



(51) International Patent Classification:

H01B 3/44 (2006.01) *H01B 3/52* (2006.01)
H01B 3/48 (2006.01)

(21) International Application Number:

PCT/US2010/037304

(22) International Filing Date:

3 June 2010 (03.06.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/184,126 4 June 2009 (04.06.2009) US

(71) Applicant (for all designated States except US): **LY-DALL, INC.** [US/US]; One Colonial Road, Manchester, Connecticut 06045-0151 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LINTZ, Timothy S.** [US/US]; 46 Oregon Trail, Waterford, New York 12188 (US). **ALBERT, John D.** [US/US]; 563 Meadow Lane, Pennsburg, Pennsylvania 18073 (US). **MCGIVERN, Donald R.** [US/US]; 12 Ashley Drive, Latham, New York 12110 (US). **POMPEY, Eric T.** [US/US]; 170 Hudson Avenue, Green Island, New York 12183 (US).

(74) Agents: **CARROLL, Rodney, B.** et al.; Conley Rose, P.C., 5601 Granite Parkway, Suite 750, Plano, Texas 75024 (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, 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, RO, RS, RU, 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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

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:

31 March 2011

(54) Title: ELECTRICAL INSULATION MATERIALS AND METHODS OF MAKING AND USING SAME

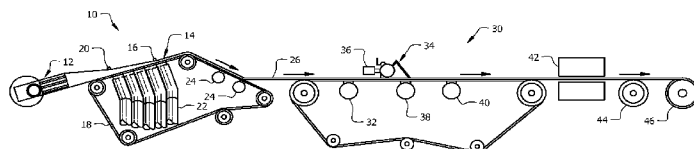


FIG. 1

(57) Abstract: Electrical insulation material comprising a fiber component, a binder element, and a dielectric additive and having a dielectric strength measured in air in the range of from about 8.9 MV/m (225 V/mil) to about 15.7 MV/m (325 V/mil), a dielectric strength measured in oil of greater than about 23.6 MV/m (600 V/mil), and a continuous use temperature of from about -30C (-22F) to about 220C (428F). A method of making electrical insulation material, comprising preparing an aqueous slurry comprising a fiber component, forming the slurry into a sheet, saturating the sheet with a saturant, wherein the saturant comprises a binder and a dielectric additive, and drying the saturated sheet. A method comprising preparing an aqueous slurry comprising a fibrillated acrylic fiber, dilution hydroforming the slurry into a sheet, saturating the sheet with a saturant, wherein the saturant comprises a carboxylated styrene-acrylate copolymer and a fluoropolymer, drying the sheet, and providing the sheet for use as insulation on an electrical conductor.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/037304**A. CLASSIFICATION OF SUBJECT MATTER*****H01B 3/44(2006.01)i, H01B 3/48(2006.01)i, H01B 3/52(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)

H01B 3/44; D21H 13/26

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: insulation, dielectric, sheet, fiber, binder

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007-0137818 A1 (MIKHAIL LEVIT et al.) 21 June 2007	1-10
A	See paragraphs [0083]-[0086]; claims 1,7,12-15	11-22
A	US 5833807 A1 (RAMACHANDRAN; SESHADRI et al.) 10 November 1998 See claims 1-10	1-22

☐ 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 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

24 JANUARY 2011 (24.01.2011)

Date of mailing of the international search report

24 JANUARY 2011 (24.01.2011)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-
gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Jang, Ki Wan

Telephone No. 82-42-481-5567



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2010/037304

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007-0137818 A1	21.06.2007	None	
US 5833807 A1	10.11.1998	CA 2282256 C	31.01.2006
		CA 2282256-A1	22.10.1998
		CN 1095011 C	27.11.2002
		CN 1252113 A	03.05.2000
		CN 1252113 C0	03.05.2000
		EP 0975835 A1	02.02.2000
		EP 0975835 B1	06.11.2002
		JP 2001-520711 A	30.10.2001
		KR 10-0486050 B1	03.05.2005
		US 05833807A A	10.11.1998
		WO 98-46827 A1	22.10.1998