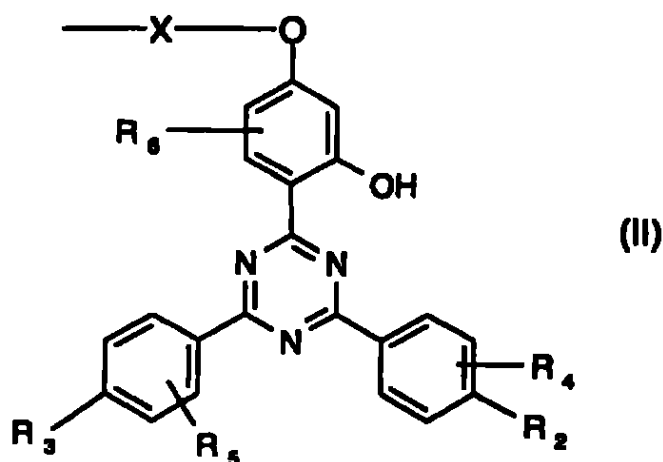
R_4 y R_5 son independientemente H, C_1-C_8 alquil, OR_{10} ;

R_6 es H, C_1-C_{12} cicloalquil, C_7-C_{12} fenil alquil, C_7-C_{12} alquil fenil, C_3-C_{12} alquenil, halógeno, OH, OR_9 .

R_8 es H; halógeno; C_1-C_{12} alcoxi; C_1-C_{12} alquil; C_3-C_{24} alquil interrumpido por oxígeno y/o sustituido por OH; o es $NH-CO-R_{14}$ o $NH-COO-R_{12}$;

R_7 , R_9 y R_{10} son independientemente H; C_1-C_{24} alquil; C_3-C_{12} alquenil; C_3-C_{24} alquil interrumpido por oxígeno y/o sustituido por OH; o es C_5-C_{12} cicloalquil, C_7-C_{12} fenil alquil, C_7-C_{12} alquil fenil; $CH_2CH(OH)CH_2OR_{11}$; C_1-C_{12} alquil sustituido por $COOR_{12}$, $CONR_{13}R_{14}$, $OCOR_{15}$, OH o halógeno;

y R_7 también adopta un residuo representado por la Fórmula II



en donde X es C_2-C_{24} alquileo; $-CH_2CH(OH)CH_2-$; $-CH_2CH(OH)CH_2O-$; $D-OCH_2CH(OH)CH_2-$; (C_1-C_{18} alquileo) - $CO-O-D-O-CO-(C_1-C_{18}$ alquileo); CO ; $CO-(C_2-C_{24}$ alquileo)- CO ; C_3-C_{24} alquileo interrumpido por oxígeno;

D es C_2-C_{12} alquileo; C_4-C_{30} alquileo interrumpido por O; fenileno; bifenileno o fenileno - E - fenileno;

E es O, S, SO_2 ; CH_2 ; CO o $-C(CH_3)_2-$;

R_{11} es H, C_1-C_{12} alquil; fenil; fenil sustituido por 1-3 C_1-C_4 alquil; C_5-C_{12} cicloalquil; C_7-C_{12} fenil alquil; C_3-C_{12} alquenil;

R_{12} es H; C_1-C_{24} alquil; C_3-C_{12} alquenil; C_3-C_{36} alquil interrumpido por oxígeno y/o sustituido por OH; o es C_5-C_{12} cicloalquil, C_7-C_{12} fenil alquil, C_7-C_{12} alquil fenil; fenil;

R_{13} y R_{14} son independientemente H, C_1-C_{18} alquil; fenil; fenil sustituido por 1-3 C_1-C_4 alquil y/o C_1-C_4 alcoxi; C_5-C_{12} cicloalquil; C_3-C_{12} alquenil;

R_{15} es C_1-C_{12} alquil; fenil; fenil sustituido por 1-3 C_1-C_4 alquil y/o C_1-C_4 alcoxi; C_5-C_{12} cicloalquil; C_3-C_{12} alquenil; C_1-C_{12} alcoxi; o es $NR_{13}R_{14}$

7. Un artículo de poliolefina transparente de la Reivindicación 6, en donde en la Fórmula I, R_4 , R_5 y R_6 son independientemente H;

R_4 es H; C_1 - C_4 alcoxi; C_1 - C_4 alquil;

R_7 , R_9 son independientemente H; C_1 - C_{18} alquil; C_3 - C_{12} alquenil; C_3 - C_{24} alquil interrumpido por oxígeno y/o sustituido por OH; o es C_5 - C_{12} Cícloalquil, C_7 - C_{12} fenil alquil, C_7 - C_{12} alquil fenil; C_1 - C_{12} alquil sustituido por $COOR_{12}$, $OCOR_{15}$, OH;

y R_7 también adopta un residuo representado por la fórmula II en donde X es C_2 - C_{18} alquileno; $-CH_2CH(OH)CH_2-$; $-CH_2CH(OH)CH_2O-D-OCH_2CH(OH)CH_2-$;

$(C_1$ - C_4 alquileno)-CO-O-D-O-CO- $(C_1$ - C_4 alquileno); CO; CO- $(C_2$ - C_{18} alquileno)-CO;

C_3 - C_{18} alquileno interrumpido por oxígeno; D es C_2 - C_{12} alquileno;

R_{12} es H; C_1 - C_{24} alquil; C_3 - C_{12} alquenil; C_3 - C_{24} alquil interrumpido por oxígeno y/o sustituido por OH; o es C_5 - C_{12} cícloalquil, C_7 - C_{12} fenil alquil, C_7 - C_{12} alquil fenil; fenil;

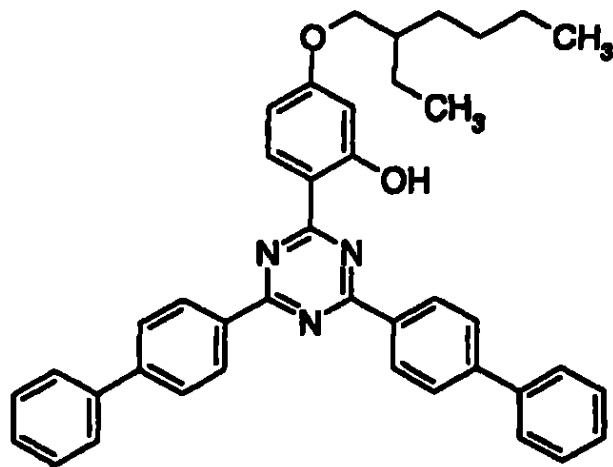
R_{15} es C_1 - C_{12} alquil; C_5 - C_{12} cícloalquil; C_3 - C_{12} alquenil.

8. Un artículo de poliolefina transparente de la Reivindicación 1 el cual es una película o capa que tiene un espesor entre 1 y 300 μm , especialmente entre 1 y 200 μm .

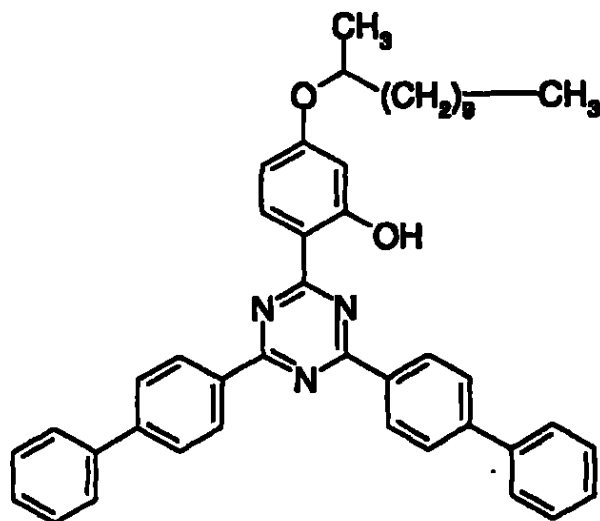
9. El uso de una película de poliolefina transparente de la Reivindicación 8 para suprimir el crecimiento microbiano en un cultivo protegido.
10. El proceso para suprimir el crecimiento microbiano en un ambiente protegido, cuyo proceso incluye el recubrir dicho ambiente con la película de poliolefina transparente de la Reivindicación 8.
11. El proceso de la Reivindicación 10, en donde el ambiente protegido es un cultivo de plantas.
12. Un método para filtrar selectivamente la radiación de luz artificial y / o solar a cultivos contenidos dentro de una casa verde, este método incluye el recubrir dicha casa verde con la película de poliolefina de la Reivindicación 8.
13. Un artículo de poliolefina transparente de la Reivindicación 1 en donde la poliolefina es polietileno o polipropileno.
14. Un artículo de poliolefina transparente de la Reivindicación 1 en donde es una película, fibra, tira o una cinta flexible, especialmente una película para agricultura.
15. Un artículo de poliolefina transparente de la Reivindicación 1 o 2 que además incluye un componente adicional, especialmente un estabilizador de luz adicional, un estabilizador de proceso, un relleno, un clarificante, un modificador o un ácido captador o "scavenger"

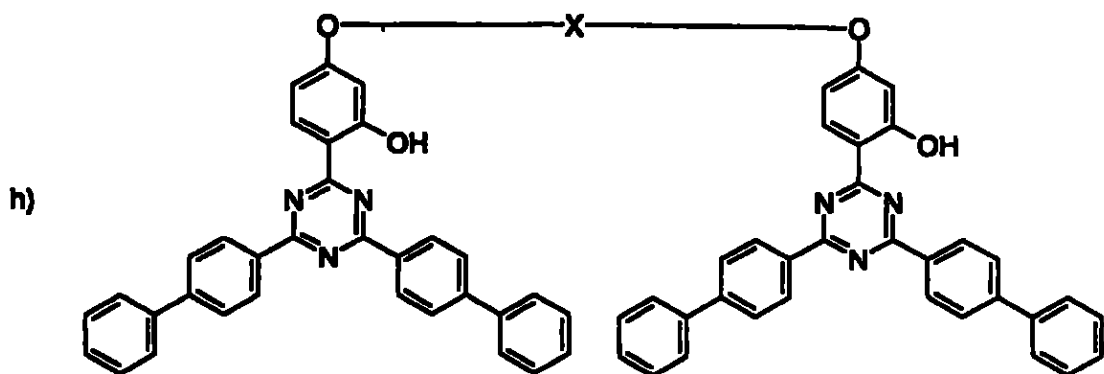
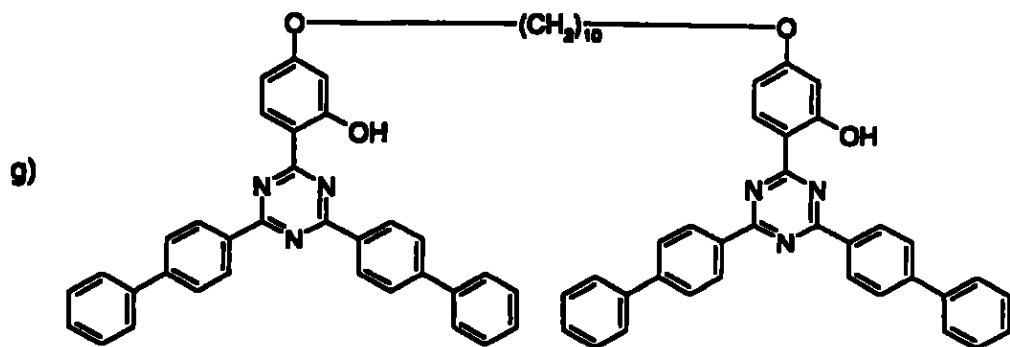
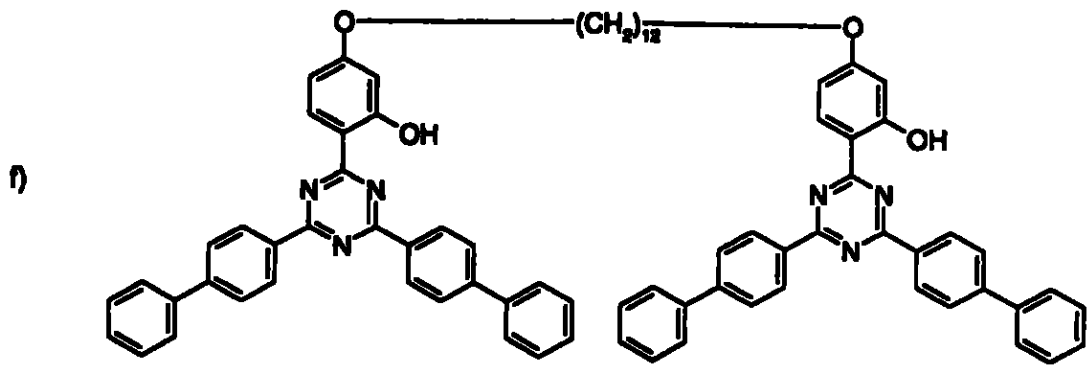
16. Un compuesto de una de las fórmulas a, b, f, g, o h

a)



b)





En donde X es $C_{13} - C_{24}$ alquileo; $(C_1 - C_{18}$ alquileo) - $CO - O - D - O - CO - (C_1 - C_{18}$ alquileo); $CO - (C_{13} - C_{24}$ alquileo) - CO ;
 $C_3 - C_{24}$ alquileo interrumpido por oxígeno, especialmente $(C_1 - C_3$ alquileo) - $O - (C_1 - C_3$ alquileo)



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Bescheinigung

Certificate

Attestation

Die angehefteten Unterla-
gen stimmen mit der
ursprünglich eingereichten
Fassung der auf dem näch-
sten Blatt bezeichneten
europäischen Patentanmel-
dung überein.

The attached documents
are exact copies of the
European patent application
described on the following
page, as originally filed.

Les documents fixés à
cette attestation sont
conformes à la version
initialement déposée de
la demande de brevet
européen spécifiée à la
page suivante.

Patentanmeldung Nr. Patent application No. Demande de brevet n°

00810666.8

Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
p.o.

I. L. C. Hatten

I.L.C. HATTEN-HECKMANN

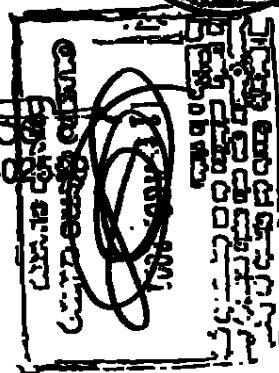


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M. DE ROO
(070) 3402599



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**Blatt 2 der Bescheinigung
Sheet 2 of the certificate
Page 2 de l'attestation**

Anmeldung Nr.: 00810666.8
Application no.:
Demande n°:

Anmeldetag: 26/07/00
Date of filing:
Date de dépôt:

Anmelder:
Applicant(s):
Demandeur(s):
Ciba Specialty Chemicals Holding Inc.
4057 Basel
SWITZERLAND

Bezeichnung der Erfindung:
Title of the invention:
Titre de l'invention:
Transparent polyolefin articles of low thickness

In Anspruch genommene Priorität(en) / Priority(ies) claimed / Priorité(s) revendiquée(s)

Staat:
State:
Pays:

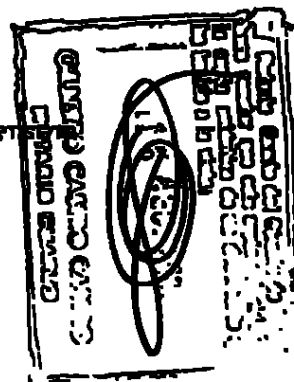
Tag:
Date:
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Anzeichen:
File no.
Numéro de dépôt:

Internationale Patentklassifikation:
International Patent classification:
Classification internationale des brevets:
C08K5/3492, C08K5/00, C08L23/02

Anmeldetag benannte Vertragsstaaten:
Contracting states designated at date of filing: AT/BE/CH/CY/DE/DK/ES/FI/FR/GB/GR/IE/IT/LU/LV/MC/NL/PT
Etats contractants désignés lors du dépôt:

Bemerkungen:
Remarks:
Remarques:



- 1 -

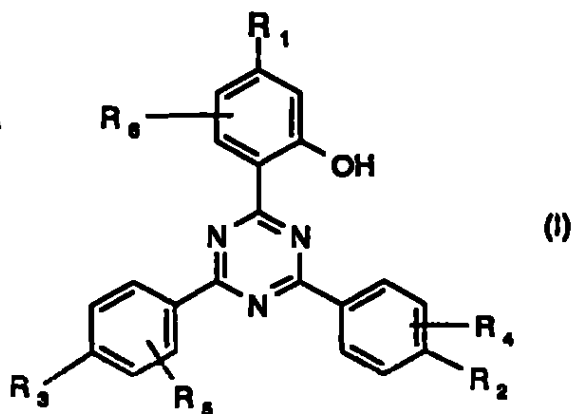
Transparent Polyolefin Articles of low Thickness

The invention relates to a novel polyolefin article of low thickness and good transparency having enhanced stability against the effects of light, oxygen, heat and aggressive chemicals, which is also effective as a selective UV filter for agricultural applications, and to some novel stabilizers suitable for this application.

Certain polyolefin articles containing UV absorbers of the type hydroxyphenyl triazine are known from GB-A-2319523, EP-A-704437, EP-A-704560, WO 99/57189.

Present invention pertains to a transparent polyolefin article stabilized by addition of 0.005-0.30 % by weight the polyolefin of a hydroxyphenyl triazine UV absorber, characterized in that the article has a thickness between 1 and 500 μm .

Preferred articles contain as a hydroxyphenyl triazine UV absorber a compound of the formula I



wherein

R_1 is H or OR_7 ;

R_2 and R_3 independently are H, , OR_8 ;

R_4 and R_5 independently are H, $\text{C}_1\text{-C}_8$ alkyl, OR_{10} ;

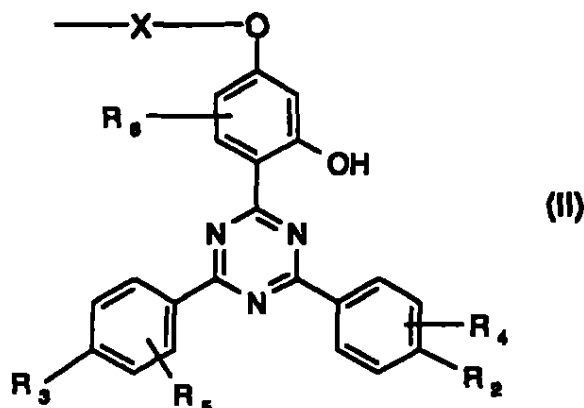
R_6 is H, $\text{C}_1\text{-C}_{18}$ alkyl, $\text{C}_5\text{-C}_{12}$ cycloalkyl, $\text{C}_7\text{-C}_{12}$ phenylalkyl, $\text{C}_7\text{-C}_{12}$ alkylphenyl, $\text{C}_7\text{-C}_{12}$ alkenyl, halogen, OH, OR_9 ;

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R_6 is H; halogen; C_1 - C_{12} alkoxy; C_1 - C_{12} alkyl; C_3 - C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is $NH-CO-R_{14}$ or $NH-COO-R_{12}$;

R_7 , R_8 and R_{10} independently are H; C_1 - C_{24} alkyl; C_3 - C_{12} alkenyl; C_3 - C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is C_5 - C_{12} cycloalkyl, C_7 - C_{12} phenylalkyl, C_7 - C_{12} alkylphenyl; $CH_2CH(OH)CH_2OR_{11}$; C_1 - C_{12} alkyl substituted by $COOR_{12}$, $CONR_{13}R_{14}$, $OCOR_{15}$, OH or halogen;

and R_7 also embraces a residue of formula II



wherein X is C_2 - C_{24} alkylene; $-CH_2CH(OH)CH_2-$; $-CH_2CH(OH)CH_2O-D-OCH_2CH(OH)CH_2-$;

$(C_1-C_{18}alkylene)-CO-O-D-O-CO-(C_1-C_{18}alkylene)-CO$; CO ; $CO-(C_2-C_{24}alkylene)-CO$;

C_3 - C_{24} alkylene interrupted by oxygen, e.g. $CH_2CH_2O-CH_2CH_2$;

D is C_2 - C_{12} alkylene; C_4 - C_{50} alkylene interrupted by O; phenylene; biphenylene or phenylene-E-phenylene;

E is O, S, SO_2 ; CH_2 ; CO or $-C(CH_3)_2$;

R_{11} is H, C_1 - C_{12} alkyl; phenyl; phenyl substituted by 1-3 C_1 - C_4 alkyl; C_5 - C_{12} cycloalkyl; C_7 - C_{12} phenylalkyl; C_3 - C_{12} alkenyl;

R_{12} is H; C_1 - C_{24} alkyl; C_3 - C_{12} alkenyl; C_3 - C_{30} alkyl interrupted by oxygen and/or substituted by OH; or is C_5 - C_{12} cycloalkyl, C_7 - C_{12} phenylalkyl, C_7 - C_{12} alkylphenyl; phenyl;

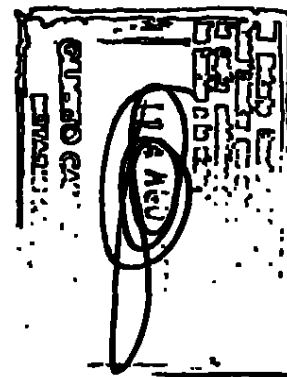
R_{13} and R_{14} independently are H, C_1 - C_{18} alkyl; phenyl; phenyl substituted by 1-3 C_1 - C_4 alkyl and/or C_1 - C_4 alkoxy; C_5 - C_{12} cycloalkyl; C_3 - C_{12} alkenyl;

R_{15} is C_1 - C_{12} alkyl; phenyl; phenyl substituted by 1-3 C_1 - C_4 alkyl and/or C_1 - C_4 alkoxy; C_5 - C_{12} cycloalkyl; C_3 - C_{12} alkenyl; C_1 - C_{12} alkoxy; or is $NR_{13}R_{14}$.

More preferably, in the hydroxyphenyl triazine UV absorber of the formula I

R_4 and R_5 and R_6 independently are H;

R_8 is H; C_1 - C_8 alkoxy; C_1 - C_8 alkyl;



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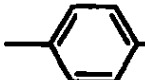
DESC

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R_7, R_8 independently are H; C_1-C_{10} alkyl; C_3-C_{12} alkenyl; C_3-C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is C_5-C_{12} cycloalkyl, C_7-C_{12} phenylalkyl, C_7-C_{12} alkylphenyl; C_1-C_{12} alkyl substituted by $COOR_{12}$, $OCOR_{15}$, OH;
 and R_7 also embraces a residue of formula II, wherein X is C_2-C_{18} alkylene; $-CH_2CH(OH)CH_2-$; $-CH_2CH(OH)CH_2O-D-OCH_2CH(OH)CH_2-$; $(C_1-C_4$ alkylene)-CO-O-D-O-CO-(C_1-C_4 alkylene); CO; CO-(C_2-C_{18} alkylene)-CO; C_3-C_{18} alkylene interrupted by oxygen;
 D is C_2-C_{12} alkylene;
 R_{12} is H; C_1-C_{24} alkyl; C_3-C_{12} alkenyl; C_3-C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is C_5-C_{12} cycloalkyl, C_7-C_{12} phenylalkyl, C_7-C_{12} alkylphenyl; phenyl;
 R_{15} is C_1-C_{12} alkyl; C_5-C_{12} cycloalkyl; C_3-C_{12} alkenyl;

especially

 R_1 is OR_7 ;

R_2 and R_3 independently are  R_8 , OR_8 ;

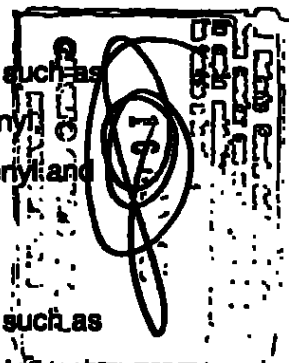
 R_4 and R_5 and R_6 are H; R_8 is H; C_1-C_8 alkoxy; C_1-C_4 alkyl; R_7, R_8 independently are C_4-C_{18} alkyl or C_5-C_{12} cycloalkyl;and R_7 also embraces a residue of formula II, wherein X is C_4-C_{18} alkylene.

Of utmost importance are compounds of the formula I, wherein R_1 is OR_7 ; R_2 and R_3 each are phenyl; R_4, R_5 and R_6 are hydrogen; and R_7 is C_4-C_{18} alkyl or C_5-C_{12} cycloalkyl or a residue of formula II, wherein X is C_4-C_{12} alkylene.

A halogen substituent is -F, -Cl, -Br or -I, preferably -F, -Cl or -Br and, in particular, -Cl.

Alkylphenyl is alkyl-substituted phenyl; C_7-C_{14} alkylphenyl embraces examples such as methylphenyl (tolyl), dimethylphenyl (xylyl), trimethylphenyl (mesityl), ethylphenyl, propylphenyl, butylphenyl, dibutylphenyl, pentylphenyl, hexylphenyl, heptylphenyl and octylphenyl.

Phenylalkyl is phenyl-substituted alkyl; C_7-C_{11} phenylalkyl embraces examples such as benzyl, α -methylbenzyl, α -ethylbenzyl, α, α -dimethylbenzyl, phenylethyl, phenylpropyl,



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phenylbutyl and phenylpentyl.

n-alkyl or alkyl-n is an unbranched alkyl radical.

Alkyl interrupted by O, NH, NR₁₃, etc., can generally comprise one or more nonadjacent heteroatoms. Preferably, a carbon atom of the alkyl chain bonds to not more than 1 heteroatom. R₇, R₈ and R₁₀, especially R₇, as alkyl substituted by COOR₁₂ is most preferably CH₂-COOR₁₂. R₁₂ is most preferably C₁-C₁₈alkyl, or C₆-C₁₂cycloalkyl; cycloalkyl is most preferably cyclohexyl or cyclododecyl.

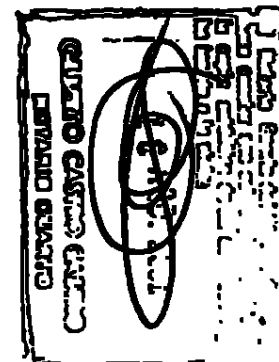
Within the scope of the stated definitions, the radicals R₄, R₅, R₆, R₈, R₉, R₁₁, R₁₂, R₁₃, R₁₄, R₁₅ as alkyl are branched or unbranched alkyl such as methyl, ethyl, propyl, isopropyl, n-butyl, sec-butyl, isobutyl, t-butyl, 2-ethylbutyl, n-pentyl, isopentyl, 1-methylpentyl, 1,3-dimethylbutyl, n-hexyl, 1-methylhexyl, n-heptyl, isoheptyl, 1,1,3,3-tetramethylbutyl, 1-methylheptyl, 3-methylheptyl, n-octyl, 2-ethylhexyl, 1,1,3-trimethylhexyl, 1,1,3,3-tetramethylpentyl, nonyl, decyl, undecyl, 1-methylundecyl, dodecyl, 1,1,3,3,5,5-hexamethylhexyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl and octadecyl.

C₁-C₄alkyl is especially methyl, ethyl, isopropyl, n-butyl, 2-butyl, 2-methylpropyl or tert-butyl.

Within the scope of the stated definitions, R₄, R₅, R₆, R₈, R₉, R₁₁, R₁₂, R₁₃, R₁₄, R₁₅ as alkenyl include allyl, isopropenyl, 2-butenyl, 3-butenyl, isobutenyl, n-penta-2,4-dienyl, 3-methyl-but-2-enyl.

R₄, R₅ and R₆ are most preferably hydrogen. R₂ and R₃ are most preferably phenyl or OR₉, especially phenyl. R₉ is most preferably C₁-C₄alkyl.

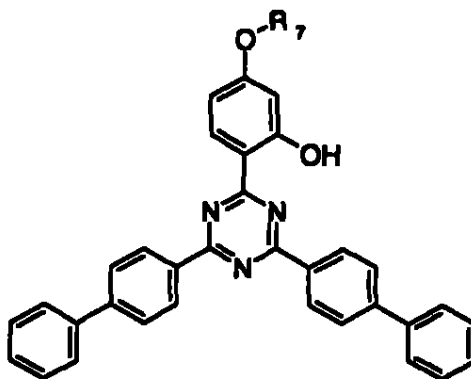
Examples for highly effective compounds of the formula I are as listed in the following tables:



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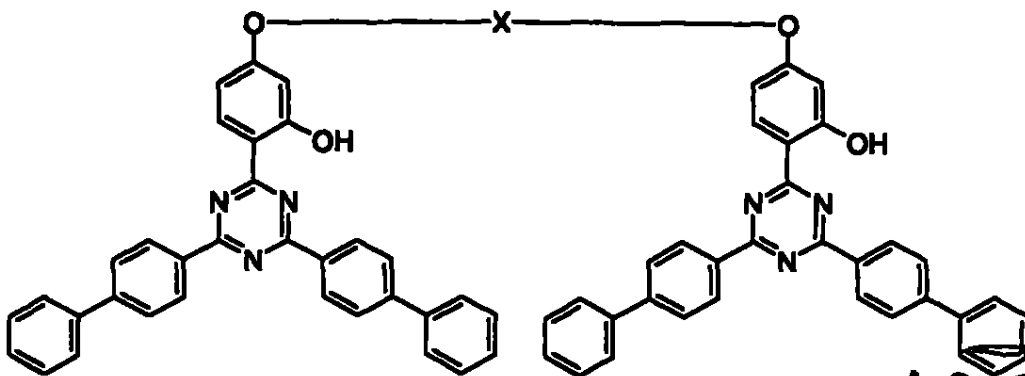
Table 1: Compounds of the formula



compound	R ₇
a)	CH ₂ CH(C ₂ H ₅)-(CH ₂) ₃ -CH ₃
b)	CH(CH ₃)-(CH ₂) ₈ -CH ₃
c)	n-C ₈ H ₁₃
d)	n-C ₉ H ₁₇
e)	n-C ₁₂ H ₂₅

In the above definitions, n denotes a straight alkyl chain.

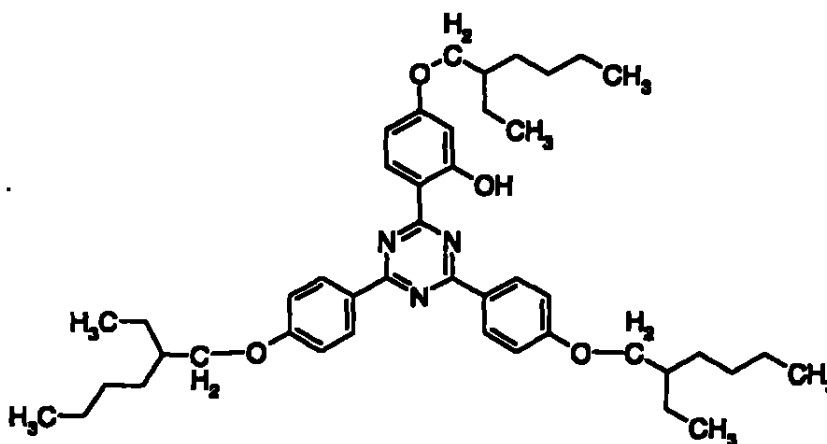
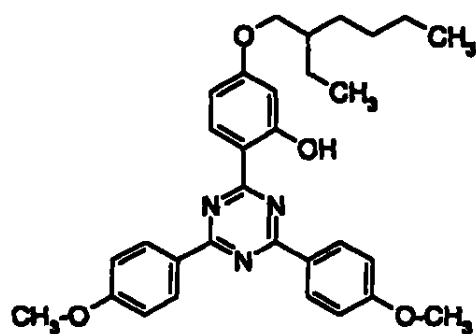
Table 2: Compounds of the formula



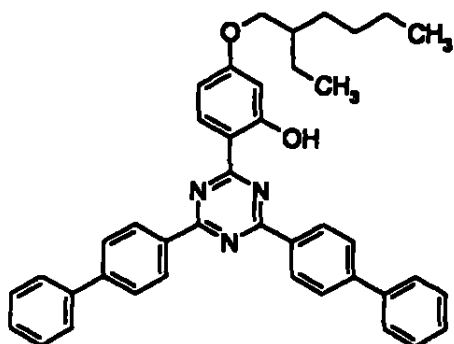
compound	X
f)	-(CH ₂) ₁₂ -
g)	-(CH ₂) ₁₀ -

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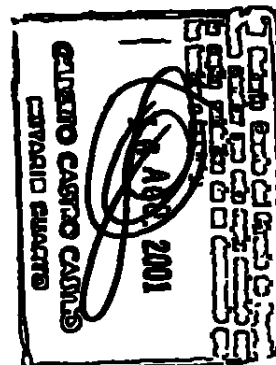
Further examples for highly effective compounds of the formula I are the compounds



Some compounds of formula I are known, e.g. from WO 96/28431, US-5591850, EP-A-434608; others, e.g. the compounds



(a)



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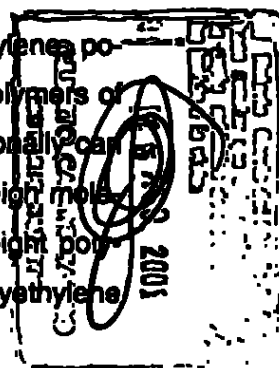
as well as (b), (f) and (g) are novel compounds. They are conveniently prepared in analogy to procedures described in these references, especially to the method given in example 18 of WO 96/28431.

A particular useful application of polyolefin films of present invention is their use as green-house films. Some types of crops are degraded by the UV-components of solar radiation which must be filtered off to obtain high quality and productivity of the crops. Additionally, some microorganisms, e.g. *Botrytis Cinerea*, as well as some harmful insects, e.g. white flies, aphides, thrips or leafminers, can proliferate under specific UV-irradiation. These pest can be significantly reduced when UV light does not or to less extent reach the plants. [*R. Reuveni et al., Development of photoselective PE films for control of foliar pathogens in greenhouse-grown crops, Plasticulture No. 102, p. 7 (1994); Y. Antignus et al., The use of UV absorbing plastic sheets to protect crops against insects and spread of virus diseases, CIPA Congress March 1997, pp.23-33*]. On the other hand, bee activity, requiring a certain band of UV radiation, needs to be retained in greenhouses in order to ensure fructification on flowering plants, e.g. tomato, cucumber, pumpkin etc.

Present hydroxyphenyl triazine UV absorbers show excellent compatibility and persistence in the polyolefin. The same time, these UV absorbers provide efficient and selective UV shielding for suppressing microbial growth in a protected environment, especially a plant cultivation, while retaining the UV irradiation necessary for bee activity. Thus, present invention also pertains to the use of a transparent polyolefin film as described above for suppressing microbial growth in a protected cultivation.

Examples for polyolefines to be used for manufacturing the articles of present invention include the following polymers:

1. Polymers of monoolefins and diolefins, for example polypropylene, polyisobutylene, polybut-1-ene, poly-4-methylpent-1-ene, polyisoprene or polybutadiene, as well as polymers of cycloolefins, for instance of cyclopentene or norbornene, polyethylene (which optionally can be crosslinked), for example high density polyethylene (HDPE), high density and high molecular weight polyethylene (HDPE-HMW), high density and ultrahigh molecular weight polyethylene (HDPE-UHMW), medium density polyethylene (MDPE), low density polyethylene (LDPE), linear low density polyethylene (LLDPE), (VLDPE) and (ULDPE).



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Polyolefins, i.e. the polymers of monoolefins exemplified in the preceding paragraph, preferably polyethylene and polypropylene, can be prepared by different, and especially by the following, methods:

- a) radical polymerisation (normally under high pressure and at elevated temperature).
- b) catalytic polymerisation using a catalyst that normally contains one or more than one metal of groups IVb, Vb, Vlb or VIII of the Periodic Table. These metals usually have one or more than one ligand, typically oxides, halides, alcoholates, esters, ethers, amines, alkyls, alkenyls and/or aryls that may be either π - or σ -coordinated. These metal complexes may be in the free form or fixed on substrates, typically on activated magnesium chloride, titanium(III) chloride, alumina or silicon oxide. These catalysts may be soluble or insoluble in the polymerisation medium. The catalysts can be used by themselves in the polymerisation or further activators may be used, typically metal alkyls, metal hydrides, metal alkyl halides, metal alkyl oxides or metal alkyloxanes, said metals being elements of groups Ia, IIa and/or IIIa of the Periodic Table. The activators may be modified conveniently with further ester, ether, amine or silyl ether groups. These catalyst systems are usually termed Phillips, Standard Oil Indiana, Ziegler (-Natta), TNZ (DuPont), metallocene or single site catalysts (SSC).

2. Mixtures of the polymers mentioned under 1), for example mixtures of polypropylene with polyisobutylene, polypropylene with polyethylene (for example PP/HDPE, PP/LDPE) and mixtures of different types of polyethylene (for example LDPE/HDPE).

3. Polyolefin copolymers: Copolymers of monoolefins and diolefins with each other or with other vinyl monomers, for example ethylene/propylene copolymers, linear low density polyethylene (LLDPE) and mixtures thereof with low density polyethylene (LDPE), propylene/but-1-ene copolymers, propylene/isobutylene copolymers, ethylene/but-1-ene copolymers, ethylene/hexene copolymers, ethylene/methylpentane copolymers, ethylene/heptene copolymers, ethylene/octene copolymers, propylene/butadiene copolymers, isobutylene/isoprene copolymers, ethylene/alkyl acrylate copolymers, ethylene/alkyl methacrylate copolymers, ethylene/vinyl acetate copolymers and their copolymers with carbon monoxide or ethylene/acrylic acid copolymers and their salts (ionomers) as well as terpolymers of ethylene with propylene and a diene, such as

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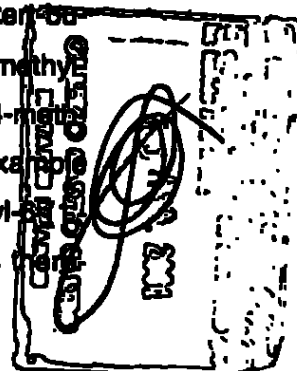
hexadiene, dicyclopentadiene or ethylidene-norbornene; and mixtures of such copolymers with one another and with polymers mentioned in 1) above, for example polypropylene/ethylene-propylene copolymers, LDPE/ethylene-vinyl acetate copolymers (EVA), LDPE/ethylene-acrylic acid copolymers (EAA), LLDPE/EVA, LLDPE/EAA and alternating or random polyalkylene/carbon monoxide copolymers and mixtures thereof with other polymers, for example polyamides.

Most preferred are polyethylene, especially LDPE or LLDPE, or polypropylene.

The transparent polyolefin article of the invention usually is a film, fiber, ribbon or stretched tape, especially an agricultural film. Its thickness preferably ranges between 1 and 300 μm , especially between 1 and 200 μm . The transparent polyolefin article of the invention often contains one or more further components, e.g. selected from further light stabilizers, processing stabilizers, fillers, clarifiers, modifiers, acid scavengers or other additives known in the art. For sufficient transparency, present articles do not contain crystalline components in an amount that would significantly impair this property; preferably they contain no pigments and no or merely minor amounts, e.g. 0 - 5 % by weight of the polymer, of fillers or crystalline inorganic components having lower opaquing effect than pigments (e.g. hydrotalcites). Examples for additional components which may be contained in the polymer articles of the invention include the following:

1. Antioxidants

1.1. Alkylated monophenols, for example 2,6-di-tert-butyl-4-methylphenol, 2-tert-butyl-4,6-dimethylphenol, 2,6-di-tert-butyl-4-ethylphenol, 2,6-di-tert-butyl-4-n-butylphenol, 2,6-di-tert-butyl-4-isobutylphenol, 2,6-dicyclopentyl-4-methylphenol, 2-(α -methylcyclohexyl)-4,6-dimethylphenol, 2,6-dioctadecyl-4-methylphenol, 2,4,6-tricyclohexylphenol, 2,6-di-tert-butyl-4-methoxymethylphenol, nonylphenols which are linear or branched in the side chains, for example 2,6-di-nonyl-4-methylphenol, 2,4-dimethyl-6-(1'-methylundec-1'-yl)phenol, 2,4-dimethyl-6-(1'-methylheptadec-1'-yl)phenol, 2,4-dimethyl-6-(1'-methyltridec-1'-yl)phenol and mixtures thereof.



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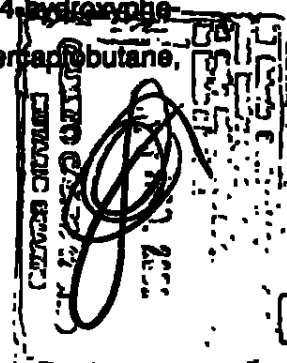
1.2. Alkylthiomethylphenols, for example 2,4-dioctylthiomethyl-6-tert-butylphenol, 2,4-dioctylthiomethyl-6-methylphenol, 2,4-dioctylthiomethyl-6-ethylphenol, 2,6-di-dodacylthiomethyl-4-nonylphenol.

1.3. Hydroquinones and alkylated hydroquinones, for example 2,6-di-tert-butyl-4-methoxyphenol, 2,5-di-tert-butylhydroquinone, 2,5-di-tert-amylhydroquinone, 2,6-diphenyl-4-octadecyloxyphenol, 2,6-di-tert-butylhydroquinone, 2,5-di-tert-butyl-4-hydroxyanisole, 3,5-di-tert-butyl-4-hydroxyanisole, 3,5-di-tert-butyl-4-hydroxyphenyl stearate, bis(3,5-di-tert-butyl-4-hydroxyphenyl) adipate.

1.4. Tocopherols, for example α -tocopherol, β -tocopherol, γ -tocopherol, δ -tocopherol and mixtures thereof (vitamin E).

1.5. Hydroxylated thiodiphenyl ethers, for example 2,2'-thiobis(6-tert-butyl-4-methylphenol), 2,2'-thiobis(4-octylphenol), 4,4'-thiobis(6-tert-butyl-3-methylphenol), 4,4'-thiobis(6-tert-butyl-2-methylphenol), 4,4'-thiobis(3,6-di-sec-amylphenol), 4,4'-bis(2,6-dimethyl-4-hydroxyphenyl)-disulfide.

1.6. Alkylidenebisphenols, for example 2,2'-methylenebis(6-tert-butyl-4-methylphenol), 2,2'-methylenebis(6-tert-butyl-4-ethylphenol), 2,2'-methylenebis(4-methyl-6-(α -methylcyclohexyl)-phenol), 2,2'-methylenebis(4-methyl-6-cyclohexylphenol), 2,2'-methylenebis(6-nonyl-4-methylphenol), 2,2'-methylenebis(4,6-di-tert-butylphenol), 2,2'-ethylidenebis(4,6-di-tert-butylphenol), 2,2'-ethylidenebis(6-tert-butyl-4-isobutylphenol), 2,2'-methylenebis[6-(α -methylbenzyl)-4-nonylphenol], 2,2'-methylenebis[6-(α,α -dimethylbenzyl)-4-nonylphenol], 4,4'-methylenebis(2,6-di-tert-butylphenol), 4,4'-methylenebis(6-tert-butyl-2-methylphenol), 1,1-bis(5-tert-butyl-4-hydroxy-2-methylphenyl)butane, 2,6-bis(3-tert-butyl-5-methyl-2-hydroxybenzyl)-4-methylphenol, 1,1,3-tris(5-tert-butyl-4-hydroxy-2-methylphenyl)butane, 1,1-bis(5-tert-butyl-4-hydroxy-2-methylphenyl)-3-n-dodecylmercaptobutane, ethylene glycol bis[3,3-bis(3'-tert-butyl-4'-hydroxyphenyl)butyrate], bis(3-tert-butyl-4-hydroxy-5-methyl-phenyl)dicyclopentadiene, bis[2-(3'-tert-butyl-2'-hydroxy-5'-methylbenzyl)-6-tert-butyl-4-methylphenyl]terephthalate, 1,1-bis-(3,5-dimethyl-2-hydroxyphenyl)butane, 2,2-bis(3,5-di-tert-butyl-4-hydroxyphenyl)propane, 2,2-bis-(5-tert-butyl-4-hydroxy-2-methylphenyl)-4-n-dodecylmercaptobutane, 1,1,5,5-tetra(5-tert-butyl-4-hydroxy-2-methylphenyl)pentane.



1.7. O-, N- and S-benzyl compounds, for example 3,5,3',5'-tetra-tert-butyl-4,4'-dihydroxydi-benzyl ether, octadecyl-4-hydroxy-3,5-dimethylbenzylmercaptoacetate, tridecyl-4-hydroxy-3,5-di-tert-butylbenzylmercaptoacetate, tris(3,5-di-tert-butyl-4-hydroxybenzyl)amine, bis(4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)dithioterephthalate, bis(3,5-di-tert-butyl-4-hydroxybenzyl)sulfide, isooctyl-3,5-di-tert-butyl-4-hydroxybenzylmercaptoacetate.

1.8. Hydroxybenzylated malonates, for example dioctadecyl-2,2-bis(3,5-di-tert-butyl-2-hydroxybenzyl)malonate, di-octadecyl-2-(3-tert-butyl-4-hydroxy-5-methylbenzyl)malonate, di-dodecylmercaptoethyl-2,2-bis(3,5-di-tert-butyl-4-hydroxybenzyl)malonate, bis[4-(1,1,3,3-tetramethylbutyl)phenyl]-2,2-bis(3,5-di-tert-butyl-4-hydroxybenzyl)malonate.

1.9. Aromatic hydroxybenzyl compounds, for example 1,3,5-tris(3,5-di-tert-butyl-4-hydroxybenzyl)-2,4,6-trimethylbenzene, 1,4-bis(3,5-di-tert-butyl-4-hydroxybenzyl)-2,3,5,6-tetramethylbenzene, 2,4,6-tris(3,5-di-tert-butyl-4-hydroxybenzyl)phenol.

1.10. Triazine compounds, for example 2,4-bis(octylmercapto)-6-(3,5-di-tert-butyl-4-hydroxyanilino)-1,3,5-triazine, 2-octylmercapto-4,6-bis(3,5-di-tert-butyl-4-hydroxyanilino)-1,3,5-triazine, 2-octylmercapto-4,6-bis(3,5-di-tert-butyl-4-hydroxyphenoxy)-1,3,5-triazine, 2,4,6-tris(3,5-di-tert-butyl-4-hydroxyphenoxy)-1,2,3-triazine, 1,3,5-tris(3,5-di-tert-butyl-4-hydroxybenzyl)isocyanurate, 1,3,5-tris(4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)isocyanurate, 2,4,6-tris(3,5-di-tert-butyl-4-hydroxyphenylethyl)-1,3,5-triazine, 1,3,5-tris(3,5-di-tert-butyl-4-hydroxyphenylpropionyl)-hexahydro-1,3,5-triazine, 1,3,5-tris(3,5-dicyclohexyl-4-hydroxybenzyl)isocyanurate.

1.11. Benzylphosphonates, for example dimethyl-2,5-di-tert-butyl-4-hydroxybenzylphosphonate, diethyl-3,5-di-tert-butyl-4-hydroxybenzylphosphonate, dioctadecyl-3,5-di-tert-butyl-4-hydroxybenzylphosphonate, the calcium salt of the monoethyl ester of 3,5-di-tert-butyl-4-hydroxybenzylphosphonic acid.

1.12. Acylaminophenols, for example 4-hydroxylauranilide, 4-hydroxystearanilide, octyl-3,5-di-tert-butyl-4-hydroxyphenyl)carbamate.

1.13. Esters of 6-(3,5-di-tert-butyl-4-hydroxyphenyl)propionic acid with mono- or polyhydric alcohols, e.g. with methanol, ethanol, n-octanol, i-octanol, octadecanol, 1,6-hexanediol, 1,9-nonanediol, ethylene glycol, 1,2-propanediol, neopentyl glycol, thiodiethylene glycol, diethy-

lene glycol, triethylene glycol, pentaerythritol, tris(hydroxyethyl)isocyanurate, N,N'-bis(hydroxyethyl)oxamide, 3-thiaundecanol, 3-thiapentadecanol, trimethylhexanediol, trimethylolpropane, 4-hydroxymethyl-1-phospha-2,6,7-trioxabicyclo[2.2.2]octane.

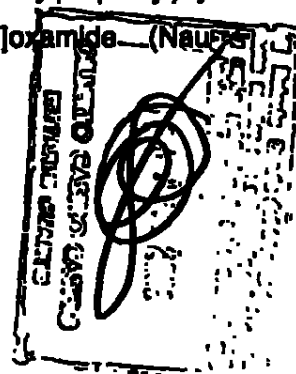
1.14. Esters of 6-(5-tert-butyl-4-hydroxy-3-methylphenyl)propionic acid with mono- or polyhydric alcohols, e.g. with methanol, ethanol, n-octanol, l-octanol, octadecanol, 1,6-hexanediol, 1,9-nonanediol, ethylene glycol, 1,2-propanediol, neopentyl glycol, thiodiethylene glycol, diethylene glycol, triethylene glycol, pentaerythritol, tris(hydroxyethyl)isocyanurate, N,N'-bis(hydroxyethyl)oxamide, 3-thiaundecanol, 3-thiapentadecanol, trimethylhexanediol, trimethylolpropane, 4-hydroxymethyl-1-phospha-2,6,7-trioxabicyclo[2.2.2]octane; 3,9-bis[2-(3-(3-tert-butyl-4-hydroxy-5-methylphenyl)propionyloxy)-1,1-dimethylethyl]-2,4,8,10-tetraoxaspiro[5.5]undecane.

1.15. Esters of 6-(3,5-dicyclohexyl-4-hydroxyphenyl)propionic acid with mono- or polyhydric alcohols, e.g. with methanol, ethanol, octanol, octadecanol, 1,6-hexanediol, 1,9-nonanediol, ethylene glycol, 1,2-propanediol, neopentyl glycol, thiodiethylene glycol, diethylene glycol, triethylene glycol, pentaerythritol, tris(hydroxyethyl)isocyanurate, N,N'-bis(hydroxyethyl)oxamide, 3-thiaundecanol, 3-thiapentadecanol, trimethylhexanediol, trimethylolpropane, 4-hydroxymethyl-1-phospha-2,6,7-trioxabicyclo[2.2.2]octane.

1.16. Esters of 3,5-di-tert-butyl-4-hydroxyphenyl acetic acid with mono- or polyhydric alcohols, e.g. with methanol, ethanol, octanol, octadecanol, 1,6-hexanediol, 1,9-nonanediol, ethylene glycol, 1,2-propanediol, neopentyl glycol, thiodiethylene glycol, diethylene glycol, triethylene glycol, pentaerythritol, tris(hydroxyethyl)isocyanurate, N,N'-bis(hydroxyethyl)oxamide, 3-thiaundecanol, 3-thiapentadecanol, trimethylhexanediol, trimethylolpropane, 4-hydroxymethyl-1-phospha-2,6,7-trioxabicyclo[2.2.2]octane.

1.17. Amides of 6-(3,5-di-tert-butyl-4-hydroxyphenyl)propionic acid e.g. N,N'-bis(3,5-di-tert-butyl-4-hydroxyphenylpropionyl)hexamethylenediamide, N,N'-bis(3,5-di-tert-butyl-4-hydroxyphenylpropionyl)trimethylenediamide, N,N'-bis(3,5-di-tert-butyl-4-hydroxyphenylpropionyl)hydrazide, N,N'-bis[2-(3-[3,5-di-tert-butyl-4-hydroxyphenyl]propionyloxy)ethyl]oxamide (Naupregard[®]XL-1, supplied by Uniroyal).

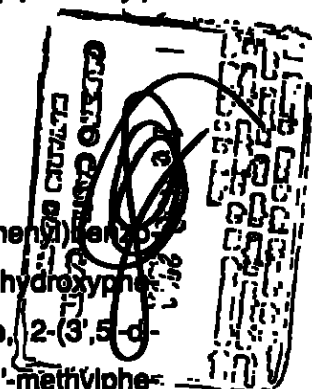
1.18. Ascorbic acid (vitamin C)



1.19. Aminic antioxidants, for example N,N'-di-isopropyl-p-phenylenediamine, N,N'-di-sec-butyl-p-phenylenediamine, N,N'-bis(1,4-dimethylpentyl)-p-phenylenediamine, N,N'-bis(1-ethyl-3-methylpentyl)-p-phenylenediamine, N,N'-bis(1-methylheptyl)-p-phenylenediamine, N,N'-dicyclohexyl-p-phenylenediamine, N,N'-diphenyl-p-phenylenediamine, N,N'-bis(2-naphthyl)-p-phenylenediamine, N-isopropyl-N'-phenyl-p-phenylenediamine, N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine, N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine, N-cyclohexyl-N'-phenyl-p-phenylenediamine, 4-(p-toluenesulfamoyl)diphenylamine, N,N'-dimethyl-N,N'-di-sec-butyl-p-phenylenediamine, diphenylamine, N-allyldiphenylamine, 4-isopropoxydiphenylamine, N-phenyl-1-naphthylamine, N-(4-tert-octylphenyl)-1-naphthylamine, N-phenyl-2-naphthylamine, octylated diphenylamine, for example p,p'-di-tert-octyldiphenylamine, 4-n-butylaminophenol, 4-butyrylaminophenol, 4-nonanoylaminophenol, 4-dodecanoylaminophenol, 4-octadecanoylaminophenol, bis(4-methoxyphenyl)amine, 2,6-di-tert-butyl-4-dimethylaminomethylphenol, 2,4'-diaminodiphenylmethane, 4,4'-diaminodiphenylmethane, N,N,N',N'-tetramethyl-4,4'-diaminodiphenylmethane, 1,2-bis[(2-methylphenyl)amino]ethane, 1,2-bis(phenylamino)propane, (o-tolyl)biguanide, bis[4-(1',3'-dimethylbutyl)phenyl]amine, tert-octylated N-phenyl-1-naphthylamine, a mixture of mono- and dialkylated tert-butyl/tert-octyldiphenylamines, a mixture of mono- and dialkylated nonyldiphenylamines, a mixture of mono- and dialkylated dodecyldiphenylamines, a mixture of mono- and dialkylated isopropyl/isohexyldiphenylamines, a mixture of mono- and dialkylated tert-butyl/tert-octyldiphenylamines, 2,3-dihydro-3,3-dimethyl-4H-1,4-benzothiazine, phenothiazine, a mixture of mono- and dialkylated tert-butyl/tert-octylphenothiazines, a mixture of mono- and dialkylated tert-octylphenothiazines, N-allylphenothiazine, N,N,N',N'-tetraphenyl-1,4-diaminobut-2-ene, N,N-bis(2,2,6,6-tetramethylpiperid-4-yl)-hexamethylenediamine, bis(2,2,6,6-tetramethylpiperid-4-yl)-sebacate, 2,2,6,6-tetramethylpiperidin-4-one, 2,2,6,6-tetramethylpiperidin-4-ol.

2. UV absorbers and light stabilisers

2.1. 2-(2'-Hydroxyphenyl)benzotriazoles, for example 2-(2'-hydroxy-5'-methylphenyl)benzotriazole, 2-(3',5'-di-tert-butyl-2'-hydroxyphenyl)benzotriazole, 2-(5'-tert-butyl-2'-hydroxyphenyl)benzotriazole, 2-(2'-hydroxy-5'-(1,1,3,3-tetramethylbutyl)phenyl)benzotriazole, 2-(3',5'-di-tert-butyl-2'-hydroxyphenyl)-5-chlorobenzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-methylphenyl)-5-chlorobenzotriazole, 2-(3'-sec-butyl-5'-tert-butyl-2'-hydroxyphenyl)benzotriazole, 2-(2'-hydroxy-4'-octyloxyphenyl)benzotriazole, 2-(3',5'-di-tert-amyl-2'-hydroxyphenyl)benzotriazole, 2-(3',5'-bis(α,α -dimethylbenzyl)-2'-hydroxyphenyl)benzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-



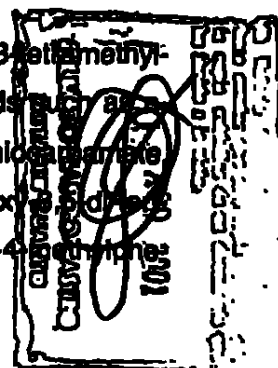
(2-octyloxycarbonylethyl)phenyl)-5-chlorobenzotriazole, 2-(3'-tert-butyl-5'-[2-(2-ethylhexyloxy)carbonylethyl]-2'-hydroxyphenyl)-5-chlorobenzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-(2-methoxycarbonylethyl)phenyl)-5-chlorobenzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-(2-methoxycarbonylethyl)phenyl)benzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-(2-octyloxycarbonylethyl)phenyl)benzotriazole, 2-(3'-tert-butyl-5'-[2-(2-ethylhexyloxy)carbonylethyl]-2'-hydroxyphenyl)benzotriazole, 2-(3'-dodecyl-2'-hydroxy-5'-methylphenyl)benzotriazole, 2-(3'-tert-butyl-2'-hydroxy-5'-(2-isooctyloxycarbonylethyl)phenyl)benzotriazole, 2,2'-methylenebis[4-(1,1,3,3-tetramethylbutyl)-6-benzotriazole-2-ylphenol]; the transesterification product of 2-[3'-tert-butyl-5'-(2-methoxycarbonylethyl)-2'-hydroxyphenyl]-2H-benzotriazole with polyethylene glycol 300; $[R-CH_2CH_2-COO-CH_2CH_2]_2$, where $R = 3'$ -tert-butyl-4'-hydroxy-5'-2H-benzotriazol-2-ylphenyl, 2-[2'-hydroxy-3'-(α,α -dimethylbenzyl)-5'-(1,1,3,3-tetramethylbutyl)phenyl]-benzotriazole; 2-[2'-hydroxy-3'-(1,1,3,3-tetramethylbutyl)-5'-(α,α -dimethylbenzyl)phenyl]-benzotriazole.

2.2. 2-Hydroxybenzophenones, for example the 4-hydroxy, 4-methoxy, 4-octyloxy, 4-decyloxy, 4-dodecyloxy, 4-benzyloxy, 4,2',4'-trihydroxy and 2'-hydroxy-4,4'-dimethoxy derivatives.

2.3. Esters of substituted and unsubstituted benzoic acids, for example 4-tert-butylphenyl salicylate, phenyl salicylate, octylphenyl salicylate, dibenzoyl resorcinol, bis(4-tert-butylbenzoyl)resorcinol, benzoyl resorcinol, 2,4-di-tert-butylphenyl 3,5-di-tert-butyl-4-hydroxybenzoate, hexadecyl 3,5-di-tert-butyl-4-hydroxybenzoate, octadecyl 3,5-di-tert-butyl-4-hydroxybenzoate, 2-methyl-4,6-di-tert-butylphenyl 3,5-di-tert-butyl-4-hydroxybenzoate.

2.4. Acrylates, for example ethyl α -cyano- β,β -diphenylacrylate, isooctyl α -cyano- β,β -diphenylacrylate, methyl α -carbomethoxycinnamate, methyl α -cyano- β -methyl-p-methoxycinnamate, butyl α -cyano- β -methyl-p-methoxycinnamate, methyl α -carbomethoxy-p-methoxycinnamate and N-(β -carbomethoxy- β -cyanovinyl)-2-methylindoline.

2.5. Nickel compounds, for example nickel complexes of 2,2'-thiobis[4-(1,1,3,3-tetramethylbutyl)phenol], such as the 1:1 or 1:2 complex, with or without additional ligands such as n-butylamine, triethanolamine or N-cyclohexyldiethanolamine, nickel dibutyldithiocarbamate, nickel salts of the monoalkyl esters, e.g. the methyl or ethyl ester, of 4-hydroxy-3,5-di-tert-butylbenzylphosphonic acid, nickel complexes of ketoximes, e.g. of 2-hydroxy-4-methylphenone



nylundecylketoxime, nickel complexes of 1-phenyl-4-lauroyl-5-hydroxypyrazole, with or without additional ligands.

2.6. Sterically hindered amines, for example bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate, bis(2,2,6,6-tetramethyl-4-piperidyl)succinate, bis(1,2,2,6,6-pentamethyl-4-piperidyl)sebacate, bis(1-octyloxy-2,2,6,6-tetramethyl-4-piperidyl)sebacate, bis(1,2,2,6,6-pentamethyl-4-piperidyl) n-butyl-3,5-di-tert-butyl-4-hydroxybenzylmalonate, the condensate of 1-(2-hydroxyethyl)-2,2,6,6-tetramethyl-4-hydroxypiperidine and succinic acid, linear or cyclic condensates of N,N'-bis(2,2,6,6-tetramethyl-4-piperidyl)hexamethylenediamine and 4-tert-octylamino-2,6-dichloro-1,3,5-triazine, tris(2,2,6,6-tetramethyl-4-piperidyl)nitritotriacetate, tetrakis(2,2,6,6-tetramethyl-4-piperidyl)-1,2,3,4-butanetetracarboxylate, 1,1'-(1,2-ethanediyl)-bis(3,3,5,5-tetramethylpiperazinone), 4-benzoyl-2,2,6,6-tetramethylpiperidine, 4-stearyloxy-2,2,6,6-tetramethylpiperidine, bis(1,2,2,6,6-pentamethylpiperidyl)-2-n-butyl-2-(2-hydroxy-3,5-di-tert-butylbenzyl)-malonate, 3-n-octyl-7,7,9,9-tetramethyl-1,3,8-triazaspiro[4.5]decane-2,4-dione, bis(1-octyloxy-2,2,6,6-tetramethylpiperidyl)sebacate, bis(1-octyloxy-2,2,6,6-tetramethylpiperidyl)succinate, linear or cyclic condensates of N,N'-bis(2,2,6,6-tetramethyl-4-piperidyl)hexamethylenediamine and 4-morpholino-2,6-dichloro-1,3,5-triazine, the condensate of 2-chloro-4,6-bis(4-n-butylamino-2,2,6,6-tetramethylpiperidyl)-1,3,5-triazine and 1,2-bis(3-aminopropylamino)ethane, the condensate of 2-chloro-4,6-di-(4-n-butylamino-1,2,2,6,6-pentamethylpiperidyl)-1,3,5-triazine and 1,2-bis(3-aminopropylamino)ethane, 8-acetyl-3-dodecyl-7,7,9,9-tetramethyl-1,3,8-triazaspiro[4.5]decane-2,4-dione, 3-dodecyl-1-(2,2,6,6-tetramethyl-4-piperidyl)pyrrolidine-2,5-dione, 3-dodecyl-1-(1,2,2,6,6-pentamethyl-4-piperidyl)pyrrolidine-2,5-dione, a mixture of 4-hexadecyloxy- and 4-stearyloxy-2,2,6,6-tetramethylpiperidine, a condensate of N,N'-bis(2,2,6,6-tetramethyl-4-piperidyl)hexamethylenediamine and 4-cyclohexylamino-2,6-dichloro-1,3,5-triazine, a condensate of 1,2-bis(3-aminopropylamino)ethane and 2,4,6-trichloro-1,3,5-triazine as well as 4-butylamino-2,2,6,6-tetramethylpiperidine (CAS Reg. No. [136504-96-6]); a condensate of 1,6-hexanediamine and 2,4,6-trichloro-1,3,5-triazine as well as N,N-dibutylamine and 4-butylamino-2,2,6,6-tetramethylpiperidine (CAS Reg. No. [132236-64-7]); N-(2,2,6,6-tetramethyl-4-piperidyl)-n-dodecylsuccinimide, N-(1,2,2,6,6-pentamethyl-4-piperidyl)-n-dodecylsuccinimide, 2-undecyl-7,7,9,9-tetramethyl-1-oxa-3,8-diaza-4-oxospiro[4.5]decane, a reaction product of 7,7,9,9-tetramethyl-2-cycloundecyl-1-oxa-3,8-diaza-4-oxospiro[4.5]decane and epichlorohydrin, 1,1-bis(1,2,2,6,6-pentamethyl-4-piperidyl)oxy carbonyl)-2-(4-methoxyphenyl)ethene, N,N'-bis-formyl-N,N'-bis(2,2,6,6-tetramethyl-4-piperidyl)hexamethylenediamine, a diester of 4-methoxymethylenemalonic acid with 1,2,2,6,6-pentamethyl-4-hydroxypiperidine, poly[methylpropyl-3-oxy-4-(2,2,6,6-tetramethyl-4-piperidyl)]

dy]]siloxane, a reaction product of maleic acid anhydride- α -olefin copolymer with 2,2,6,6-tetramethyl-4-aminopiperidine or 1,2,2,6,6-pentamethyl-4-aminopiperidine.

2.7. Oxamides, for example 4,4'-dioctyloxyoxanilide, 2,2'-diethoxyoxanilide, 2,2'-dioctyloxy-5,5'-di-tert-butoxanilide, 2,2'-didodecyloxy-5,5'-di-tert-butoxanilide, 2-ethoxy-2'-ethyloxanilide, N,N'-bis(3-dimethylaminopropyl)oxamide, 2-ethoxy-5-tert-butyl-2'-ethoxanilide and its mixture with 2-ethoxy-2'-ethyl-5,4'-di-tert-butoxanilide, mixtures of o- and p-methoxy-disubstituted oxanilides and mixtures of o- and p-ethoxy-disubstituted oxanilides.

2.8. 2-(2-Hydroxyphenyl)-1,3,5-triazines, for example 2,4,6-tris(2-hydroxy-4-octyloxyphenyl)-1,3,5-triazine, 2-(2-hydroxy-4-octyloxyphenyl)-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine, 2-(2,4-dihydroxyphenyl)-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine, 2,4-bis(2-hydroxy-4-propyloxyphenyl)-6-(2,4-dimethylphenyl)-1,3,5-triazine, 2-(2-hydroxy-4-octyloxyphenyl)-4,6-bis(4-methylphenyl)-1,3,5-triazine, 2-(2-hydroxy-4-dodecyloxyphenyl)-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine, 2-(2-hydroxy-4-tridecyloxyphenyl)-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine, 2-[2-hydroxy-4-(2-hydroxy-3-butyloxypropoxy)phenyl]-4,6-bis(2,4-dimethyl)-1,3,5-triazine, 2-[2-hydroxy-4-(2-hydroxy-3-octyloxypropyloxy)phenyl]-4,6-bis(2,4-dimethyl)-1,3,5-triazine, 2-[4-(dodecyloxy/tridecyloxy-2-hydroxypropoxy)-2-hydroxyphenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine, 2-[2-hydroxy-4-(2-hydroxy-3-dodecyloxypropoxy)phenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine, 2-(2-hydroxy-4-hexyloxy)phenyl-4,6-diphenyl-1,3,5-triazine, 2-(2-hydroxy-4-methoxyphenyl)-4,6-diphenyl-1,3,5-triazine, 2,4,6-tris[2-hydroxy-4-(3-butoxy-2-hydroxypropoxy)phenyl]-1,3,5-triazine, 2-(2-hydroxyphenyl)-4-(4-methoxyphenyl)-6-phenyl-1,3,5-triazine, 2-(2-hydroxy-4-[3-(2-ethylhexyl-1-oxy)-2-hydroxypropyloxy]phenyl)-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine.

3. Metal deactivators, for example N,N'-diphenyloxamide, N-salicylal-N'-salicyloyl hydrazine, N,N'-bis(salicyloyl)hydrazine, N,N'-bis(3,5-di-tert-butyl-4-hydroxyphenylproplonyl)hydrazine, 3-salicyloylamino-1,2,4-triazole, bis(benzylidene)oxalyl dihydrazide, oxanilide, isophthaloyl dihydrazide, sebacoyl bisphenylhydrazide, N,N'-diacetyladi-poyl dihydrazide, N,N'-bis(salicyloyl)oxalyl dihydrazide, N,N'-bis(salicyloyl)thiopropionyl dihydrazide.

4. Phosphites and phosphonites, for example triphenyl phosphite, diphenylalkyl phosphites, phenyldialkyl phosphites, tris(nonylphenyl) phosphite, trilauryl phosphite, trioctadecyl phosphite, distearyl-pentaerythritol diphosphite, tris(2,4-di-tert-butylphenyl) phosphite, distearyl-pentaerythritol diphosphite, bis(2,4-di-tert-butylphenyl)pentaerythritol diphosphite, bis(2,4-di-

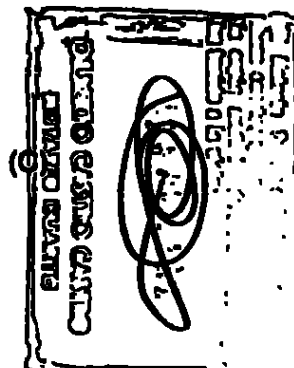
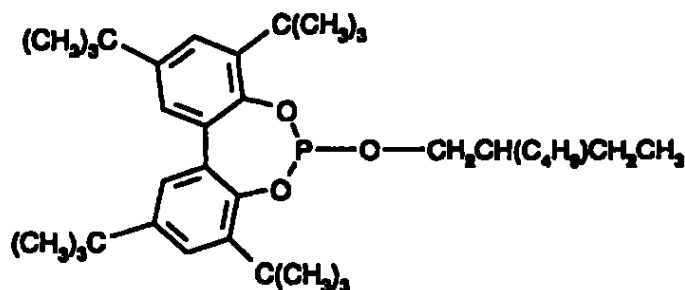
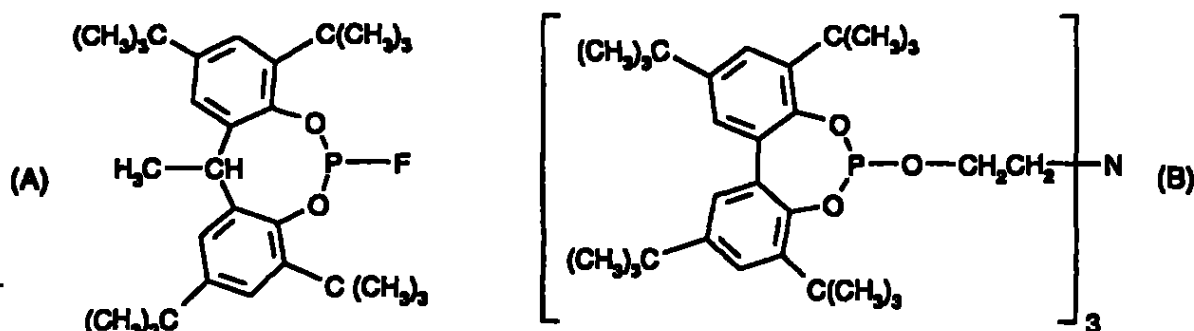


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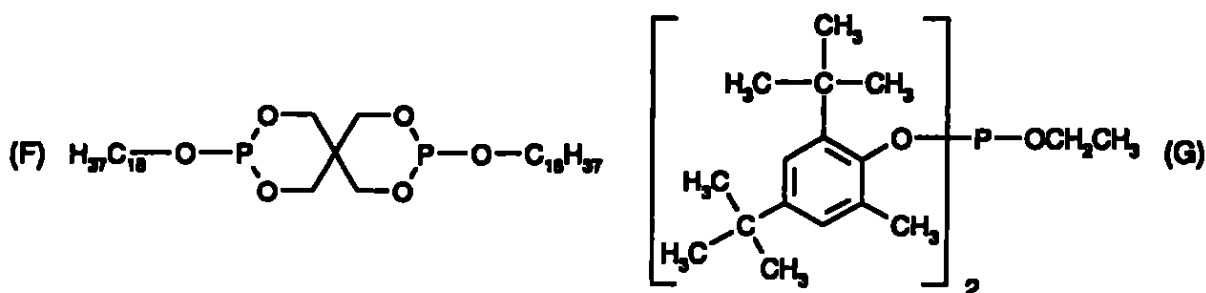
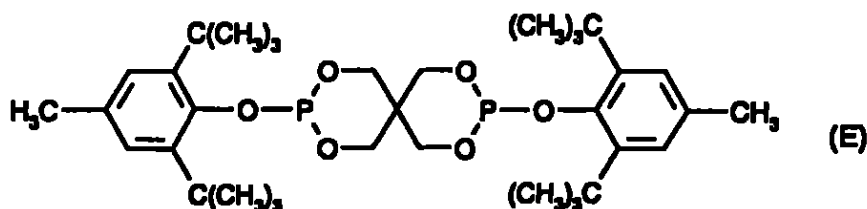
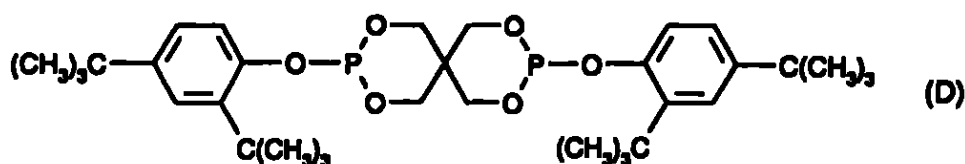
cumylphenyl)pentaerythritol diphosphite, bis(2,6-di-tert-butyl-4-methylphenyl)pentaerythritol diphosphite, dilsodecyloxypentaerythritol diphosphite, bis(2,4-di-tert-butyl-6-methylphenyl)pentaerythritol diphosphite, bis(2,4,6-tris(tert-butylphenyl)pentaerythritol diphosphite, tristearyl sorbitol triphosphite, tetrakis(2,4-di-tert-butylphenyl) 4,4'-biphenylene diphosphonite, 6-isooctyloxy-2,4,8,10-tetra-tert-butyl-12H-dibenz[d,g]-1,3,2-dioxaphosphocin, bis(2,4-di-tert-butyl-6-methylphenyl)methyl phosphite, bis(2,4-di-tert-butyl-6-methylphenyl)ethyl phosphite, 6-fluoro-2,4,8,10-tetra-tert-butyl-12-methyl-dibenz[d,g]-1,3,2-dioxaphosphocin, 2,2',2"-nitro-[triethyltris(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl)phosphite], 2-ethylhexyl(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl)phosphite, 5-butyl-5-ethyl-2-(2,4,6-tri-tert-butylphenoxy)-1,3,2-dioxaphosphirane.

The following phosphites are especially preferred:

Tris(2,4-di-tert-butylphenyl) phosphite (Irgafos®168, Ciba-Geigy), tris(nonylphenyl) phosphite,



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5. Hydroxylamines, for example N,N-dibenzylhydroxylamine, N,N-diethylhydroxylamine, N,N-dioctylhydroxylamine, N,N-dilaurylhydroxylamine, N,N-ditetradecylhydroxylamine, N,N-dihexadecylhydroxylamine, N,N-dioctadecylhydroxylamine, N-hexadecyl-N-octadecylhydroxylamine, N-heptadecyl-N-octadecylhydroxylamine, N,N-dialkylhydroxylamine derived from hydrogenated tallow amine.

6. Nitrones, for example N-benzyl-alpha-phenylnitron, N-ethyl-alpha-methylnitron, N-octyl-alpha-heptylnitron, N-lauryl-alpha-undecylnitron, N-tetradecyl-alpha-tridecyl-nitron, N-hexadecyl-alpha-pentadecylnitron, N-octadecyl-alpha-heptadecylnitron, N-hexadecyl-alpha-heptadecylnitron, N-octadecyl-alpha-pentadecylnitron, N-heptadecyl-alpha-heptadecylnitron, N-octadecyl-alpha-hexadecylnitron, nitron derived from N,N-dialkylhydroxylamine derived from hydrogenated tallow amine.

7. Thioamers, for example dilauryl thiodipropionate or distearyl thiodipropionate.

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8. Peroxide scavengers, for example esters of β -thiodipropionic acid, for example the lauryl, stearyl, myristyl or tridecyl esters, mercaptobenzimidazole or the zinc salt of 2-mercaptobenzimidazole, zinc dibutyldithiocarbamate, dioctadecyl disulfide, pentaerythritol tetrakis(β -dodecylmercapto)proplonate.

9. Polyamide stabilisers, for example copper salts in combination with iodides and/or phosphorus compounds and salts of divalent manganese.

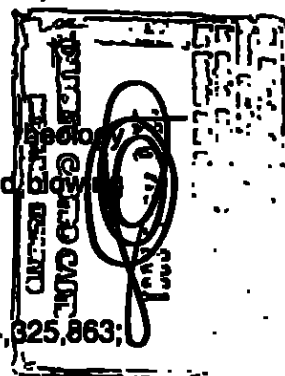
10. Basic co-stabilisers, for example melamine, polyvinylpyrrolidone, dicyandiamide, triallyl cyanurate, urea derivatives, hydrazine derivatives, amines, polyamides, polyurethanes, alkali metal salts and alkaline earth metal salts of higher fatty acids, for example calcium stearate, zinc stearate, magnesium behenate, magnesium stearate, sodium ricinoleate and potassium palmitate, antimony pyrocatecholate or zinc pyrocatecholate.

11. Nucleating agents, for example inorganic substances, such as talcum, metal oxides, such as titanium dioxide or magnesium oxide, phosphates, carbonates or sulfates of, preferably, alkaline earth metals; organic compounds, such as mono- or polycarboxylic acids and the salts thereof, e.g. 4-tert-butylbenzoic acid, adipic acid, diphenylacetic acid, sodium succinate or sodium benzoate; polymeric compounds, such as ionic copolymers (ionomers). Especially preferred are 1,3:2,4-bis(3',4'-dimethylbenzylidene)sorbitol, 1,3:2,4-di(paramethyldibenzylidene)sorbitol, and 1,3:2,4-di(benzylidene)sorbitol.

12. Fillers and reinforcing agents, for example calcium carbonate, silicates, glass fibres, glass bulbs, asbestos, talc, kaolin, mica, barium sulfate, metal oxides and hydroxides, wood flour and flours or fibers of other natural products, synthetic fibers.

13. Other additives, for example plasticisers, lubricants, emulsifiers, pigments, dyes, additives, catalysts, flow-control agents, flameproofing agents, antistatic agents and blowing agents.

14. Benzofuranones and indolinones, for example those disclosed in U.S. 4,325,863; U.S. 4,338,244; U.S. 5,175,312; U.S. 5,216,052; U.S. 5,252,643; DE-A-4316611; DE-A-4316622; DE-A-4316876; EP-A-0589839 or EP-A-0591102 or 3-[4-(2-acetoxyethoxy)phenyl]-5,7-di-tert-butyl-benzofuran-2-one, 5,7-di-tert-butyl-3-[4-(2-stearoyloxyethoxy)phe-



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nyl]benzofuran-2-one, 3,3'-bis[5,7-di-tert-butyl-3-(4-[2-hydroxyethoxy]phenyl)benzofuran-2-one], 5,7-di-tert-butyl-3-(4-ethoxyphenyl)benzofuran-2-one, 3-(4-acetoxy-3,5-dimethylphenyl)-5,7-di-tert-butyl-benzofuran-2-one, 3-(3,5-dimethyl-4-pivaloyloxyphenyl)-5,7-di-tert-butyl-benzofuran-2-one, 3-(3,4-dimethylphenyl)-5,7-di-tert-butyl-benzofuran-2-one, 3-(2,3-dimethylphenyl)-5,7-di-tert-butyl-benzofuran-2-one.

The conventional additives are judiciously employed in amounts up to 10 % by weight, e.g. 0.1-10 % by weight, especially 0.2-5 % by weight, based on the material to be stabilized.

Acid scavengers may be added, especially in order to improve the lifetime of agricultural materials which come in contact with pesticides, e.g. greenhouse films. Components active as acid scavengers include metal oxides and/or hydroxides, e.g. oxides or hydroxides of zinc, magnesium, aluminum, calcium, mixed salts thereof, as well as hydrotalcites or zeolites as described, for example, in GB-A-2300192, from page 2, line 2, until page 4, line 22.

Thin-walled articles of the invention, especially transparent polyolefin agricultural films, act as a selective UV filter enhancing plant growth and crop while suppressing the undesired activity of microorganisms. Light of the medium or far UV region (e.g. 200-360 nm) required by these microorganisms is effectively blocked. The same time, the activity of useful insects such as bees is not affected.

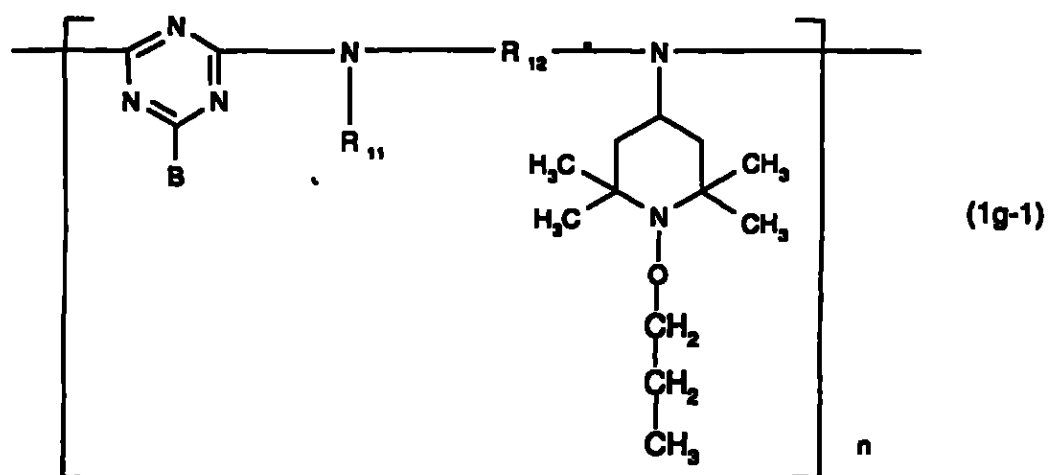
Preferably, the transparent polyolefin article of the invention also contains a sterically hindered amine as further stabilizer in order to obtain optimum light stability of the substrate. The sterically hindered amine is usually contained in an amount of 0.01 - 6 % by weight the polyolefin, the weight ratio sterically hindered amine : hydroxyphenyl triazine UV absorber preferably ranging from 2 : 1 to 20 : 1.

Examples for sterically hindered amines preferably contained in the polyolefin articles of the invention are given in the above list (item 2.6).

Best results are obtained with a sterically hindered amine from the class of the hydroxylamine ethers. Examples for the most preferred hydroxylamine ethers compounds of the formula (1g-1)

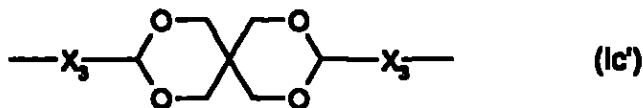
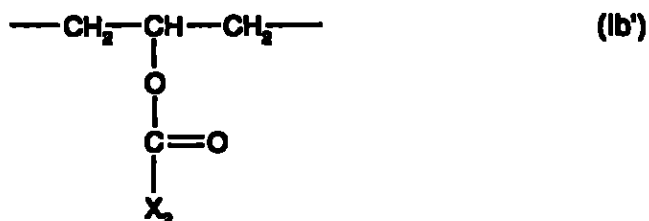


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In which the index n ranges from 1 to 15, being especially from the range 3-9;

R_{12} is C_2 - C_{12} alkylene, C_4 - C_{12} alkenylene, C_5 - C_7 cycloalkylene, C_5 - C_7 cycloalkylene-di(C_1 - C_4 alkylene), C_1 - C_4 alkylenedi(C_5 - C_7 cycloalkylene), phenylenedi(C_1 - C_4 alkylene) or C_4 - C_{12} alkylene interrupted by 1,4-piperazinediyl, -O- or $>N-X_1$ with X_1 being C_1 - C_{12} acyl or (C_1 - C_{12} alkoxy)carbonyl or having one of the definitions of R_{14} given below except hydrogen; or R_{12} is a group of the formula (1b') or (1c');



with m being 2 or 3,

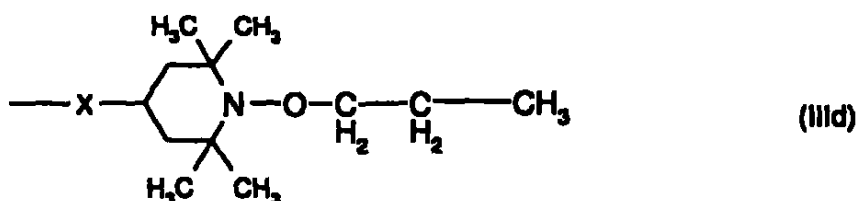
X_2 being C_1 - C_{10} alkyl, C_5 - C_{12} cycloalkyl which is unsubstituted or substituted by C_1 - C_4 alkyl; phenyl which is unsubstituted or substituted by 1, 2 or 3 C_1 - C_4 alkyl; C_1 - C_4 alkoxy; C_7 - C_9 phenylalkyl which is unsubstituted or substituted on the phenyl by 1, 2 or 3 C_1 - C_4 alkyl; and

the radicals X_3 being independently of one another C_2 - C_{12} alkylene;

the radicals B are independently of one another Cl, $-OR_{13}$, $-N(R_{14})(R_{15})$ or a group of the formula (11d);



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R_{13} , R_{14} and R_{15} , which are identical or different, are hydrogen, C_1 - C_{18} alkyl, C_5 - C_{12} cycloalkyl which is unsubstituted or substituted by 1, 2 or 3 C_1 - C_4 alkyl; C_3 - C_{18} alkenyl, phenyl which is unsubstituted or substituted by 1, 2 or 3 C_1 - C_4 alkyl or C_1 - C_4 alkoxy; C_7 - C_9 phenylalkyl which is unsubstituted or substituted on the phenyl by 1, 2 or 3 C_1 - C_4 alkyl; tetrahydrofurfuryl or C_2 - C_4 alkyl which is substituted in the 2, 3 or 4 position by -OH, C_1 - C_8 alkoxy, di(C_1 - C_4 alkyl)amino or a group of the formula (Ie');

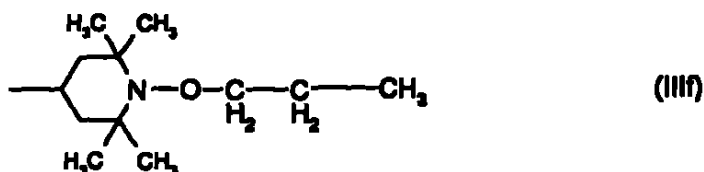


with Y being -O-, -CH₂-, -CH₂CH₂- or >N-CH₃,

or -N(R_{14})(R_{15}) is additionally a group of the formula (Ie');

X is -O- or >N- R_{16} ;

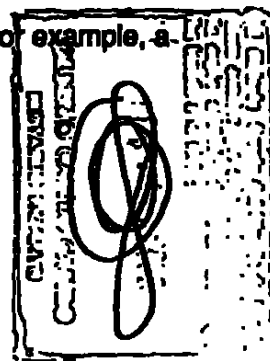
R_{16} is hydrogen, C_1 - C_{18} alkyl, C_3 - C_{18} alkenyl, C_5 - C_{12} cycloalkyl which is unsubstituted or substituted by 1, 2 or 3 C_1 - C_4 alkyl; C_7 - C_9 phenylalkyl which is unsubstituted or substituted on the phenyl by 1, 2 or 3 C_1 - C_4 alkyl; tetrahydrofurfuryl, a group of the formula (III f),



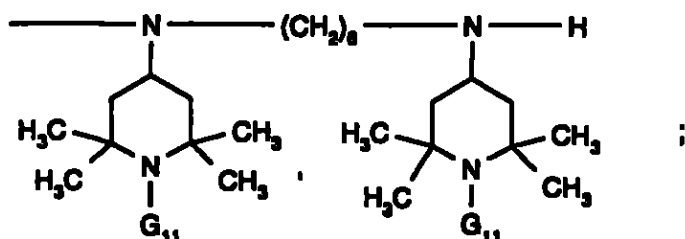
or C_2 - C_4 alkyl which is substituted in the 2, 3 or 4 position by -OH, C_1 - C_8 alkoxy, di(C_1 - C_4 alkyl)amino or a group of the formula (Ie');

R_{11} has one of the definitions given for R_{16} .

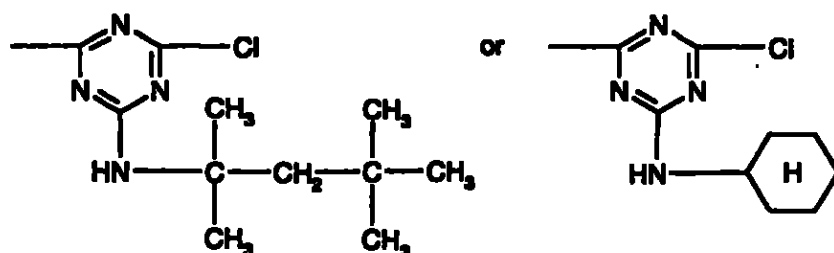
In these compounds, the end group bonded to the triazine residue can be, for example, a group B or -N(R_{11})- R_{12} -B, such as chlorine or a group



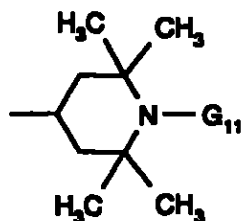
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and the end group bonded to the diamino group can be, for example, hydrogen or a di-B-substituted triazinyl group, such as a group

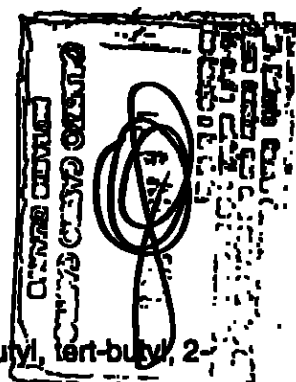


It may be convenient to replace the chlorine attached to the triazine by e.g. -OH or an amino group. Suitable amino groups are typically: pyrrolidin-1-yl, morpholino, -NH₂, -N(C₁-C₈alkyl)₂ and -NY'(C₁-C₈alkyl) wherein Y' is hydrogen or a group of the formula



In the above shown oligomeric and polymeric compounds,

examples of alkyl are methyl, ethyl, propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, 2-ethylbutyl, n-pentyl, isopentyl, 1-methylpentyl, 1,3-dimethylbutyl, n-hexyl, 1-methylhexyl, n-heptyl, isoheptyl, 1,1,3,3-tetramethylbutyl, 1-methylheptyl, 3-methylheptyl, n-octyl, 2-ethylhexyl, 1,1,3-trimethylhexyl, 1,1,3,3-tetramethylpentyl, nonyl, decyl, undecyl, 1-methylundecyl, dodecyl, 1,1,3,3,5,5-hexamethylhexyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, octadecyl, eicosyl and docosyl;

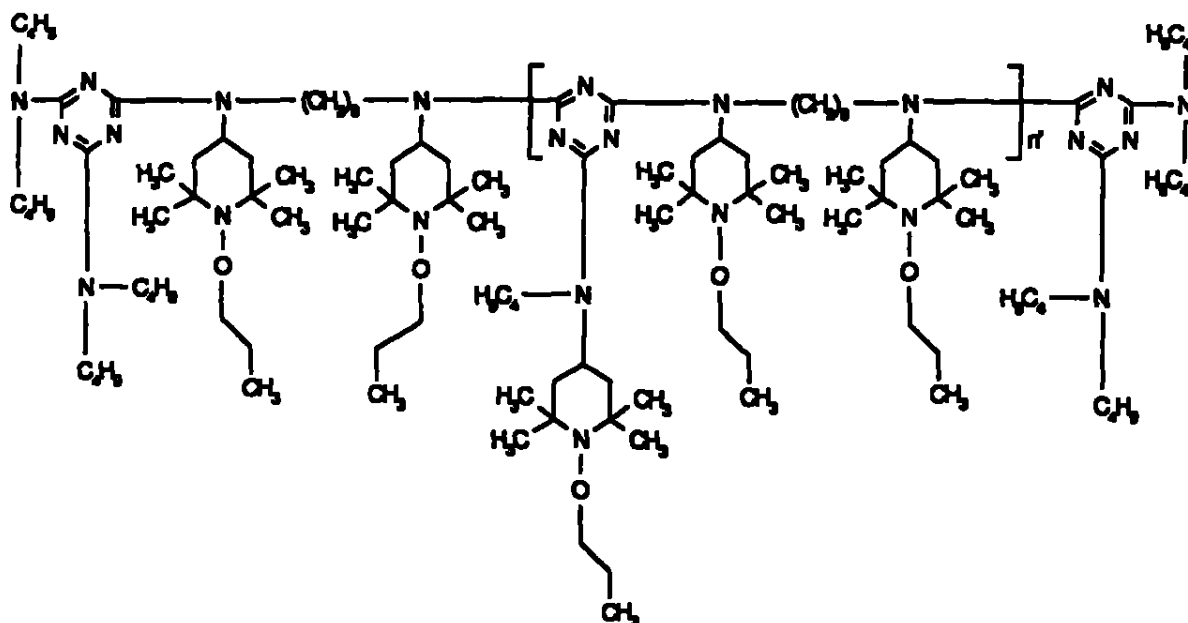


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examples of cycloalkyl are cyclopentyl, cyclohexyl, cycloheptyl and cyclooctyl;
 an example of C₇-C₈phenylalkyl is benzyl; and
 examples of alkylene are ethylene, propylene, trimethylene, tetramethylene, pentamethylene,
 2,2-dimethyltrimethylene, hexamethylene, trimethylhexamethylene, octamethylene and
 decamethylene.

An example for a highly effective compound of formula (1g-1) is the compound of the formula (1g-2)



wherein n' is approximately 3 (example 2 of GB-A-2334717, CAS # 247243-62-5, which is the NO-n-propyl derivative of the block oligomer Chmassorb® 2020 CAS # 192268-64-7, Ciba Specialty Chemicals Corp.).

Example 1: Combination hydroxyphenyl triazine compound (a) with compound (1g-2)

In order to evaluate the UV-absorber characteristics of hydroxyphenyl triazine compound (a), when mixed with a commercial thermoplastic material, thin low density polyethylene (LDPE) films are prepared, containing, as a typical formulation, 0.15% by weight of the above compound (a) and 0.70% of the sterically hindered amine ether (1g-2), used as light stabilizer of the polymeric system in highly demanding environments for agriculture applications. To do so, properly weighted amounts of the compounds are mixed with granules LDPE (Polimeri Europa, supplied by EniChem, Milano, Italy), characterized by a density of 0.921 g/cm³ and a melt flow index (190°C/2.16 kg) of 0.6 in a turbo mixer. The mixture is

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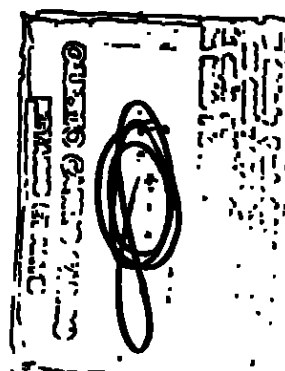
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extruded at a maximum temperature of 200°C in a OMC® twin-screw extruder. The granules so obtained are blown in a lab scale Formac® blow-extruder at a maximum temperature of 210°C to give a film of 150 µm thickness.

UV-Vis spectrum of the film as-obtained is recorded in the range 200-800 nm by means of a Perkin-Elmer lambda® 20 spectrophotometer, equipped with a RSA-PE-20 Labsphere® integrating sphere. At 0.15% loading, compound (a) imparts to the film a strong UV absorption feature, with a transmittance value less than 10% between 290 and 360 nm and less than 1% between 300 and 340 nm. The photostability of compound (a) is demonstrated by exposing the film sample to UV light in an Atlas CI 65 Xenon Arc Weather-O-meter® (WOM, 63°C black panel temperature, continuous dry cycle, according to ASTM G 28-96). After 1500 hours of WOM exposure the minimum transmittance displayed by the film is still around 1% at 320 nm.

Compound (a) is fully compatible in LDPE film; no blooming is observed after storage of the film for 6000 hours at room temperature. Same behavior is observed keeping the film for the same amount of time in oven at 60°C. After the same time of exposure in oven, no significant change in the UV-Vis absorption spectrum is observed, meaning there is no loss of additive, because of the high temperature.

WOM exposure of the formulation reported in this example is continuing, in order to evaluate the light stability performance of the polymer containing compound (a). Samples are also being exposed to natural weathering and are subjected to treatments with pesticides, in order to evaluate the resistance to chemicals that can be employed in agriculture.



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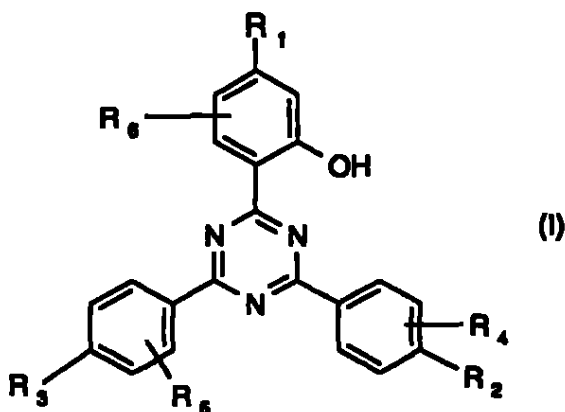
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WHAT IS CLAIMED IS:

1. Transparent polyolefin article stabilized against the effects of light, oxygen, heat and aggressive chemicals by addition of 0.005 - 0.30 % by weight the polyolefin of a hydroxyphenyl triazine UV absorber, characterized in that the article has a thickness between 1 and 500 μm .
2. Transparent polyolefin article of claim 1 containing as further stabilizer a sterically hindered amine.
3. Transparent polyolefin article of claim 2 containing the sterically hindered amine in an amount of 0.01 - 6 % by weight the polyolefin.
4. Transparent polyolefin article of claim 3 wherein the weight ratio sterically hindered amine : hydroxyphenyl triazine UV absorber ranges from 2 : 1 to 20 : 1.
5. Transparent polyolefin article of claim 2 wherein the sterically hindered amine belongs to the class of hydroxylamine ethers.
6. Transparent polyolefin article of claim 1 wherein the hydroxyphenyl triazine UV absorber conforms to the formula I



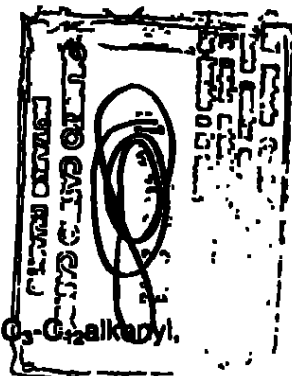
wherein

R_1 is H or OR_7 ;

R_2 and R_3 independently are H, , OR_8 ;

R_4 and R_5 independently are H, $\text{C}_1\text{-C}_8$ alkyl, OR_{10} ;

R_6 is H, $\text{C}_1\text{-C}_{12}$ alkyl, $\text{C}_5\text{-C}_{12}$ cycloalkyl, $\text{C}_7\text{-C}_{12}$ phenylalkyl, $\text{C}_7\text{-C}_{12}$ alkylphenyl, $\text{C}_3\text{-C}_{12}$ alkenyl, halogen, OH, OR_9 ;

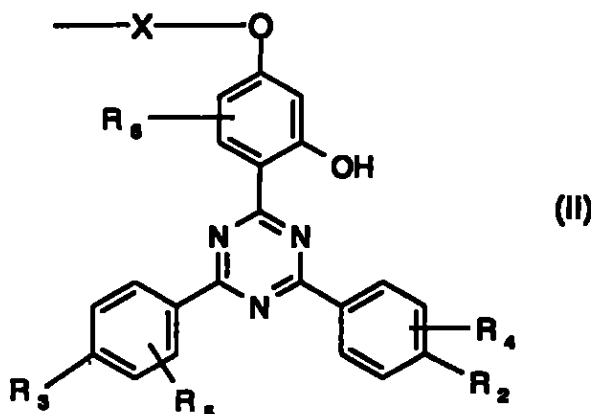


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R_8 is H; halogen; C_1 - C_{12} alkoxy; C_1 - C_{12} alkyl; C_3 - C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is $NH-CO-R_{14}$ or $NH-COO-R_{12}$;

R_7 , R_9 and R_{10} independently are H; C_1 - C_{24} alkyl; C_3 - C_{12} alkenyl; C_3 - C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is C_5 - C_{12} cycloalkyl, C_7 - C_{12} phenylalkyl, C_7 - C_{12} alkylphenyl; $CH_2CH(OH)CH_2OR_{11}$; C_1 - C_{12} alkyl substituted by $COOR_{12}$, $CONR_{13}R_{14}$, $OCOR_{16}$, OH or halogen;

and R_7 also embraces a residue of formula II



wherein X is C_2 - C_{24} alkylene; $-CH_2CH(OH)CH_2-$; $-CH_2CH(OH)CH_2O-D-OCH_2CH(OH)CH_2-$; $(C_1$ - C_{18} alkylene)- $CO-O-D-O-CO$ -(C_1 - C_{18} alkylene); CO ; CO -(C_2 - C_{24} alkylene)- CO ;

C_3 - C_{24} alkylene interrupted by oxygen;

D is C_2 - C_{12} alkylene; C_4 - C_{30} alkylene interrupted by O; phenylene; biphenylene or phenylene-E-phenylene;

E is O, S, SO_2 ; CH_2 ; CO or $-C(CH_3)_2-$;

R_{11} is H, C_1 - C_{12} alkyl; phenyl; phenyl substituted by 1-3 C_1 - C_4 alkyl; C_5 - C_{12} cycloalkyl; C_7 - C_{12} phenylalkyl; C_3 - C_{12} alkenyl;

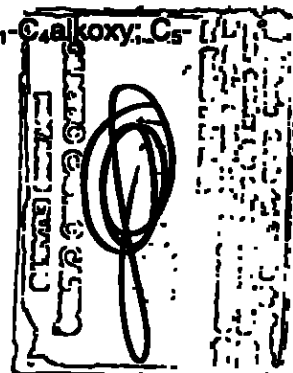
R_{12} is H; C_1 - C_{24} alkyl; C_3 - C_{12} alkenyl; C_3 - C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is C_5 - C_{12} cycloalkyl, C_7 - C_{12} phenylalkyl, C_7 - C_{12} alkylphenyl; phenyl;

R_{13} and R_{14} independently are H, C_1 - C_{18} alkyl; phenyl; phenyl substituted by 1-3 C_1 - C_4 alkyl and/or C_1 - C_4 alkoxy; C_5 - C_{12} cycloalkyl; C_3 - C_{12} alkenyl;

R_{15} is C_1 - C_{12} alkyl; phenyl; phenyl substituted by 1-3 C_1 - C_4 alkyl and/or C_1 - C_4 alkoxy; C_5 - C_{12} cycloalkyl; C_3 - C_{12} alkenyl; C_1 - C_{12} alkoxy; or is $NR_{13}R_{14}$.

7. Transparent polyolefin article of claim 6, wherein in formula I

R_4 and R_5 and R_6 independently are H;



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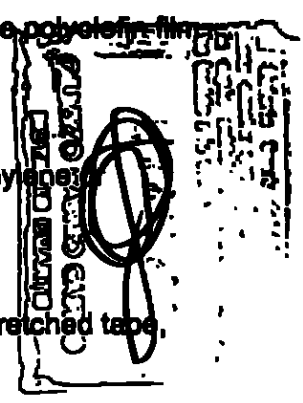
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R_6 is H; C_1 - C_8 alkoxy; C_1 - C_8 alkyl;
 R_7 , R_8 independently are H; C_1 - C_{18} alkyl; C_3 - C_{12} alkenyl; C_3 - C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is C_5 - C_{12} cycloalkyl, C_7 - C_{12} phenylalkyl, C_7 - C_{12} alkylphenyl; C_1 - C_{12} alkyl substituted by $COOR_{12}$, $OCOR_{15}$, OH;
 and R_7 also embraces a residue of formula II, wherein X is C_2 - C_{18} alkylene; $-CH_2CH(OH)CH_2-$; $-CH_2CH(OH)CH_2O-D-OCH_2CH(OH)CH_2-$;
 $(C_1-C_4alkylene)-CO-O-D-O-CO-(C_1-C_4alkylene)$; CO; $CO-(C_2-C_{18}alkylene)-CO$;
 $C_3-C_{18}alkylene$ interrupted by oxygen; D is C_2 - $C_{12}alkylene$;
 R_{12} is H; C_1 - C_{24} alkyl; C_3 - C_{12} alkenyl; C_3 - C_{24} alkyl interrupted by oxygen and/or substituted by OH; or is C_5 - C_{12} cycloalkyl, C_7 - C_{12} phenylalkyl, C_7 - C_{12} alkylphenyl; phenyl;
 R_{15} is C_1 - C_{12} alkyl; C_5 - C_{12} cycloalkyl; C_3 - C_{12} alkenyl.

8. Transparent polyolefin article of claim 1 which is a film or layer having a thickness between 1 and 300 μm , especially between 1 and 200 μm .
9. Use of the transparent polyolefin film of claim 8 for suppressing microbial growth in a protected cultivation.
10. Process for suppressing microbial growth in a protected environment, which process comprises covering the environment with the transparent polyolefin film of claim 8.
11. Process of claim 10, wherein the protected environment is a plant cultivation.
12. A method for selectively screening solar and/or artificial light radiation to crops contained inside a green house which comprises covering said green house with the polyolefin film of claim 8.
13. Transparent polyolefin article of claim 1, wherein the polyolefin is polyethylene or polypropylene.
14. Transparent polyolefin article of claim 1 which is a film, fiber, ribbon or stretched tape, especially an agricultural film.

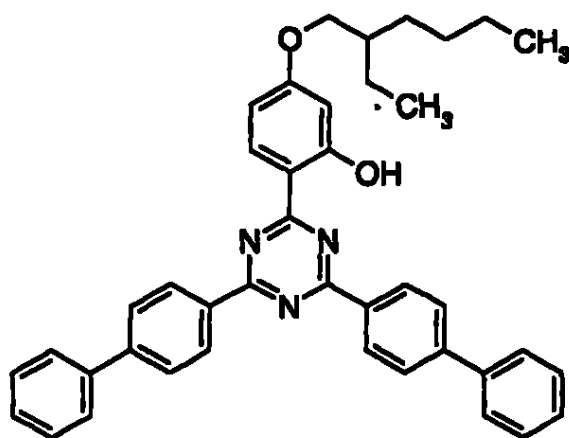


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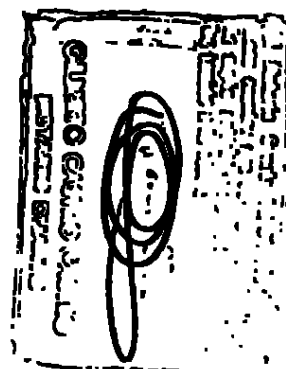
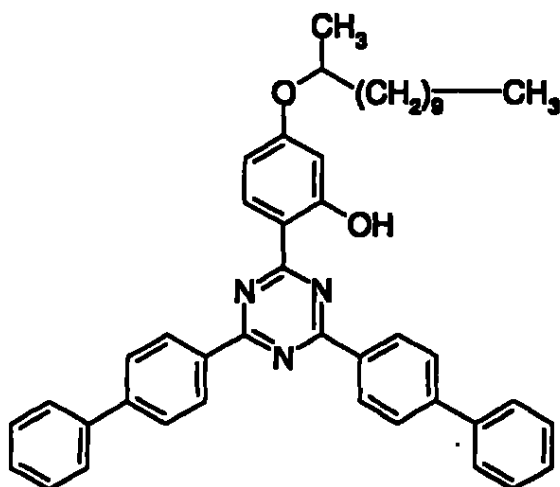
15. Transparent polyolefin article of claim 1 or 2 additionally containing a further component, especially a further light stabilizer, processing stabilizer, filler, clarifier, modifier or acid scavenger.

16. A compound of one of the formulae a, b, f, g or h

a)



b)



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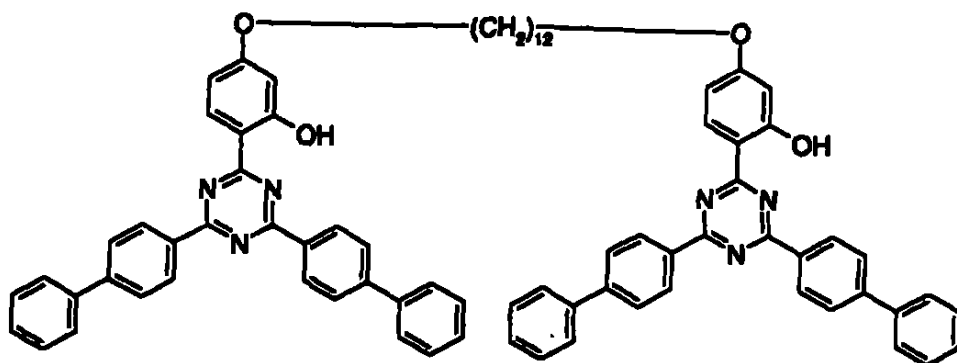
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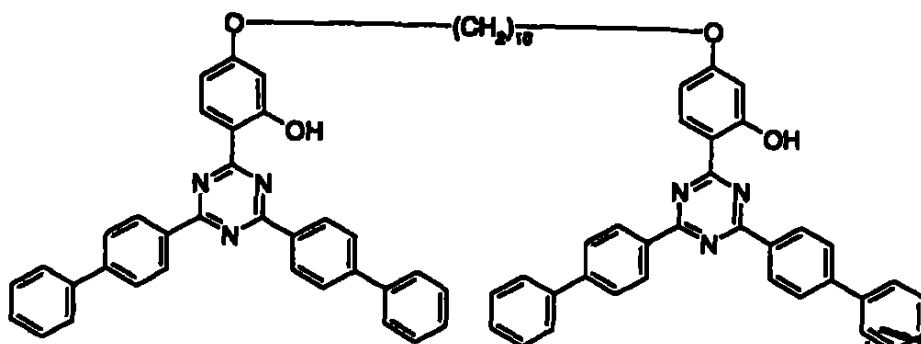
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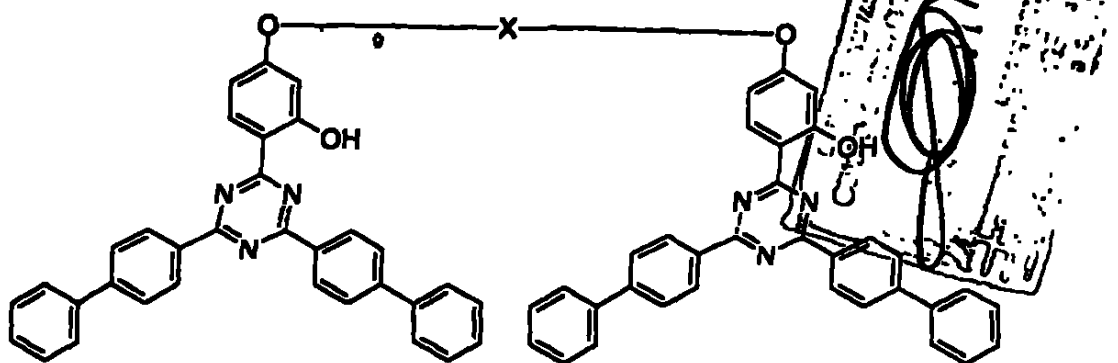
f)



g)



h)



wherein X is C₁₃-C₂₄alkylene; (C₁-C₁₈alkylene)-CO-O-D-O-CO-(C₁-C₁₈alkylene); CO-(C₁₃-C₂₄alkylene)-CO;
C₃-C₂₄alkylene interrupted by oxygen, especially (C₁-C₃alkylene)-O-(C₁-C₃alkylene).

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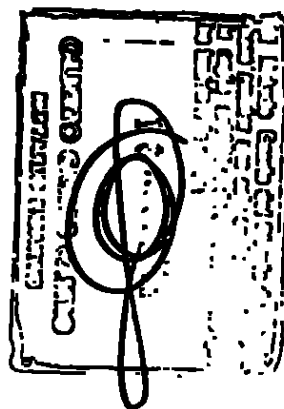
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ABST

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Abstract

The novel transparent polyolefin article disclosed is stabilized against the effects of light, oxygen, heat and aggressive chemicals by addition of 0.005 - 0.30 % by weight the polyolefin of a hydroxyphenyl triazine UV absorber, and is characterized by its thickness between 1 and 500 μm . Preferred polyolefin articles thus stabilized are agricultural films containing as further stabilizer a sterically hindered amine. The novel compositions act as selective UV filter especially useful for agriculture.



Printed:03-05-2001

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INFORME DE PROTOCOLO

Expediente 01-53813

Fecha: 30 de octubre del 2001

Se certifica que:

Desde fecha 14 de mayo de 1997, del folio 91118 al folio
91124 del libro de Protocolo N° 313, obra
el poder N° 17460 conferido por CIBA SPECIALITY
CHEMICALS HOLDING INC.

domiciliado(a) en Basilea, Suiza

al doctor JIMENA ESCOBAR URIBE y/o IGNACIO ESCOBAR
URIBE y/o LUIS PATIÑO LEYVA y/o MAURICIO PATINO
BONNET.

Representante en Bogotá D.C. los mismos

Facultad para desistir y sustituir SI.

Revisado 202027.

Carrera 13 No. 27-00 Pisos 5, 7 y 10
Conmutador: 382 0840
Fax: 382 2695
E-mail: Info@sic.gov.co
Bogotá, D.C., Colombia

Folio 132

2020
Bogotá, D. C.

Doctor
JIMENA ESCOBAR URIBE
Apoderado

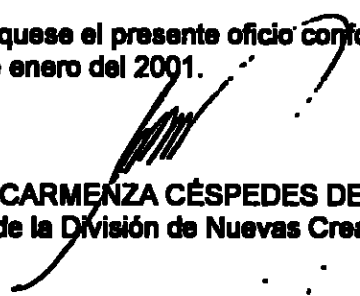
REFERENCIA:	Radicación	01-53813
	Trámite	002
	Evento	001
	Actuación	430
	Oficio No.	3121
	Folios	001

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica que:

- Debe allegar copia del documento en que consta la cesión del derecho a la patente otorgado por el inventor al solicitante o a su causante (art. 26-k, Dec 486/2000).

En cumplimiento del artículo 39 de la Decisión 486, en concordancia con el artículo 85 de la misma decisión, se le requiere para que dentro del término de dos (2) meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el artículo 8 de la Resolución 210 del 15 de enero del 2001.


ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista de fecha 13 DIC. 2001

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