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(54) Title: NOVEL CATIONIC COMPOSITIONS AND METHODS OF MAKING AND USING THE SAME

(57) Abstract: Waste reduction, including hazardous waste reduction in photoimaging processes can be accomplished by improving diffusional resolution of cationic curable compositions. The addition of fluorinated polymers including fluorinated surfactants provides improved diffusional resolution in cationic and/or radical based photoimaging formulations allowing for image accuracy improvements, and reduced product and process waste quantity and disposal cost. These fluorinated surfactants also allow for increased cure speed, and non-hazardous constituent formulations that result in less wasted material and time.



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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2006/001033

A. CLASSIFICATION OF SUBJECT MATTER

INV. G03F7/00 G03F7/004 G03F7/031 G03F7/038

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)

G03F

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, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 036 789 A1 (ASAHI DENKA KOGYO KK [JP]) 20 September 2000 (2000-09-20) examples	1-17
X	EP 0 848 293 A1 (DSM NV [NL]; JAPAN SYNTHETIC RUBBER CO LTD [JP]; JAPAN FINE COATINGS C) 17 June 1998 (1998-06-17) page 19, line 20 - page 20, line 15; claim 1; examples	1,3,5, 11,12, 14,16,17
X	JP 11 322944 A (NIPPON KAYAKU KK) 26 November 1999 (1999-11-26) example 1	1-3,7, 11,14,16
X	WO 2005/000801 A (SAN APRO LTD [JP]; DATE MASASHI [JP]; KIMURA HIDEKI [JP]; YAMASHITA SH) 6 January 2005 (2005-01-06) example 4	1,3-6, 14,16
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☒ 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

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2006/001033

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.:

see annex

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: 1-17 (part)

A cationically curable composition comprising:
a cationically curable component;
a cationic photoinitiator and
(i) a photosensitizing effective amount of a photosensitizer comprising a benzoyl diphenyl sulfide compound
A method of forming a cationically cured material using the above composition.
A process for forming a three-dimensional article using the above composition.

2. claims: 1-17 (part)

A cationically curable composition comprising:
a cationically curable component;
a cationic photoinitiator and
(ii) a photoacid diffusion inhibiting effective amount of a fluorinated surfactant.
A method of forming a cationically cured material using the above composition.
A process for forming a three-dimensional article using the above composition.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/001033

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	& EP 1 640 363 A1 (SAN APRO LTD [JP]) 29 March 2006 (2006-03-29) test example 4 ;example 4 -----	1,3-6, 14,16
A	WO 2004/001507 A (DSM IP ASSETS BV [NL]; LAWTON JOHN ALAN [US]) 31 December 2003 (2003-12-31) claim 13; example 2 -----	1-17
P,X	WO 2005/070989 A (CIBA SC HOLDING AG [CH]; WOLF JEAN-PIERRE [CH]; ILG STEPHAN [CH]; BIRB) 4 August 2005 (2005-08-04) page 22, line 7 - line 9; claim 1 page 29, line 5 - line 9 -----	1,3,6, 16,17

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2006/001033

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