



(43) International Publication Date
6 December 2012 (06.12.2012)

(10) International Publication Number
WO 2012/166779 A3

(51) International Patent Classification:

C08L 23/22 (2006.01) *C08L 71/12* (2006.01)
C08L 25/08 (2006.01) *C08J 5/00* (2006.01)
C08L 9/00 (2006.01)

(21) International Application Number:

PCT/US2012/039960

(22) International Filing Date:

30 May 2012 (30.05.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/491,555 31 May 2011 (31.05.2011) US

(71) Applicant (for all designated States except US): **POLY-ONE CORPORATION** [US/US]; 33587 Walker Road, Avon Lake, Ohio 44012 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KIM, Sehyun** [KR/US]; 20565 Westpark Place, Deer Park, Illinois 60010 (US).

(74) Agents: **HORNICKEL, John H.** et al.; Polyone Corporation, 33587 Walker Road, Avon Lake, Ohio 44012 (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, 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, 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).

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))

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

2 May 2013

(54) Title: THERMOPLASTIC ELASTOMER COMPOUNDS EXHIBITING SUPERIOR COMPRESSION SET PROPERTIES

(57) Abstract: A blend of polyisobutylene-based thermoplastic vulcanizate, styrene-ethylene-ethylene-propylene-styrene, low molecular weight liquid polybutene, polyolefin, polyphenylene ether, and, optionally, filler is disclosed which has good processability, lower compression set, and more effective barrier properties for oxygen than the same blend without the styrene-ethylene-ethylene-propylene-styrene and the polyphenylene ether. The blend is superior in oxygen transmission rate properties than a conventional styrenic block copolymer containing thermoplastic elastomer.



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A. CLASSIFICATION OF SUBJECT MATTER*C08L 23/22(2006.01)i, C08L 25/08(2006.01)i, C08L 9/00(2006.01)i, C08L 71/12(2006.01)i, C08J 5/00(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)

C08L 23/22; C08J 3/24; C08K 5/01; C08L 53/00; F16J 15/00; C08L 53/02; C09D 5/16

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: thermoplastic elastomer, thermoplastic vulcanizate, styrene-ethylene-ethylene-propylene-styrene, SEEPS, polybutene plasticizer, polyolefin, polyphenylene ether, filler, good processability, lower compression set, effective barrier properties for oxygen

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006-0229402 A1 (RAJESH VARMA) 12 October 2006 See whole document	1-3
A	US 2010-0152320 A1 (YOUN BUM SEOK et al.) 17 June 2010 See whole document	1-3
A	US 7105611 B2 (Katsuhiko Kimura et al.) 12 September 2006 See whole document	1-3
A	US 2007-0112132 A1 (XINYU ZHAO et al.) 17 May 2007 See whole document	1-3
A	US 2009-0283973 A1 (KOH YOUNG DEOG et al.) 19 November 2009 See whole document	1-3



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

16 JANUARY 2013 (16.01.2013)

Date of mailing of the international search report

17 JANUARY 2013 (17.01.2013)

Name and mailing address of the ISA/KR

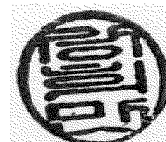
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City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Kang Huiman

Telephone No. 82-42-481-8290



INTERNATIONAL SEARCH REPORTInternational application No.
PCT/US2012/039960**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.:
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:
3. ☒ Claims Nos.: 4, 5, 6, 7, 8
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.

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