



(43) International Publication Date  
26 April 2012 (26.04.2012)

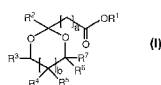
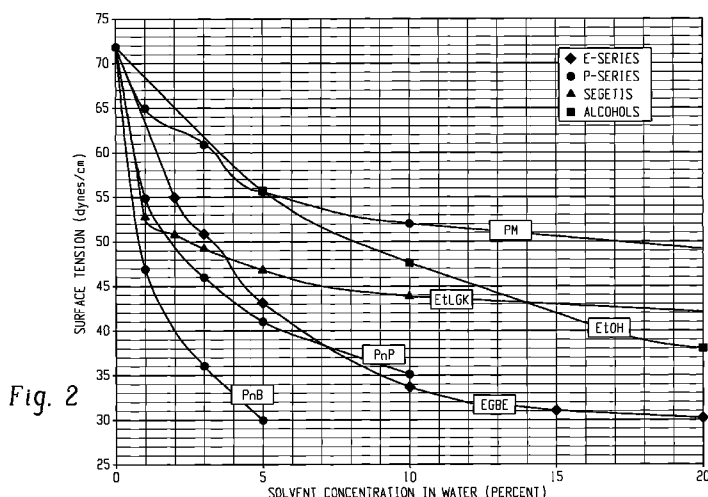
- (51) International Patent Classification:  
C09D 7/12 (2006.01) H05K 3/10 (2006.01)  
C09D 175/04 (2006.01)
- (21) International Application Number:  
PCT/US2011/056741
- (22) International Filing Date:  
18 October 2011 (18.10.2011)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
61/394,099 18 October 2010 (18.10.2010) US
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,

[Continued on next page]

(54) Title: WATER REDUCIBLE COATING COMPOSITIONS INCLUDING CARBOXY ESTER KETALS, METHODS OF MANUFACTURE, AND USES THEREOF



(57) Abstract: A water-reducible coating composition includes a water-reducible polymer binder; water; and a ketal adduct of formula (1) as well as coated substrates and films formed from the compositions. The films are useful as paints, stains, and clear-coats.

WO 2012/054505 A3



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

— *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))*

**Published:**

— *with international search report (Art. 21(3))*

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

19 July 2012

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2011/056741****A. CLASSIFICATION OF SUBJECT MATTER***C09D 7/12(2006.01)i, C09D 175/04(2006.01)i, H05K 3/10(2006.01)i*

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; C11D; A61Q; B05D; C07D; A61K; C09K; A63F; C23F

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) &amp; Keywords: water-reducible coating, ketal adduct, binder, water.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	US 2011-0274634 A1 ( RIETH; LEE RICHARD et al. ) 10 November 2011 See abstract; claims 1,2,4,23; par.[0006], [0007], [0052], [0053].	1-6,8
A	US 05489448 A ( JACKSON; MICHAEL L. et al. ) 06 February 1996 See abstract; claims 1,3; column 1 lines 11-19.	1-12,15
A	WO 2010-075330 A1 ( SEGETIS, INC. ) 01 July 2010 See abstract; claims 1,16,18; page 1 lines 13-17; page 12 lines 3-6.	1-12,15
A	US 2007-0079722 A1 ( PARISH; W. WESLEY ) 12 April 2007 See abstract; claims 1,15,16; par.[0002], [0107].	1-12,15
A	US 2003-0036489 A1 ( LIU; ZAIYOU et al. ) 20 February 2003 See abstract; claims 1,18,20; par.[0026], [0092], [0093].	1-12,15
A	US 2008-0081779 A1 ( HOLSCHER; BERND ) 03 April 2008 See abstract; claims 1,9; par.[0001], [0011], [0060], [0061], [0074], [0084].	1-12,15
A	US 2006-0208226 A1 ( MAZE; ETIENNE GEORGES et al. ) 21 September 2006 See abstract; claims 1,4; par.[0009], [0041].	1-12,15

 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 application or patent but published on or after the international filing date

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"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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

30 MAY 2012 (30.05.2012)

Date of mailing of the international search report

**30 MAY 2012 (30.05.2012)**

Name and mailing address of the ISA/KR

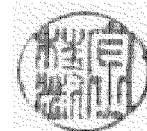
Korean Intellectual Property Office  
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan  
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Kim, Gye Sook

Telephone No. 82-42-481-8650



**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/US2011/056741**

**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.: 17-20, 22, 24  
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:  
  
The claims refer to unsearchable claims which do not comply with PCT Rule 6.4(a).  
Thus, it is not possible to make meaningful search regarding claims 17-20, 22, 24.
  
3.  Claims Nos.: 13, 14, 16, 21, 23, 25  
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.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

**PCT/US2011/056741**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/056741**

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