



(51) International Patent Classification:

C08G 18/66 (2006.01) *C08G 18/34* (2006.01)
C08G 18/75 (2006.01) *C08G 18/38* (2006.01)
C08G 18/08 (2006.01) *C08G 18/42* (2006.01)
C09D 175/04 (2006.01) *C09J 175/04* (2006.01)

(21) International Application Number:

PCT/US2013/069801

(22) International Filing Date:

13 November 2013 (13.11.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/734,145 6 December 2012 (06.12.2012) US

(71) Applicants: **ANGUS CHEMICAL COMPANY** [US/US]; 1500 East Lake Cook Road, Buffalo Grove, IL 60089 (US). **ROHM AND HAAS COMPANY** [US/US]; 100 Independence Mall West, Philadelphia, PA 19106 (US).

(72) Inventors: **BRUTTO, Patrick E.**; 326 Montabello Street, Bloomingdale, IL 60108 (US). **GREEN, George D.**; 2421 Grove Lane, Cary, IL 60013 (US). **FU, Zhenwen**; 700 Lower State Road, Apartment 13B6, North Wales, PA 19454 (US). **GREYSON, Eric C.**; 1740 Windsor Road, Blue Bell, PA 19422 (US). **HEJL, Andrew**; 230 Highland Avenue, Lansdale, PA 19446 (US). **TANG, Jia**; 216 Baxter Drive, Phoenixville, PA 19460 (US).

(74) Agent: **SHALTOUT, Raef**; The Dow Chemical Company, Intellectual Property, P.O. Box 1967, Midland, Michigan 48641-1967 (US).

(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, BN, 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, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, 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, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

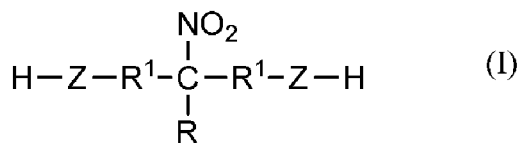
Published:

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

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

23 October 2014

(54) Title: NITROFUNCTIONAL POLYURETHANE DISPERSIONS FOR BINDER COMPOSITIONS



(57) Abstract: Provided is a binder composition and its use in aqueous based paints and coatings and other applications. The binder composition comprises: a polyurethane dispersion containing water and a polyurethane polymer, wherein the polyurethane polymer is prepared by reacting a nitroalcohol compound, a polyol compound, a polyisocyanate compound, and optionally chain extenders, wherein the nitroalcohol compound is of formula I, wherein R, R¹, and Z are as defined herein.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/069801

A. CLASSIFICATION OF SUBJECT MATTER INV. C08G18/66 C08G18/75 C08G18/08 C09D175/04 C08G18/34 C08G18/38 C08G18/42 C09J175/04 ADD. 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) C08G C09D C09J 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 practicable, search terms used) EPO-Internal, WPI Data														
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category*</th> <th style="width: 70%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 20%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>US 2009/253858 A1 (ARGYROPOULOS JOHN N [US] ET AL) 8 October 2009 (2009-10-08) paragraphs [0001] - [0004], [0019], [0036], [0042] - [0046] examples 1,2; tables 1,2 -----</td> <td style="text-align: center; vertical-align: top;">1-10</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>US 2012/149841 A1 (YAMADA TAKESHI [JP] ET AL) 14 June 2012 (2012-06-14) paragraphs [0002], [0007], [0015] - [0050], [0096] - [0103] examples 1-6; table 1 -----</td> <td style="text-align: center; vertical-align: top;">1-10</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>US 4 672 000 A (LINDEN GARY L [US]) 9 June 1987 (1987-06-09) column 1, line 56 - column 2, line 7 column 3, line 12 - column 4, line 50 example 1; tables 1,2A,2B -----</td> <td style="text-align: center; vertical-align: top;">1-10</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	US 2009/253858 A1 (ARGYROPOULOS JOHN N [US] ET AL) 8 October 2009 (2009-10-08) paragraphs [0001] - [0004], [0019], [0036], [0042] - [0046] examples 1,2; tables 1,2 -----	1-10	A	US 2012/149841 A1 (YAMADA TAKESHI [JP] ET AL) 14 June 2012 (2012-06-14) paragraphs [0002], [0007], [0015] - [0050], [0096] - [0103] examples 1-6; table 1 -----	1-10	A	US 4 672 000 A (LINDEN GARY L [US]) 9 June 1987 (1987-06-09) column 1, line 56 - column 2, line 7 column 3, line 12 - column 4, line 50 example 1; tables 1,2A,2B -----	1-10
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
A	US 2009/253858 A1 (ARGYROPOULOS JOHN N [US] ET AL) 8 October 2009 (2009-10-08) paragraphs [0001] - [0004], [0019], [0036], [0042] - [0046] examples 1,2; tables 1,2 -----	1-10												
A	US 2012/149841 A1 (YAMADA TAKESHI [JP] ET AL) 14 June 2012 (2012-06-14) paragraphs [0002], [0007], [0015] - [0050], [0096] - [0103] examples 1-6; table 1 -----	1-10												
A	US 4 672 000 A (LINDEN GARY L [US]) 9 June 1987 (1987-06-09) column 1, line 56 - column 2, line 7 column 3, line 12 - column 4, line 50 example 1; tables 1,2A,2B -----	1-10												
☐ 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 "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 11 July 2014		Date of mailing of the international search report 07/08/2014												
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Neugebauer, Ute												

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/069801

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009253858	A1	08-10-2009	
		AU 2007253855 A1	29-11-2007
		BR PI0711003 A2	23-08-2011
		CA 2650791 A1	29-11-2007
		CN 101443374 A	27-05-2009
		EP 2035474 A2	18-03-2009
		JP 2009537669 A	29-10-2009
		KR 20090018911 A	24-02-2009
		RU 2008149949 A	27-06-2010
		US 2009253858 A1	08-10-2009
		WO 2007137116 A2	29-11-2007
US 2012149841	A1	14-06-2012	
		CN 102471448 A	23-05-2012
		EP 2468790 A1	27-06-2012
		KR 20120061895 A	13-06-2012
		TW 201113302 A	16-04-2011
		US 2012149841 A1	14-06-2012
		WO 2011021500 A1	24-02-2011
US 4672000	A	09-06-1987	
		AT 398576 B	27-12-1994
		AU 561728 B2	14-05-1987
		AU 570373 B2	10-03-1988
		AU 5821486 A	24-12-1986
		AU 6874487 A	21-05-1987
		BE 904828 A1	15-09-1986
		BR 8602440 A	14-10-1986
		CA 1241878 A1	13-09-1988
		DE 3618113 A1	04-12-1986
		ES 8706735 A1	16-09-1987
		FR 2582661 A1	05-12-1986
		GB 2175912 A	10-12-1986
		IT 1208621 B	10-07-1989
		JP H0340070 B2	17-06-1991
		JP S61278571 A	09-12-1986
		MX 163893 B	30-06-1992
		NL 8601385 A	16-12-1986
		SE 468438 B	18-01-1993
		US 4672000 A	09-06-1987
		ZA 8604010 A	25-02-1987