Title: LATEX COATING COMPOSITIONS INCLUDING CARBOXY ESTER KETAL COALESCENTS, METHODS OF MANUFACTURE, AND USES THEREOF

Abstract: A latex coating composition is disclosed, comprising a latex polymer binder; water; and a ketal adduct of formula (1), wherein R₁ is CI-6 alkyl, R₂ is hydro- or CI-3 alkyl, each R₃, R₄, and R₅ is independently hydrogen or CI-6 alkyl, R⁶ and R⁷ are each independently hydrogen or CI-6 alkyl, a is 0-3, and b is 0-1.

(Continued on next page)
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:
10 May 2012
INTERNATIONAL SEARCH REPORT

International application No.
PCT/US20 11/047620

A. CLASSIFICATION OF SUBJECT MATTER

C09D 7/12(2006.01); C09D 121/02(2006.01)

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)
C09D 7/12; C08G 63/42; C08K 3/00; C09D 107/02; A61K 8/49; C07D 317/30; C07D 407/02; C07D 407/00; B32B 15/08; C08G 18/77

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

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: latex, binder, copolymer, acrylic, vinyl, ethylene, pigment, coating, ketal adduct

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>US 2008-0242721 A1 (SELIFSWOV SERGEY) 02 October 2008 See the whole document</td>
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<td>WO 2009-032905 A1 (SEGETIS, INC. et al.) 12 March 2009 cited in the application See the whole document</td>
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<td>US 5700522 A (NONWEILER; MARK A. et al.) 23 December 1997 See the whole document</td>
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<td>A</td>
<td>US 2008-0188603 A1 (PORRIS ROBERT SHANE et al.) 07 August 2008 See the whole document</td>
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</table>

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

A: 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 application or patent 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 citation or other special reason (as specified)
"O" document referring to an oral submission, 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: 21 MARCH 2012 (21.03.2012)
Date of mailing of the international search report: 22 MARCH 2012 (22.03.2012)

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
Government Complex-Daejeon, 189 Cheongsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea
Facsimile No. 82-42-472-7140

Authorized officer
So, Jae Hyun
Telephone No. 82-42-481-8397

Form PCT/ISA/210 (second sheet) (My 2009)
**INTERNATIONAL SEARCH REPORT**

**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.: 6, 21
   - 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:
     - Claims 6 and 21 refer to the claim 5 or 20, which is not drafted in accordance with the second and third sentences of Rule 6.4(a).

3. ☑ Claims Nos.: 4, 5, 7-20
   - 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:

1. ☑ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

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.

Form PCT/ISA/210 (continuation of first sheet (2)) (July 2009)
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## INTERNATIONAL SEARCH REPORT

### Information on patent family members

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