



(51) International Patent Classification:

*C11D 1/835* (2006.01)    *C11D 3/43* (2006.01)  
*C11D 3/00* (2006.01)    *C11D 3/50* (2006.01)  
*C11D 3/20* (2006.01)    *C11D 17/04* (2006.01)  
*C11D 3/37* (2006.01)

(21) International Application Number:

PCT/US2014/071828

(22) International Filing Date:

22 December 2014 (22.12.2014)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant: **COLGATE-PALMOLIVE COMPANY**  
[US/US]; 300 Park Avenue, New York, New York 10022  
(US).

(72) Inventors: **SCHRAMM, JR., Charles John**; 93 Beech-  
wood Circle, Hillsborough, New Jersey 08853 (US).  
**TRUONG, Katie**; 39 Winans Avenue, Piscataway, New  
Jersey 08854 (US).

(74) Agents: **MORGAN, Michael, F.** et al.; Colgate-Palmolive  
Company, 909 River Road, Piscataway, New Jersey 08855  
(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, BN, 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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, ST, 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, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))



**WO 2016/105333 A1**

(54) Title: UNIT DOSE FABRIC SOFTENER

(57) Abstract: A unit dose fabric conditioner that contains a combination of a polyol, alkoxyated alcohol, and dispersing polymer to allow for incorporation of encapsulated fragrance slurries into unit dose fabric conditioners to disperse the encapsulated fragrance and fabric conditioner active during laundering.

## UNIT DOSE FABRIC SOFTENER

### BACKGROUND

[0001] Unit dose products provide convenience to consumers to be able to quickly and easily add a desired amount of product to laundry. One such product is fabric conditioner. To improve on fabric conditioners, it would be desirable to add encapsulated fragrances that can be delivered during the wash. A problem with encapsulated fragrances is that they are typically supplied in a suspension with more than 50 weight % water. This water creates instability in the water soluble pouch that contains the product. Also, there is a need to disperse fragrance capsules to obtain a more evenly distributed deposition of the fragrance capsules on fabric. Also, there is a need to disperse the fabric conditioner throughout the wash.

### BRIEF SUMMARY

[0002] It has been found that a combination of a polyol, alkoxyated alcohol, and dispersing polymer allows for incorporation of encapsulated fragrance slurries into unit dose fabric conditioners to disperse the encapsulated fragrance and fabric conditioner active during laundering.

[0003] In one embodiment, a unit dose fabric conditioner comprising a fabric conditioner composition contained within a water soluble pouch, wherein the composition is liquid at 25°C and comprises:

a cationic fabric softening active;

at least 50% by weight of the composition of a C<sub>3</sub>-C<sub>12</sub> polyol that is liquid at 25°C;

a C<sub>9</sub>-C<sub>15</sub> alkoxyated alcohol having an average of 3 to 8 EO per mole and which is liquid at 25°C;

a dispersing polymer for dispersing the cationic fabric softening active; and  
encapsulated fragrance.

[0004] Also, a method of laundering fabric with the unit dose fabric conditioner.

[0005] Further areas of applicability of the present invention will become apparent from the detailed description provided hereinafter. It should be understood that the detailed description and specific examples, while indicating the preferred embodiment of the invention, are intended for purposes of illustration only and are not intended to limit the scope of the invention.

### DETAILED DESCRIPTION

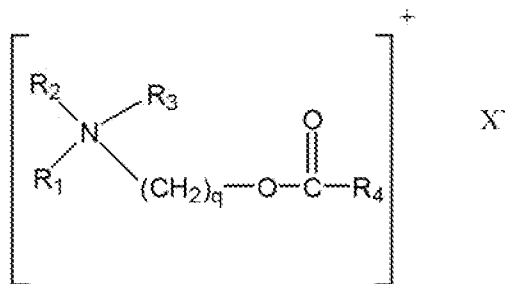
[0006] The following description of the preferred embodiment(s) is merely exemplary in nature and is in no way intended to limit the invention, its application, or uses.

[0007] As used throughout, ranges are used as shorthand for describing each and every value that is within the range. Any value within the range can be selected as the terminus of the range. In addition, all references cited herein are hereby incorporated by referenced in their entireties. In the event of a conflict in a definition in the present disclosure and that of a cited reference, the present disclosure controls.

[0008] Unless otherwise specified, all percentages and amounts expressed herein and elsewhere in the specification should be understood to refer to percentages by weight. The amounts given are based on the active weight of the material.

[0009] The cationic softener can be any cationic softener. In certain embodiments, the cationic softener is an esterquat, tallow esterquat, triolyeyl esterquat, and diolyeyl esterquat. In one embodiment, the esterquat is diolyel esterquat. In one embodiment, the tallow esterquat is described in WO2011149475.

[0010] The esterquats can be represented by the following structure:



wherein  $R_4$  represents an aliphatic hydrocarbon group having from 8 to 22 carbon atoms,  $R_2$  and  $R_3$  represent  $(CH_2)_s-R_5$  where  $R_5$  represents an alkoxy carbonyl group containing from 8 to 22 carbon atoms, benzyl, phenyl,  $(C_1-C_4)$  - alkyl substituted phenyl, OH or H;  $R_1$  represents  $(CH_2)_t R_6$  where  $R_6$  represents benzyl, phenyl,  $(C_1-C_4)$  - alkyl substituted phenyl, OH or H;  $q$ ,  $s$ , and  $t$ , each independently, represent an integer from 1 to 3; and  $X^-$  is a softener compatible anion.

[0011] The composition contains encapsulated fragrance. The encapsulated fragrance can be supplied as a suspension containing water. In certain embodiments, the encapsulated fragrance can be included in the composition in an amount of 1 to 10% by weight of the composition.

[0012] The water soluble pouch can be any material that is typically used for making a unit dose film. These materials include, but are not limited to polyvinyl alcohol. The thickness of the film that makes the pouch can be any desired thickness. In certain embodiment, the thickness is 25 to 150 microns. The thickness is chosen based on the desired dissolvability of the film.

[0013] In one embodiment, provided is Composition 1 that is a unit dose fabric conditioner comprising a fabric conditioner composition contained within a water soluble pouch, wherein the composition is liquid at 25°C and comprises:

a cationic fabric softening active;

at least 50% by weight of the composition of a C<sub>3</sub>-C<sub>12</sub> polyol that is liquid at 25°C;

a C<sub>9</sub>-C<sub>15</sub> alkoxyated alcohol having an average of 3 to 8 EO per mole and which is liquid at 25°C;

a dispersing polymer for dispersing the cationic fabric softening active; and encapsulated fragrance.

- 1.1 The unit dose fabric conditioner of any preceding Composition, wherein the water soluble pouch comprises polyvinyl alcohol.
- 1.2 The unit dose fabric conditioner of any preceding Composition, wherein the composition further comprises free fragrance.
- 1.3 The unit dose fabric conditioner of Composition 1.2, wherein the free fragrance is present in an amount of 0.5 to 7% by weight of the composition.
- 1.4 The unit dose fabric conditioner of any preceding Composition, wherein the encapsulated fragrance is present in an amount of 1 to 10% by weight of the composition.
- 1.5 The unit dose fabric conditioner of any preceding Composition, wherein the cationic fabric softening active is at least one active chosen from esterquat, tallow esterquat, triolyeyl esterquat, and diolyeyl esterquat.
- 1.6 The unit dose fabric conditioner of any preceding Composition, wherein the cationic fabric softener is present in an amount of 10 to 30% by weight of the composition.
- 1.7 The unit dose fabric conditioner of any preceding Composition, wherein the cationic fabric softener is liquid at 25°C.
- 1.8 The unit dose fabric conditioner of any preceding Composition, wherein the cationic fabric softener is diolyeyl esterquat.

- 1.9 The unit dose fabric conditioner of any preceding Composition, wherein the polyol is at least one polyol chosen from glycerin, propylene glycol, diglycerol, triglycerol, and quadraglycerol.
- 1.10 The unit dose fabric conditioner of any preceding Composition, wherein the polyol is present in an amount of 50 to 90% by weight of the composition.
- 1.11 The unit dose fabric conditioner of any preceding Composition, wherein the polyol is present in an amount of 50 to 80% by weight of the composition.
- 1.12 The unit dose fabric conditioner of any preceding Composition, wherein the polyol is present in an amount of 60 to 80% by weight of the composition.
- 1.13 The unit dose fabric conditioner of any preceding Composition, wherein the polyol is present in an amount of 60 to 70% by weight of the composition.
- 1.14 The unit dose fabric conditioner of any preceding Composition, wherein the alkoxyated alcohol is present in an amount of 2 to 8 weight % by weight of the composition.
- 1.15 The unit dose fabric conditioner of any preceding Composition, wherein the alkoxyated alcohol is present in an amount of 6 weight % by weight of the composition.
- 1.16 The unit dose fabric conditioner of any preceding Composition, wherein the alkoxyated alcohol is at least one alkoxyated alcohol chosen from a C<sub>9</sub>-C<sub>11</sub> alkoxyated alcohol with an average of 8 EO, C<sub>12</sub>-C<sub>13</sub> alkoxyated alcohol with an average of 5 EO, and C<sub>12</sub>-C<sub>13</sub> alkoxyated alcohol with an average of 7 EO.
- 1.17 The unit dose fabric conditioner of any preceding Composition, wherein the alkoxyated alcohol is a C<sub>9</sub>-C<sub>11</sub> alkoxyated alcohol with an average of 8 EO.
- 1.18 The unit dose fabric conditioner of any preceding Composition, wherein the dispersing polymer is a water soluble cross-linked cationic polymer derived from the polymerization of from 5 to 100 mole percent of cationic vinyl addition monomer, from 0 to 95 mole percent of acrylamide, and from 70 to 300 ppm of a difunctional vinyl addition monomer cross-linking agent. Examples of these types of polymers are available from SNF Floerger.
- 1.19 The unit dose fabric conditioner of any preceding Composition, wherein the dispersing polymer is present in an amount of 0.2 to 2% by weight of the composition.
- 1.20 The unit dose fabric conditioner of any preceding Composition, wherein the dispersing polymer is present in an amount of 0.2 to 0.5% by weight of the composition.

- 1.21 The unit dose fabric conditioner of any preceding Composition, wherein the dispersing polymer is present in an amount of 0.3 to 0.35% by weight of the composition.
- 1.22 The unit dose fabric conditioner of any preceding Composition, wherein the composition contains water in an amount of 0 to 10 % by weight of the composition.
- 1.23 The unit dose fabric conditioner of Composition 1.22, wherein the amount of water is 0 to 7% by weight of the composition, and the water soluble pouch has a thickness of 35 to 40 microns.
- 1.24 The unit dose fabric conditioner of Composition 1.22, wherein the amount of water is 0 to 9% by weight of the composition, and the water soluble pouch has a thickness of 70 to 80 microns.
- 1.25 The unit dose fabric conditioner of any preceding Composition, wherein the composition further comprises at least one material chosen from PPG-2-myristyl ether propionate, propylene/hexene maleic terminated copolymer with a weight average molecular weight of about 800, and a polyether-alkyl-polymethyl-siloxane copolymer.
- 1.26 The unit dose fabric conditioner of any preceding Composition, wherein the composition is non-Newtonian and has a viscosity of 200 to 1000 mPas as measured on a Brookfield LVT viscometer with spindle 4 at 12 rpm, optionally 200 to 800 mPas.
- 1.27 The unit dose fabric conditioner of any of Compositions 1 to 1.25, wherein the composition is Newtonian and has a viscosity of 200 to 1000 mPas as measured on a Brookfield LVT viscometer with spindle 2 at 30 rpm, optionally 200 to 800 mPas.

[0014] Any of the preceding unit dose fabric conditioners can be used in a laundry process to condition fabrics. The unit dose can be added to the wash cycle, the rinse cycle, or both.

[0015] Liquid at 25°C refers to the ordinary definition of a liquid in which the material conforms to the shape of the container that it is in. In certain embodiments, liquid at 25°C refers to a material that is liquid and when added to the composition, the composition has a viscosity of 200 to 1000 or 200 to 800 mPas as measured above.

[0016] The compositions can contain any typical additive, such as coloring agents, pH adjusting agents, preservatives, antifoams, and silicones.

## EXAMPLES

[0017] Exemplary compositions were prepared as detailed in the tables below. The compositions were prepared by mixing of the materials.

Material	A	B	C	D	E	F	G	H
Soft Tallow Triesterquat	19.1%	19.2%	19.4%	19.1%	14.8%	19.9%	20.7%	20.8%
TriOleyl Esterquat								
DiOleyl Esterquat								
50/50 Hard/Soft Esterquat from WO2011149475								
Glycerin	58.7%	59%	59.7%	58.6%	61.8%	61.2%	63.7%	64%
Free Fragrance	5.1%	5.1%	5.2%	5.1%	5.4%	4%	2.6%	1.8%
Neodol 91-8 C <sub>9</sub> -C <sub>11</sub> alkoxyated alcohol with an average of SEO	2.6%	2.6%	2.6%	3.3%	2.7%	3.5%	3.6%	3.6%
Water soluble cross-linked cationic polymer from SNF Floerger 2243-5 polymer	2.1%	2.1%	2.1%	1.6%	2.2%	2.2%	2.3%	2.3%
Propylene/Hexene Maleic Terminated copolymer with 800MW from Baker Hughes	0.5%			0.5%	0.5%			
Deionized water	2.4%	2.4%	2.5%	2.4%	2.6%	2.5%	2.6%	2.6%
Fragrance Capsules	8.1%	8.1%	8.2%	8.1%	8.5%	6.3%	4.1%	2.9%
Tegopren 7008 polyether-alkyl-polymethyl-siloxane copolymer from Evonik	1.1%	1.1%		1.1%	1.2%			
Minors (color and pH adjust)	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.
Crodamol PMP PPG-2 myristyl ether propionate								1.6%

Material	I	J	K	L	M	N	O	P
Soft Tallow Triesterquat								
TriOleyl Esterquat		38.8%						
DiOleyl Esterquat			14.8%	38.8%				
50/50 Hard/Soft Esterquat from WO2011149475	20.8%				20.5%	21%	20.7%	20.5%
Glycerin	64%		61.8%		63.2%	64.5%	63.7%	63%
Free Fragrance	1.8%	14.1%	5.4%	14.1%	1.8%	1%	1%	0.8%
Neodol 91-8 C <sub>9</sub> -C <sub>11</sub> alkoxyated alcohol with an average of SEO	3.6%	7.1%	2.7%	7.1%	3.6%	3.7%	3.6%	3.6%
Water soluble cross-linked cationic polymer from SNF Floerger 2243-5 polymer	2.3%	5.8%	2.2%	5.8%	2.3%	2.3%	2.3%	2.3%
Propylene/Hexene Maleic Terminated copolymer with 800MW from Baker Hughes		1.4%	0.5%	1.4%				
Deionized water	2.6%	6.7%	2.6%	6.7%	2.6%	2.7%	2.6%	2.6%
Fragrance Capsules	2.9%	22.2%	8.5%	22.2%	4.2%	2.9%	4.1%	5.4%

Tegopren 7008 polyether-alkyl-polymethyl-siloxane copolymer from Evonik		3%	1.2%	3%				
Minors (color and pH adjust)	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.
Crodamol PMP PPG-2 myristyl ether propionate	1.6%				1.5%	1.6%	1.6%	1.5%

Material	Q	R	S	T	U	V	W	X
Soft Tallow Triesterquat			21%	16.6%		21%	20.8%	
TriOleyl Esterquat								
DiOleyl Esterquat								
50/50 Hard/Soft Esterquat from WO2011149475	20.8%	16.4%			21%			20.8%
Glycerin	63.9%	67.4%	64.5%	68.1%	64.5%	64.6%	63.9%	63.9%
Free Fragrance	1.8%	1.9%	1.1%	1.1%	1.4%	1.4%	1.8%	1.8%
Neodol 91-8 C <sub>9</sub> -C <sub>11</sub> alkoxyated alcohol with an average of 8EO	3.6%	3.8%	3.7%	3.9%	3.7%	3.7%	3.6%	3.6%
Water soluble cross-linked cationic polymer from SNF Floerger 2243-5 polymer	2.3%	2.4%	2.3%	2.4%	2.3%	2.3%	2.3%	2.3%
Propylene/Hexene Maleic Terminated copolymer with 800MW from Baker Hughes								
Deionized water			2.7%	2.8%	1.3%	1.3%	1.3%	1.3%
Fragrance Capsules	4.2%	4.4%	2.9%	3.1%	3.6%	3.6%	4.2%	4.2%
Tegopren 7008 polyether-alkyl-polymethyl-siloxane copolymer from Evonik								
Minors (color and pH adjust)	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.
Crodamol PMP PPG-2 myristyl ether propionate	1.6%	1.6%	1.6%	1.7%	1.6%	1.6%	1.6%	1.6%

[0018] Each of compositions A to X was able to disperse the esterquat and fragrance capsules.

[0019] Without either, the alkoxyated alcohol (C<sub>9</sub>-C<sub>11</sub> alkoxyated alcohol with an average of 8EO) or the dispersing polymer (water soluble cross-linked cationic polymer), dispersability of the esterquat and fragrance capsules was not observed.

[0020] PEG 400 and PEG 600 were tested in place of the polyol. Dispersability was not observed with these PEGs.

## CLAIMS

## WHAT IS CLAIMED IS:

1. A unit dose fabric conditioner comprising a fabric conditioner composition contained within a water soluble pouch, wherein the composition is liquid at 25°C and comprises:
  - a) a cationic fabric softening active;
  - b) at least 50% by weight of the composition of a C<sub>3</sub>-C<sub>12</sub> polyol that is liquid at 25°C;
  - c) a C<sub>9</sub>-C<sub>15</sub> alkoxyated alcohol having an average of 3 to 8 EO per mole and which is liquid at 25°C;
  - d) a dispersing polymer for dispersing the cationic fabric softening active; and
  - e) encapsulated fragrance.
2. The unit dose fabric conditioner of any preceding claim, wherein the water soluble pouch comprises polyvinyl alcohol.
3. The unit dose fabric conditioner of any preceding claim, wherein the composition further comprises free fragrance.
4. The unit dose fabric conditioner of claim 3, wherein the free fragrance is present in an amount of 0.5 to 7% by weight of the composition.
5. The unit dose fabric conditioner of any preceding claim, wherein the encapsulated fragrance is present in an amount of 1 to 10% by weight of the composition.
6. The unit dose fabric conditioner of any preceding claim, wherein the cationic fabric softening active is at least one active chosen from esterquat, tallow esterquat, triolyeyl esterquat, and diolyeyl esterquat.
7. The unit dose fabric conditioner of any preceding claim, wherein the cationic fabric softener is present in an amount of 10 to 30% by weight of the composition.
8. The unit dose fabric conditioner of any preceding claim, wherein the cationic fabric softener is liquid at 25°C.
9. The unit dose fabric conditioner of any preceding claim, wherein the cationic fabric softener is diolyeyl esterquat.

10. The unit dose fabric conditioner of any preceding claim, wherein the polyol is at least one polyol chosen from glycerin, propylene glycol, diglycerol, triglycerol, and quadraglycerol.
11. The unit dose fabric conditioner of any preceding claim, wherein the polyol is present in an amount of 50 to 90% by weight of the composition.
12. The unit dose fabric conditioner of any preceding claim, wherein the polyol is present in an amount of 50 to 80% by weight of the composition.
13. The unit dose fabric conditioner of any preceding claim, wherein the polyol is present in an amount of 60 to 80% by weight of the composition.
14. The unit dose fabric conditioner of any preceding claim, wherein the polyol is present in an amount of 60 to 70% by weight of the composition.
15. The unit dose fabric conditioner of any preceding claim, wherein the alkoxyated alcohol is present in an amount of 2 to 8 weight % by weight of the composition.
16. The unit dose fabric conditioner of any preceding claim, wherein the alkoxyated alcohol is present in an amount of 6 weight % by weight of the composition.
17. The unit dose fabric conditioner of any preceding claim, wherein the alkoxyated alcohol is at least one alkoxyated alcohol chosen from a C<sub>9</sub>-C<sub>11</sub> alkoxyated alcohol with an average of 8 EO, C<sub>12</sub>-C<sub>13</sub> alkoxyated alcohol with an average of 5 EO, and C<sub>12</sub>-C<sub>13</sub> alkoxyated alcohol with an average of 7 EO.
18. The unit dose fabric conditioner of any preceding claim, wherein the alkoxyated alcohol is a C<sub>9</sub>-C<sub>11</sub> alkoxyated alcohol with an average of 8 EO.
19. The unit dose fabric conditioner of any preceding claim, wherein the dispersing polymer is a water soluble cross-linked cationic polymer derived from the polymerization of from 5 to 100 mole percent of cationic vinyl addition monomer, from 0 to 95 mole percent of acrylamide, and from 70 to 300 ppm of a difunctional vinyl addition monomer cross-linking agent.
20. The unit dose fabric conditioner of any preceding claim, wherein the dispersing polymer is present in an amount of 0.2 to 2% by weight of the composition.

21. The unit dose fabric conditioner of any preceding claim, wherein the dispersing polymer is present in an amount of 0.2 to 0.5% by weight of the composition.
22. The unit dose fabric conditioner of any preceding claim, wherein the dispersing polymer is present in an amount of 0.3 to 0.35% by weight of the composition.
23. The unit dose fabric conditioner of any preceding claim, wherein the composition contains water in an amount of 0 to 10 % by weight of the composition.
24. The unit dose fabric conditioner of claim 23, wherein the amount of water is 0 to 7% by weight of the composition, and the water soluble pouch has a thickness of 35 to 40 microns.
25. The unit dose fabric conditioner of claim 23, wherein the amount of water is 0 to 9% by weight of the composition, and the water soluble pouch has a thickness of 70 to 80 microns.
26. The unit dose fabric conditioner of any preceding claim, wherein the composition further comprises at least one material chosen from PPG-2-myristyl ether propionate, propylene/hexene maleic terminated copolymer with a weight average molecular weight of about 800, and a polyether-alkyl-polymethyl-siloxane copolymer.
27. The unit dose fabric conditioner of any preceding claim, wherein the composition is non-newtonian and has a viscosity of 200 to 1000 mPas as measured on a Brookfield LVT viscometer with spindle 4 at 12 rpm, optionally 200 to 800 mPas.
28. The unit dose fabric conditioner of any of claims 1 to 26, wherein the composition is newtonian and has a viscosity of 200 to 1000 mPas as measured on a Brookfield LVT viscometer with spindle 2 at 30 rpm, 200 to 800 mPas.
29. Method of conditioning fabrics comprising adding the unit does fabric conditioner of any preceding claim to laundry during at least one of wash and rinse.

**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/US2014/071828

**A. CLASSIFICATION OF SUBJECT MATTER**  
 INV. C11D1/835 C11D3/00 C11D3/20 C11D3/37 C11D3/43  
 C11D3/50 C11D17/04  
 ADD.  
 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)  
 C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 431 383 A1 (PROCTER & GAMBLE [US]) 23 June 2004 (2004-06-23)	1-18, 20-29
Y	paragraphs [0080] - [0081], [0099] - [0100], [0022], [0049], [0059] - [0063], [0165] - [0167]; claims; examples -----	19
Y	WO 2011/149475 A1 (COLGATE PALMOLIVE CO [US]) 1 December 2011 (2011-12-01) cited in the application paragraphs [0033], [0030]; claims -----	19
Y	US 2008/076698 A1 (JACQUES ALAIN [BE] ET AL) 27 March 2008 (2008-03-27) paragraphs [0018], [0026]; claims -----	19

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 another 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  26 August 2015	Date of mailing of the international search report  02/09/2015
---	--

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Pffannenstein, Heide
--	--

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2014/071828

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
EP 1431383	A1	23-06-2004	AU 2003297479 A1	14-07-2004
			BR 0317415 A	08-11-2005
			CA 2505535 A1	08-07-2004
			EP 1431383 A1	23-06-2004
			JP 2006520823 A	14-09-2006
			MX PA05006590 A	16-08-2005
			US 2004142840 A1	22-07-2004
			WO 2004056958 A1	08-07-2004
			WO 2011149475	A1
CA 2796160 A1	01-12-2011			
CN 102918143 A	06-02-2013			
EP 2576743 A1	10-04-2013			
RU 2012157095 A	10-07-2014			
SG 184549 A1	29-11-2012			
US 2013059767 A1	07-03-2013			
WO 2011149475 A1	01-12-2011			
US 2008076698	A1	27-03-2008		
			BR PI0509842 A	16-10-2007
			CA 2561309 A1	03-11-2005
			CN 1942568 A	04-04-2007
			EP 1735415 A1	27-12-2006
			IL 178379 A	31-03-2011
			MX 267574 B	18-06-2009
			MY 142032 A	16-08-2010
			US 2005256027 A1	17-11-2005
			US 2008070824 A1	20-03-2008
			US 2008076697 A1	27-03-2008
			US 2008076698 A1	27-03-2008
			WO 2005103215 A1	03-11-2005
			ZA 200608203 A	25-06-2008