



(51) International Patent Classification:

C08J 9/04 (2006.01) *C08K 5/02* (2006.01)
C08J 9/14 (2006.01) *B01F 17/00* (2006.01)

(21) International Application Number:

PCT/US2011/047855

(22) International Filing Date:

16 August 2011 (16.08.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/374,978 18 August 2010 (18.08.2010) US
 13/210,188 15 August 2011 (15.08.2011) US

(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): **BOGDAN, Mary C.** [US/US]; 101 Electric Avenue, Buffalo, New York

14206 (US). **ROSS, Michael** [US/US]; 29 Gardenvale Drive, Cheektowaga, New York 14225 (US). **WILLIAMS, David J.** [US/US]; 6202 Shamrock Lane, East Amherst, New York 14051 (US). **GITTERE, Clifford P.** [US/US]; 235 Randwood Drive, Amherst, New York 14221 (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).

(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, 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.

[Continued on next page]

(54) Title: BLOWING AGENTS, FOAMABLE COMPOSITIONS AND FOAMS

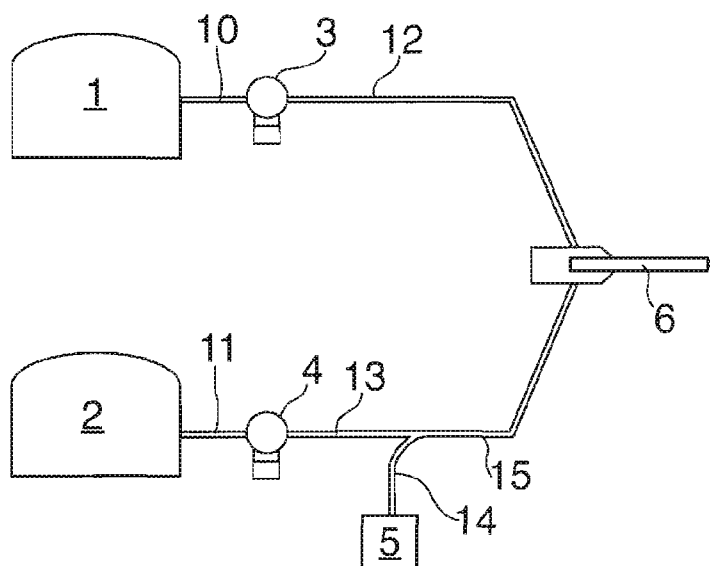


FIG. 1

(57) Abstract: A method of forming foam comprising: (a) providing at least a first relatively high pressure liquid comprising a first reactive component; (b) introducing into said relatively high pressure stream a liquid blowing agent composition comprising 1,3,3,3-tetrafluoropropene (HFO-1234ze) and/or HFCO-1233zd to produce a second stream at relatively high pressure and containing said blowing agent; and (c) mixing at least a portion of said third stream with a fourth stream containing a component reactive with said first component to produce a mixed reactive stream.



(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:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*