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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

30 December 2009

(54) Title: POLYVINYL ULTRAVIOLET LIGHT ABSORBERS FOR PERSONAL CARE

(57) Abstract: UV-absorbing polymers and copolymers suitable for Composition into sunscreens for the protection of human skin. The UV-absorbing chromophoric monomers chosen are simple and easily synthesized. With the correct choice of chromophoric monomer or mixture of monomers, protection against UV-A radiation or against both UV-A and UV-B radiation can be achieved. With the correct choice of comonomer, copolymers produced as aqueous latex emulsions or as Polyethylene Glycol solutions can also be achieved.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
INV. C08F20/28 C08F12/22 C08K5/00 C07C235/34 A61Q17/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
C08F C08L C08K C07C A61Q A61K

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

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

EPO-Internal, WPI Data, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 3 943 094 A (MARGOTTE DIETER ET AL) 9 March 1976 (1976-03-09)  column 2, line 51 - column 4, line 17 example 1	1, 3, 5-7, 13 2, 4, 8-12, 15
Y	JP 07 258166 A (KAO CORP) 9 October 1995 (1995-10-09) abstract	8-12, 15
Y	WO 2006/057824 A (ADVANCED MEDICAL OPTICS INC [US]; PEARSON JASON CLAY [US]; WEAVER MAX) 1 June 2006 (2006-06-01) page 2, paragraph 6 - page 4, paragraph 9 page 11, paragraph 40 page 16, paragraph 52	1-9, 14
A	----- -/--	8-12

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents; such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search  
  
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INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2009/000066

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	SHUIZHU WU, FANG ZENG, HONGPING ZHU, SHAOJIN LUO, BIYE REN, ZHEN TONG: MACROMOLECULES, vol. 38, 10 July 2005 (2005-07-10), pages 9266-9274, XP002550838	1-7, 14
A	page 1, column 2, line 7 - page 2, column 1, line 4  -----	8-12

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2009/000066

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13 and 15

A UV absorbing polymer comprising at least one residue of a chromophoric monomer structure depicted by formula Ia, a composition comprising said polymer and the chromophoric monomer comprising the structure depicted by formula Ia.

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2. claims: 1-12, 14 and 15

A UV absorbing polymer comprising at least one residue of a chromophoric monomer structure depicted by formula Ib, a composition comprising said polymer and the chromophoric monomer comprising the structure depicted by formula Ib.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No  
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Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
US 3943094	A	09-03-1976	NONE	
JP 7258166	A	09-10-1995	JP 3505214 B2	08-03-2004
WO 2006057824	A	01-06-2006	AU 2005309912 A1	01-06-2006
			BR PI0518030 A	28-10-2008
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