



- (51) **International Patent Classification:**
C09J 103/02 (2006.01) *C09J 9/00* (2006.01)
C09J 11/00 (2006.01) *C09J 7/02* (2006.01)
- (21) **International Application Number:**
PCT/US2011/050965
- (22) **International Filing Date:**
9 September 2011 (09.09.2011)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/381,642 10 September 2010 (10.09.2010) 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, 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, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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:**
5 July 2012

(54) **Title:** IMPROVED ADHESIVE HAVING INSULATIVE PROPERTIES

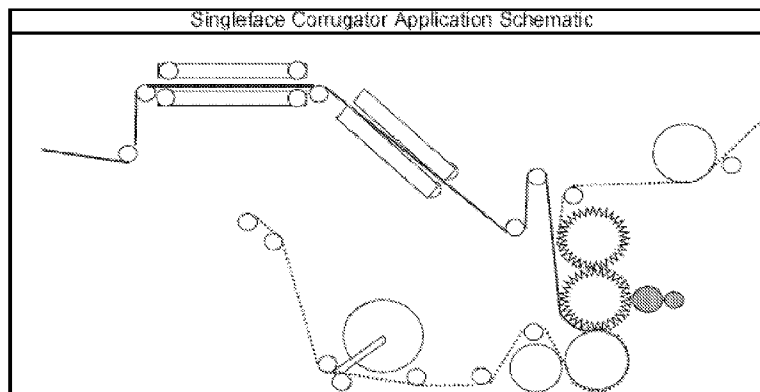


FIG 1A

(57) **Abstract:** An improved adhesive composition having increased insulative properties is provided. The adhesive composition having improved insulative properties includes a starch component; an alkaline component; sodium tetraborate; water; and a plurality of expandable microspheres. Products having improved insulation capabilities and methods of making the products having improved insulation capabilities are also provided. The present adhesive and products including the adhesive is environmentally friendly.



WO 2012/033998 A3

A. CLASSIFICATION OF SUBJECT MATTER*C09J 103/02(2006.01)i, C09J 11/00(2006.01)i, C09J 9/00(2006.01)i, C09J 7/02(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)

C09J 103/02; C09J 163/00; B32B 31/14; B32B 31/26; C08J 9/32; D04H 3/00; D21H 27/30

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: adhesive, amylose, starch, alkaline, sodium tetraborate, expendable microsphere, insulation, corrugated sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6740373 B1 (SWOBODA; DEAN P. et al.) 25 May 2004 See the whole document	1-20
A	US 6379497 B1 (SANDSTROM; ERLAND et al.) 30 April 2002 See the whole document	1-20
A	WO 02-31077 A2 (HENKEL CORPORATION) 18 April 2002 See the whole document	1-20
A	US 2007-0009723 A1 (MASANORI OGAWA et al.) 11 January 2007 See the whole document	1-20

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

* Special categories of cited documents:

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Date of the actual completion of the international search

27 APRIL 2012 (27.04.2012)

Date of mailing of the international search report

30 APRIL 2012 (30.04.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
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Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/050965

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