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(71) **Applicant** (for all designated States except US): **HONEYWELL INTERNATIONAL INC.** [US/US]; Patent Services M/S AB/2B, 101 Columbia Road, P. O. Box 2245, Morristown, New Jersey 07962-2245 (US).

(72) Inventors; and

(75) **Inventors/Applicants** (for US only): **WILLIAMS, David J.** [US/US]; Honeywell International Inc., Patent Services M/S AB/2B, 101 Columbia Road, P. O. Box 2245, Morristown, New Jersey 07962-2245 (US). **BOGDAN, Mary C.** [US/US]; Honeywell International Inc., Patent Services M/S AB/2B, 101 Columbia Road, P. O. Box 2245, Morristown, New Jersey 07962-2245 (US). **GITTERE, Clifford**

P. [US/US]; Honeywell International Inc., Patent Services M/S AB/2B, 101 Columbia Road, P. O. Box 2245, Morristown, New Jersey 07962-2245 (US). **POSS, Andrew J.** [US/US]; Honeywell International Inc., Patent Services M/S AB/2B, 101 Columbia Road, P. O. Box 2245, Morristown, New Jersey 07962-2245 (US).

(74) **Agent:** **BEATUS, Carrie;** Honeywell International Inc., Patent Services M/S AB/2B, 101 Columbia Road, P. O. Box 2245, Morristown, New Jersey 07962-2245 (US).

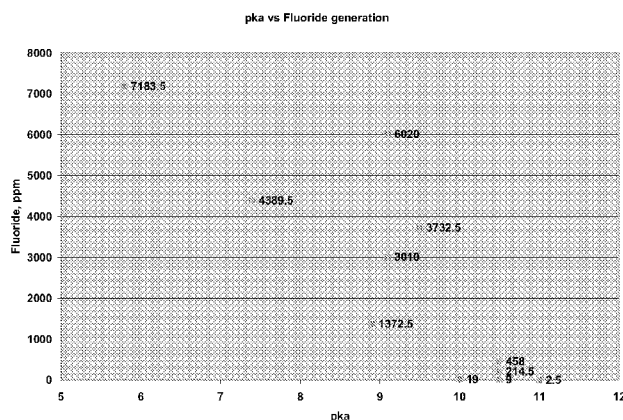
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[Continued on next page]

(54) **Title:** POLYURETHANE FOAM PREMIXES CONTAINING HALOGENATED OLEFIN BLOWING AGENTS AND FOAMS MADE FROM SAME

FIGURE 1



(57) **Abstract:** The invention provides polyurethane and polyisocyanurate foams and methods for the preparation thereof. More particularly, the invention relates to closed-celled, polyurethane and polyisocyanurate foams and methods for their preparation. The foams are characterized by a fine uniform cell structure and little or no foam collapse. The foams are produced with a polyol premix composition which comprises a combination of a hydrohaloolefin blowing agent, a polyol, a silicone surfactant, and a non-amine catalyst used alone or in combination with an amine catalyst.

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A. CLASSIFICATION OF SUBJECT MATTER*C08L 75/04(2006.01)i, C08J 9/04(2006.01)i, C08J 9/06(2006.01)i, C08G 18/00(2006.01)i, C08G 101/00(2006.01)n*

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 75/04; C08J 9/228; C08G 18/28; C08J 9/06; B01J 27/02; C08G 18/8

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: foamable composition, hydrohaloolefin blowing agent, polyol, surfactant, precipitation resistant metal catalyst, amine catalyst

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2009-0099274 A1 (VAN DER PUY, MICHAEL et al.) 16 April 2009 See abstract; claims 1-5; paragraphs [0042], [0059].	1,5,6 2-4,7-9
A	US 2011-0039964 A1 (WILLIAMS, DAVID J. et al.) 17 February 2011 See abstract; claims 1, 2, 7, 8, 13, 22; paragraphs [0028], [0035].	1-9
A	US 2009-0099272 A1 (WILLIAMS, DAVID J. et al.) 16 April 2009 See abstract; claims 1, 3, 5-7; paragraphs [0011], [0013], [0014].	1-9
A	US 6762214 B1 (TRACY, JERRY E. et al.) 13 July 2004 See abstract; claims 1, 7; column 5, lines 63-67; column 6, lines 1-15, 30-32 .	1-9
A	US 04225453A A (DEPAUL, HARRY V. et al.) 30 September 1980 See abstract; claim 1; column 7, lines 29-36.	1-9



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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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

"&" document member of the same patent family

Date of the actual completion of the international search

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189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

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Authorized officer

HONG, SUNG RAN

Telephone No. 82-42-481-5405



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/025869**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.: 10
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/US2012/025869

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