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(71) Demandeur/Applicant:
THE PROCTER & GAMBLE COMPANY, US

(72) Inventeurs/Inventors:
FRANKENBACH, GAYLE MARIE, US;
HOLLINGSHEAD, JUDITH ANN, US;
HORENZIAK, STEVEN ANTHONY, US

(74) Agent: KIRBY EADES GALE BAKER

(54) Titre : SUBSTRATS CONTENANT DES COMPOSITIONS REDUISANT LES MAUVAISES ODEURS
(54) Title: SUBSTRATES COMPRISING MALODOR REDUCTION COMPOSITIONS

(57) Abrégé/Abstract:
The present invention relates to substrates comprising malodor reduction compositions and methods of making and using such substrates. Such malodor reduction compositions do not unduely interfere with the scent of the perfumed or unperfumed substrates comprising such malodor reduction compositions and the perfumed or unperfumed situs that is treated with such substrates.

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(71) **Applicant**: **THE PROCTER & GAMBLE COMPANY** [US/US]; One Procter & Gamble Plaza, Cincinnati, Ohio 45202 (US).

(72) **Inventors**: **FRANKENBACH, Gayle, Marie**; One Procter & Gamble Plaza, Cincinnati, Ohio 45202 (US). **HOLLINGSHEAD, Judith, Ann**; One Procter & Gamble Plaza, Cincinnati, Ohio 45202 (US). **HORENZIAK, Steven, Anthony**; One Procter & Gamble Plaza, Cincinnati, Ohio 45202 (US).

(74) **Agent**: **KREBS, Jay A.**; c/o THE PROCTER & GAMBLE COMPANY, Global Patent Services, One Procter & Gamble Plaza, C8-229, Cincinnati, Ohio 45202 (US).

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(54) **Title**: SUBSTRATES COMPRISING MALODOR REDUCTION COMPOSITIONS

(57) **Abstract**: The present invention relates to substrates comprising malodor reduction compositions and methods of making and using such substrates. Such malodor reduction compositions do not unduely interfere with the scent of the perfumed or unperfumed substrates comprising such malodor reduction compositions and the perfumed or unperfumed situs that is treated with such substrates.

SUBSTRATES COMPRISING MALODOR REDUCTION COMPOSITIONS

FIELD OF THE INVENTION

The present invention relates to substrates comprising malodor reduction compositions and methods of making and using such substrates.

BACKGROUND OF THE INVENTION

Unscented or scented products are desired by consumers as they may be considered more natural and discreet than scented products. Manufacturers of unscented or scented products for controlling malodors rely on malodor reduction ingredients or other technologies (e.g. filters) to reduce malodors. However, effectively controlling malodors, for example, amine-based malodors (e.g. fish and urine), thiol and sulfide-based malodors (e.g. garlic and onion), C_2-C_{12} carboxylic acid based malodors (e.g. body and pet odor), indole based malodors (e.g. fecal and bad breath), short chain fatty aldehyde based malodors (e.g. grease) and geosmin based malodors (e.g. mold/mildew) may be difficult, and the time required for a product to noticeably reduce malodors may create consumer doubt as to the product's efficacy on malodors. Often times, manufacturers incorporate scented perfumes to help mask these difficult malodors.

Unfortunately, malodor control technologies typically cover up the malodor with a stronger scent and thus interfere with the scent of the perfumed or unperfumed situs that is treated with the malodor control technology. Thus, limited nature of the current malodor control technologies is extremely constraining. Thus what is needed is a broader palette of malodor control technologies so the perfume community can deliver the desired level of character in a greater number of situations/applications. Surprisingly, Applicants recognized that in addition to blocking a malodor's access to a sensory cell, in order to achieve the desired goal, a malodor control technology must leave such sensor cell open to other molecules, for example scent molecules. As a result, such malodor reduction compositions do not unduely interfere with the scent of the perfumed or unperfumed substrates comprising such malodor reduction compositions and the perfumed or unperfumed situs that is treated with such substrates.

SUMMARY OF THE INVENTION

The present invention relates to substrates comprising malodor reduction compositions and methods of making and using such substrates. Such malodor reduction compositions do not

unduely interfere with the scent of the perfumed or unperfumed substrates comprising such malodor reduction compositions and the perfumed or unperfumed situs that is treated with such substrates.

DETAILED DESCRIPTION OF THE INVENTION

As used herein "MORV" is the calculated malodor reduction value for a subject material. A material's MORV indicates such material's ability to decrease or even eliminate the perception of one or more malodors. For purposes of the present application, a material's MORV is calculated in accordance with method found in the test methods section of the present application.

As used herein, the term "perfume" does not include malodor reduction materials. Thus, the perfume portion of a composition does not include, when determining the perfume's composition, any malodor reduction materials found in the composition as such malodor reduction materials are described herein. In short, if a material has a malodor reduction value "MORV" that is within the range of the MORV recited in the subject claim, such material is a malodor reduction material for purposes of such claim.

As used herein, "malodor" refers to compounds generally offensive or unpleasant to most people, such as the complex odors associated with bowel movements.

As used herein, "odor blocking" refers to the ability of a compound to dull the human sense of smell.

As used herein, "odor masking" refers to the ability of a compound with a non-offensive or pleasant smell that is dosed such that it limits the ability to sense a malodorous compound. Odor-masking may involve the selection of compounds which coordinate with an anticipated malodor to change the perception of the overall scent provided by the combination of odorous compounds.

As used herein, the terms "a" and "an" mean "at least one".

As used herein, the terms "include", "includes" and "including" are meant to be non-limiting.

Unless otherwise noted, all component or composition levels are in reference to the active portion of that component or composition, and are exclusive of impurities, for example, residual solvents or by-products, which may be present in commercially available sources of such components or compositions.

All percentages and ratios are calculated by weight unless otherwise indicated. All percentages and ratios are calculated based on the total composition unless otherwise indicated.

It should be understood that every maximum numerical limitation given throughout this specification includes every lower numerical limitation, as if such lower numerical limitations were expressly written herein. Every minimum numerical limitation given throughout this specification will include every higher numerical limitation, as if such higher numerical limitations were expressly written herein. Every numerical range given throughout this specification will include every narrower numerical range that falls within such broader numerical range, as if such narrower numerical ranges were all expressly written herein.

Malodor Reduction Materials

A non-limiting set of suitable malodor reduction materials are provided in the tables below. For ease of use, each material in Tables 1-3 is assigned a numerical indentifier which is found in the column for each table that is designated Number. Table 4 is a subset of Table 1, Table 5 is a subset of Table 2 and Table 6 is a subset of Table 3 and there for Tables 4, 5 and 6 each use the same numerical identifier as found, respectively, in Tables 1-3.

Codes
A = Vapor Pressure > 0.1 torr
B = Vapor Pressure is between 0.01 torr and 0.1 torr
C = LogP < 3
D = LogP > 3
E = Probability of Ingredient Color Instability = 0%
F = Probability of Ingredient Color Instability < 71%
G = Odor Detection Threshold less than p.ol=8
H = Odor Detection Threshold greater than p.ol=8
I = Melamine formaldehyde PMC Headspace Response Ratio greater than or equal to 10
J = Melamine formaldehyde PMC leakage less than or equal to 5%
K = Log of liquid dish neat product liquid-air partition coefficient greater than or equal to -7
L = Log of liquid dish neat product liquid-air partition coefficient greater than or equal to -5

Table 1
List of materials with at least one MORV from 1 to 5

Number	Material Name	CAS Number	Comment Code
1	2-ethylhexyl (Z)-3-(4-methoxyphenyl)acrylate	5466-77-3	DEFHJ
2	2,4-dimethyl-2-(5,5,8,8-tetramethyl-5,6,7,8-tetrahydronaphthalen-2-yl)-1,3-dioxolane	131812-67-4	DFHJ
3	1,1-dimethoxynon-2-yne	13257-44-8	ACEFHJK

4	para-Cymen-8-ol	1197-01-9	BCGIJK
7	3-methoxy-7,7-dimethyl-10-methylenebicyclo[4.3.1]decane	216970-21-7	BDEFHJK
9	Methoxycyclododecane	2986-54-1	DEFHJK
10	1,1-dimethoxycyclododecane	950-33-4	DEFHJK
11	(Z)-tridec-2-enenitrile	22629-49-8	DEFHJK
13	Oxybenzone	131-57-7	DEFGJ
14	Oxyoctaline formate	65405-72-3	DFHJK
16	4-methyl-1-oxaspiro[5.5]undecan-4-ol	57094-40-3	CFGIJK
17	7-methyl-2H-benzo[b][1,4]dioxepin-3(4H)-one	28940-11-6	CGIK
18	1,8-dioxacycloheptadecan-9-one	1725-01-5	DGJ
21	4-(tert-pentyl)cyclohexan-1-one	16587-71-6	ADFGIJKL
22	o-Phenyl anisol	86-26-0	DEFHJK
23	3a,5,6,7,8,8b-hexahydro-2,2,6,6,7,8,8-heptamethyl-4H-indeno(4,5-d)-1,3-dioxole	823178-41-2	DEFHJK
25	7-isopropyl-8,8-dimethyl-6,10-dioxaspiro[4.5]decane	62406-73-9	BDEFHIJK
28	Octyl 2-furoate	39251-88-2	DEFHJK
29	Octyl acetate	112-14-1	BDEFHJKL
30	octanal propylene glycol acetal	74094-61-4	BDEFHJKL
31	Octanal	124-13-0	ACHIKL
32	Octanal dimethyl acetal	10022-28-3	ACEFGJKL
33	Myrcene	123-35-3	ADEFGIKL
34	Myrcenol	543-39-5	BCEFGIJK
35	Myrcenyl acetate	1118-39-4	ADEFGJK
36	Myristaldehyde	124-25-4	DFHJK
37	Myristicine	607-91-0	CGJK
38	Myristyl nitrile	629-63-0	DEFHJK
39	2,2,6,8-tetramethyl-1,2,3,4,4a,5,8,8a-octahydronaphthalen-1-ol	103614-86-4	DEFHIJK
42	Ocimenol	5986-38-9	BCHIJK
43	Ocimenol	28977-58-4	BCHIJK
47	Nopyl acetate	128-51-8	DEFHJK
48	Nootkatone	4674-50-4	DHJK
49	Nonyl alcohol	143-08-8	BDEFGIJKL
50	Nonaldehyde	124-19-6	ADHIKL
52	12-methyl-14-tetradec-9-enolide	223104-61-8	DFHJK
57	N-ethyl-p-menthane-3-carboxamide	39711-79-0	DEFGIJK
61	1-(3-methylbenzofuran-2-yl)ethan-1-one	23911-56-0	CEFHIK
62	2-methoxynaphthalene	93-04-9	BDEFHK
63	Nerolidol	7212-44-4	DEFHJK
64	Nerol	106-25-2	BCHIK
65	1-ethyl-3-methoxytricyclo[2.2.1.02,6]heptane	31996-78-8	ACEFHIJKL

67	Methyl (E)-non-2-enoate	111-79-5	ADEFHJKL
68	10-isopropyl-2,7-dimethyl-1-oxaspiro[4.5]deca-3,6-diene	89079-92-5	BDEFHIJK
69	2-(2-(4-methylcyclohex-3-en-1-yl)propyl)cyclopentan-1-one	95962-14-4	DHJK
70	Myrtenal	564-94-3	ACFHIJKL
71	(E)-4-(2,2,3,6-tetramethylcyclohexyl)but-3-en-2-one	54992-90-4	BDEFHIJK
74	Myraldyl acetate	53889-39-7	DHJK
75	Musk tibetine	145-39-1	DHIJ
76	1,7-dioxacycloheptadecan-8-one	3391-83-1	DGJ
77	Musk ketone	81-14-1	DHJ
78	Musk ambrette	83-66-9	DHIJ
79	3-methylcyclopentadecan-1-one	541-91-3	DEFHJK
80	(E)-3-methylcyclopentadec-4-en-1-one	82356-51-2	DHJK
82	3-methyl-4-phenylbutan-2-ol	56836-93-2	BCEFHIK
83	1-(4-isopropylcyclohexyl)ethan-1-ol	63767-86-2	BDEFHIJK
85	Milk Lactone	72881-27-7	DEFHJK
91	Methyl octine carbonate	111-80-8	BDEFHKL
92	Methyl octyl acetaldehyde	19009-56-4	ADFHJKL
93	6,6-dimethoxy-2,5,5-trimethylhex-2-ene	67674-46-8	ACHIJKL
98	Methyl phenylethyl carbinol	2344-70-9	BCEFHIK
100	Methyl stearate	112-61-8	DEFHJ
101	Methyl nonyl acetaldehyde dimethyl acetal	68141-17-3	BDEFHJK
102	Methyl nonyl ketone	112-12-9	BDFHJKL
103	Methyl nonyl acetaldehyde	110-41-8	BDFHJK
104	Methyl myristate	124-10-7	DEFHJK
105	Methyl linoleate	112-63-0	DEFHJ
106	Methyl lavender ketone	67633-95-8	CFHJK
108	Methyl isoeugenol	93-16-3	ACEFHK
109	Methyl hexadecanoate	112-39-0	DEFHJK
110	Methyl eugenol	93-15-2	ACEFHK
112	Methyl epijasmonate	1211-29-6	CHJK
113	Methyl dihydrojasmonate	24851-98-7	DFHJK
114	Methyl diphenyl ether	3586-14-9	DEFHJK
117	Methyl cinnamate	103-26-4	BCEFHK
119	Methyl chavicol	140-67-0	ADEFHK
120	Methyl beta-naphthyl ketone	93-08-3	CEFHK
122	Methyl 2-octynoate	111-12-6	ACEFHKL
123	Methyl alpha-cyclogeranate	28043-10-9	ACHIJKL
126	Methoxycitronellal	3613-30-7	ACFGIJK
128	Menthone 1,2-glycerol ketal (racemic)	67785-70-0	CEFHJ

130	Octahydro-1H-4,7-methanoindene-1-carbaldehyde	30772-79-3	BCFHIJKL
134	3-(3-(tert-butyl)phenyl)-2-methylpropanal	62518-65-4	BDHJK
135	(E)-4-(4,8-dimethylnona-3,7-dien-1-yl)pyridine	38462-23-6	DEFHJK
137	(E)-trideca-3,12-dienenitrile	134769-33-8	DEFHJK
140	2,2-dimethyl-3-(m-tolyl)propan-1-ol	103694-68-4	CEFHIJK
141	2,4-dimethyl-4,4a,5,9b-tetrahydroindeno[1,2-d][1,3]dioxine	27606-09-3	CEFHJK
142	Maceal	67845-30-1	BDFHJK
143	4-(4-hydroxy-4-methylpentyl)cyclohex-3-ene-1-carbaldehyde	31906-04-4	CHJ
145	l-Limonene	5989-54-8	ADEFGIJKL
146	(Z)-3-hexen-1-yl-2-cyclopenten-1-one	53253-09-1	BDHK
148	Linalyl octanoate	10024-64-3	DEFHJ
149	Linalyl isobutyrate	78-35-3	BDHJK
152	Linalyl benzoate	126-64-7	DFHJ
153	Linalyl anthranilate	7149-26-0	DFHJ
155	Linalool oxide (furanoid)	60047-17-8	BCHIJK
156	linalool oxide	1365-19-1	CGIJK
158	(2Z,6E)-3,7-dimethylnona-2,6-dienenitrile	61792-11-8	BDEFHJK
159	3-(4-methylcyclohex-3-en-1-yl)butanal	6784-13-0	ACFHIJK
161	(2,5-dimethyl-1,3-dihydroinden-2-yl)methanol	285977-85-7	CEFHJK
162	3-(4-(tert-butyl)phenyl)-2-methylpropanal	80-54-6	BDHJK
167	(E)-1-(1-methoxypropoxy)hex-3-ene	97358-54-8	ACEFGJKL
168	Leaf acetal	88683-94-7	ACEFGJKL
170	l-Carveol	2102-58-1	BCHIJK
174	Lauryl alcohol	112-53-8	DEFGJK
175	Lauryl acetate	112-66-3	DEFHJK
176	Lauric acid	143-07-7	DEFHJ
177	Lactojasmone	7011-83-8	BDEFHIJKL
178	Lauraldehyde	112-54-9	BDFHJK
179	3,6-dimethylhexahydrobenzofuran-2(3H)-one	92015-65-1	BCEFHIJKL
182	4-(1-ethoxyvinyl)-3,3,5,5-tetramethylcyclohexan-1-one	36306-87-3	BDFHIJK
183	Khusimol	16223-63-5	CEFHJK
184	5-(sec-butyl)-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane	117933-89-8	DEFHJ

185	(1-methyl-2-((1,2,2-trimethylbicyclo[3.1.0]hexan-3-yl)methyl)cyclopropyl)methanol	198404-98-7	DEFHJK
186	2-propylheptanenitrile	208041-98-9	ADEFHIJKL
187	(E)-6-(pent-3-en-1-yl)tetrahydro-2H-pyran-2-one	32764-98-0	BCFHIKL
189	2-hexylcyclopentan-1-one	13074-65-2	BDFHJKL
190	2-methyl-4-phenyl-1,3-dioxolane	33941-99-0	BCEFGIK
192	2,6,9,10-tetramethyl-1-oxaspiro(4.5)deca-3,6-diene	71078-31-4	BDEFHIJK
193	Isopulegol	89-79-2	BCEFHIJKL
195	Isopropyl palmitate	142-91-6	DEFHJ
196	Isopropyl myristate	110-27-0	DEFHJK
197	Isopropyl dodecanoate	10233-13-3	DEFHJK
199	Isopimpinellin	482-27-9	CFGJ
206	Iso3-methylcyclopentadecan-1-one	3100-36-5	DEFGJK
208	Isomenthone	491-07-6	ADEFGIJKL
209	Isojasmone	95-41-0	BDFHJKL
210	Isomenthone	36977-92-1	ADEFGIJKL
211	Isohexenyl cyclohexenyl carboxaldehyde	37677-14-8	DFHJK
212	Isoeugenyl benzyl ether	120-11-6	DFHJ
215	1-((2S,3S)-2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethan-1-one	54464-57-2	DHJK
218	Isocyclocitral	1335-66-6	ACFHIJKL
221	Isobutyl quinoline	65442-31-1	DEFHJK
227	Isobornylcyclohexanol	68877-29-2	DEFHJK
228	Isobornyl propionate	2756-56-1	BDEFHIJK
229	Isobornyl isobutyrate	85586-67-0	BDEFHIJK
230	Isobornyl cyclohexanol	66072-32-0	DEFHJK
231	Isobornyl acetate	125-12-2	ADEFHIJKL
233	Isobergamate	68683-20-5	DEFHJK
234	Isoamyl undecylenate	12262-03-2	DEFHJK
238	Isoamyl laurate	6309-51-9	DEFHJK
242	Isoambrettolide	28645-51-4	DGJ
243	Irisnitrile	29127-83-1	ADEFHKL
244	Indolene	68527-79-7	DEFHJ
246	Indol/Hydroxycitronellal Schiff base	67801-36-9	DEFHJ
247	4,4a,5,9b-tetrahydroindeno[1,2-d][1,3]dioxine	18096-62-3	BCEFGJK
249	Hydroxy-citronellol	107-74-4	CEFGIJK
252	2-cyclododecylpropan-1-ol	118562-73-5	DEFHJK
253	Hydrocitronitrile	54089-83-7	CEFHJK
254	Hydrocinnamyl alcohol	122-97-4	BCEFHIK
256	Hydratropaldehyde dimethyl acetal	90-87-9	ACEFHJK
259	5-ethyl-4-hydroxy-2-methylfuran-3(2H)-one	27538-09-6	CFGIK

260	2,3-dihydro-3,3-dimethyl-1H-indene-5-propanal	173445-44-8	DHJK
261	3-(3,3-dimethyl-2,3-dihydro-1H-inden-5-yl)propanal	173445-65-3	DHJK
263	Hexyl octanoate	1117-55-1	DEFHJK
267	Hexyl hexanoate	6378-65-0	DEFHJKL
269	Hexyl cinnamic aldehyde	101-86-0	DHJ
271	Hexyl benzoate	6789-88-4	DEFHJK
274	Hexenyl tiglate	84060-80-0	BDEFHJK
276	(E)-3,7-dimethylocta-2,6-dien-1-yl palmitate	3681-73-0	DEFHJ
277	Hexadecanolide	109-29-5	DEFGJK
278	2-butyl-4,4,6-trimethyl-1,3-dioxane	54546-26-8	ADEFHIJKL
280	Ethyl (1R,2R,3R,4R)-3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate	116126-82-0	BDEFHIJK
281	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl acetate	5413-60-5	CEFGJK
285	2-(1-(3,3-dimethylcyclohexyl)ethoxy)-2-methylpropyl propionate	141773-73-1	DEFHJ
286	Heliotropine diethyl acetal	40527-42-2	CEFGJ
288	Helional	1205-17-0	CHJK
289	(E)-oxacyclohexadec-13-en-2-one	111879-80-2	DGJK
290	Gyrane	24237-00-1	ADEFHIJKL
292	Guaiol	489-86-1	DEFHJK
293	1-(2,6,6-trimethylcyclohex-2-en-1-yl)pentan-3-one	68611-23-4	DHJK
294	Ethyl 2-ethyl-6,6-dimethylcyclohex-2-ene-1-carboxylate	57934-97-1	BDEFHIJK
295	Germacrene B	15423-57-1	DEFHJK
296	Germacrene D	23986-74-5	DEFHJK
300	Geranyl phenylacetate	102-22-7	DFHJ
301	Geranyl phenyl acetate	71648-43-6	DFHJ
303	Geranyl linalool	1113-21-9	DFHJ
307	Geranyl cyclopentanone	68133-79-9	DHJK
316	gamma-Undecalactone (racemic)	104-67-6	DEFHJKL
317	gamma-Terpinyl acetate	10235-63-9	BDHJK
318	gamma-Terpineol	586-81-2	BCGIJK
321	gamma-Nonalactone	104-61-0	BCEFHIKL
322	gamma-Muurolene	30021-74-0	DEFHJKL
323	gamma-(E)-6-(pent-3-en-1-yl)tetrahydro-2H-pyran-2-one	63095-33-0	BCEFHKL
324	gamma-Ionone	79-76-5	BDEFHIJK
325	gamma-Himachalene	53111-25-4	BDEFHJKL
328	gamma-Gurjunene	22567-17-5	DEFHJKL
329	gamma-Eudesmol	1209-71-8	DFHJK
330	gamma-Dodecalactone	2305-05-7	DEFHJK

331	gamma-Damascone	35087-49-1	BDEFHIJK
332	gamma-Decalactone	706-14-9	BDEFHIJKL
333	gamma-Cadinene	39029-41-9	DEFHJKL
334	1-(3,3-dimethylcyclohexyl)pent-4-en-1-one	56973-87-6	BDEFHJK
335	4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopenta[g]isochromene	1222-05-5	DEFHJK
336	Furfuryl octanoate	39252-03-4	DEFHJK
338	Furfuryl hexanoate	39252-02-3	CEFHJK
339	Furfuryl heptanoate	39481-28-2	CEFHJK
342	2-methyldecanenitrile	69300-15-8	BDEFHJKL
343	8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate	76842-49-4	DEFHJK
344	Ethyl (3aR,4S,7R,7aR)-octahydro-3aH-4,7-methanoindene-3a-carboxylate	80657-64-3	DEFHIJK
347	Diethyl cyclohexane-1,4-dicarboxylate	72903-27-6	CEFHJK
349	(6-isopropyl-9-methyl-1,4-dioxaspiro[4.5]decan-2-yl)methanol	63187-91-7	CEFHJ
350	2-isobutyl-4-methyltetrahydro-2H-pyran-4-ol	63500-71-0	BCEFHIJK
352	Undec-10-enenitrile	53179-04-7	BDEFHJK
353	(Z)-6-ethylideneoctahydro-2H-5,8-methanochromen-2-one	69486-14-2	CEFGJK
356	3-(2-ethylphenyl)-2,2-dimethylpropanal	67634-15-5	BDHJK
358	(E)-4,8-dimethyldeca-4,9-dienal	71077-31-1	BDFHJK
359	(E)-4-((3aR,4R,7R,7aR)-1,3a,4,6,7,7a-hexahydro-5H-4,7-methanoinden-5-ylidene)-3-methylbutan-2-ol	501929-47-1	DEFHJK
360	8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl acetate	171102-41-3	DEFHJK
361	3-(4-ethylphenyl)-2,2-dimethylpropanenitrile	134123-93-6	DEFHJK
362	2-heptylcyclopentan-1-one	137-03-1	DFHJKL
363	1-ethoxyethoxy Cyclododecane	389083-83-4	DEFHJK
364	3-cyclohexene-1-carboxylic acid, 2,6,6-trimethyl-, methyl ester	815580-59-7	ACHIJKL
368	Farnesyl acetate	29548-30-9	DEFHJK
369	Farnesol	4602-84-0	DEFHJK
370	Oxacyclohexadecan-2-one	106-02-5	DEFGJK
371	1-cyclopentadec-4-en-1-one	14595-54-1	DEFGJK
372	1-cyclopentadec-4-en-1-one	35720-57-1	DEFGJK

373	2-methoxy-4-(4-methylenetetrahydro-2H-pyran-2-yl)phenol	128489-04-3	CGJ
374	Eugenyl acetate	93-28-7	CFHJK
375	Eugenol	97-53-0	CHIK
377	Ethylmethylphenylglycidate	77-83-8	CFHJK
378	Ethylene brassylate	105-95-3	DFGJ
381	Ethyl undecylenate	692-86-4	DEFHJK
385	Ethyl palmitate	628-97-7	DEFHJ
386	Ethyl nonanoate	123-29-5	BDEFHJKL
388	Ethyl myristate	124-06-1	DEFHJK
390	Ethyl linalool	10339-55-6	BCEFHJK
391	Ethyl laurate	106-33-2	DEFHJK
394	Ethyl hexyl ketone	925-78-0	ADFHIKL
397	Ethyl decanoate	110-38-3	BDEFHJK
398	Ethyl gamma-Safranate	35044-57-6	ADHIJK
407	Ethyl 3-phenylglycidate	121-39-1	CGJK
413	6-ethyl-2,10,10-trimethyl-1-oxaspiro[4.5]deca-3,6-diene	79893-63-3	BDEFHIJK
414	Elemol	639-99-6	DEFHJK
415	(2-(1-ethoxyethoxy)ethyl)benzene	2556-10-7	BCEFHJK
416	(E)-3-methyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pent-4-en-2-ol	67801-20-1	DHJK
417	d-xylose	58-86-6	CGIJ
418	(E)-4-((3aS,7aS)-octahydro-5H-4,7-methanoinden-5-ylidene)butanal	30168-23-1	DFHJK
421	Dodecanal dimethyl acetal	14620-52-1	DEFHJK
424	d-Limonene	5989-27-5	ADEFGIJKL
425	Dipropylene Glycol	25265-71-8	CEFGIK
426	Dispirone	83863-64-3	BDEFHJK
428	Diphenyloxide	101-84-8	BDEFHK
429	Diphenylmethane	101-81-5	DEFGK
432	Dimethyl benzyl carbinyl butyrate	10094-34-5	DEFHJK
436	2,6-dimethyloct-7-en-4-one	1879-00-1	ADEFHIJKL
441	Octahydro-1H-4,7-methanoinden-5-yl acetate	64001-15-6	DEFHJKL
444	Dihydrocarveol acetate	20777-49-5	BDEFHIJK
445	Dihydrocarveol	619-01-2	BCEFHIJKL
449	Dihydro Linalool	18479-51-1	BCEFGIJKL
450	Dihydro Isojasmonate	37172-53-5	DHJK
453	Dibutyl sulfide	544-40-1	ADEFHIKL
457	Dibenzyl	103-29-7	DEFGJK
459	delta-Undecalactone	710-04-3	DEFHJKL
461	delta-Elemene	20307-84-0	BDEFHJK
462	delta-Guaiene	3691-11-0	DEFHJKL
463	delta-Dodecalactone	713-95-1	DEFHJK
464	delta-Decalactone	705-86-2	BDEFHIJKL

465	delta-Cadinene	483-76-1	DEFHJKL
466	delta-damascone	57378-68-4	ADHIJK
467	delta-Amorphene	189165-79-5	DEFHJKL
468	delta-3-Carene	13466-78-9	ADEFGIJKL
470	Decylenic alcohol	13019-22-2	BDEFHJK
471	Decyl propionate	5454-19-3	DEFHJK
473	Decanal diethyl acetal	34764-02-8	DEFHJK
474	Decahydro-beta-naphthol	825-51-4	BCEFGIK
475	1-cyclohexylethyl (E)-but-2-enoate	68039-69-0	BDFHJK
478	3-(4-isopropylphenyl)-2-methylpropanal	103-95-7	BDFHJK
479	Cyclotetradecane	295-17-0	DEFGJKL
480	Cyclopentadecanone	502-72-7	DEFGJK
482	Cyclohexyl salicylate	25485-88-5	DFGJ
484	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl butyrate	113889-23-9	DEFHJK
485	Cyclic ethylene dodecanedioate	54982-83-1	DFGJ
486	8,8-dimethyl-1,2,3,4,5,6,7,8-octahydronaphthalene-2-carbaldehyde	68991-97-9	DHJK
487	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-5-yl isobutyrate	67634-20-2	DEFHJK
488	Curzerene	17910-09-7	DHJK
491	Cumic alcohol	536-60-7	CHIJK
493	Coumarone	1646-26-0	BCEFHIK
497	2-(3-phenylpropyl)pyridine	2110-18-1	CEFHJK
498	Dodecanenitrile	2437-25-4	DEFHJK
501	(E)-cycloheptadec-9-en-1-one	542-46-1	DEFGJ
502	Citryl acetate	6819-19-8	DFHJK
503	Citrus Propanol	15760-18-6	CEFHIJK
505	Citronitrile	93893-89-1	CEFHJK
519	Citral propylene glycol acetal	10444-50-5	CEFHJK
520	Citral dimethyl acetal	7549-37-3	BCEFHJK
521	Citral diethyl acetal	7492-66-2	BDEFHJK
524	cis-Ocimene	3338-55-4	ADGIKL
527	cis-Limonene oxide	13837-75-7	ADEFGIJKL
529	Cis-iso-ambrettolide	36508-31-3	DGJ
530	cis-6-nonenol	35854-86-5	BCEFHIKL
531	cis-carveol	1197-06-4	BCHIJK
532	cis-4-Decen-1-al	21662-09-9	ADHKL
534	cis-3-hexenyl-cis-3-hexenoate	61444-38-0	BDEFHJK
537	cis-3-Hexenyl salicylate	65405-77-8	DEFGJ
541	Cis-3-hexenyl Benzoate	25152-85-6	DEFHJK
544	cis-3-Hexenyl 2-methylbutyrate	53398-85-9	ADEFHJKL
546	cis-3, cis-6-nonadienol	53046-97-2	ACEFHK
548	Cinnamyl propionate	103-56-0	DEFHJK
550	Cinnamyl isobutyrate	103-59-3	DEFHJK
551	Cinnamyl formate	104-65-4	BCEFHK

552	Cinnamyl cinnamate	122-69-0	DHJ
553	Cinnamyl acetate	103-54-8	BCEFHK
555	Cinnamic alcohol	104-54-1	BCEFHIK
558	Cetyl alcohol	36653-82-4	DEFHJ
559	(E)-1-(2,6,6-trimethylcyclohex-2-en-1-yl)hepta-1,6-dien-3-one	79-78-7	DHJK
560	2-methyl-4-(2,6,6-trimethylcyclohex-1-en-1-yl)butanal	65405-84-7	DFHJK
561	(3aR,5aR,9aR,9bR)-3a,6,6,9a-tetramethyldodecahydronaphtho[2,1-b]furan	3738-00-9	DEFHJK
562	1,6-dioxacycloheptadecan-7-one	6707-60-4	DGJ
563	1-(6-(tert-butyl)-1,1-dimethyl-2,3-dihydro-1H-inden-4-yl)ethan-1-one	13171-00-1	DEFHJK
565	Cedryl methyl ether	19870-74-7	ADEFHJK
566	Cedryl formate	39900-38-4	BDEFHJK
567	Cedryl acetate	77-54-3	DEFHJK
568	(4Z,8Z)-1,5,9-trimethyl-13-oxabicyclo[10.1.0]trideca-4,8-diene	71735-79-0	DFHJK
569	Cedrol	77-53-2	DEFHJK
570	5-methyl-1-(2,2,3-trimethylcyclopent-3-en-1-yl)-6-oxabicyclo[3.2.1]octane	139539-66-5	DEFHJK
571	5-methyl-1-(2,2,3-trimethylcyclopent-3-en-1-yl)-6-oxabicyclo[3.2.1]octane	426218-78-2	DFHJ
572	1,1,2,3,3-pentamethyl-1,2,3,5,6,7-hexahydro-4H-inden-4-one	33704-61-9	BDEFHIJK
573	Caryophyllene alcohol acetate	32214-91-8	DEFHJK
574	Caryolan-1-ol	472-97-9	DEFHJK
577	Carvyl acetate	97-42-7	BDHIJK
578	Caprylnitrile	124-12-9	ACEFGIKL
580	Caprylic alcohol	111-87-5	ACEFGIKL
581	Caprylic acid	124-07-2	BCEFHIK
582	Capric acid	334-48-5	DEFHJK
584	Capraldehyde	112-31-2	ADHKL
586	3-(4-methoxyphenyl)-2-methylpropanal	5462-06-6	BCHJK
587	Camphorquinone	10373-78-1	ACEFGIJK
589	Camphene	79-92-5	ADEFGIJKL
591	Ethyl 2-methyl-4-oxo-6-pentylcyclohex-2-ene-1-carboxylate	59151-19-8	DHJ
592	Butylated hydroxytoluene	128-37-0	DEFGIJK
594	Butyl stearate	123-95-5	DEFHJ
595	Butyl butyryl lactate	7492-70-8	CEFGJK
599	Butyl 10-undecenoate	109-42-2	DEFHJK

600	2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)butan-1-ol	72089-08-8	DEFHJK
601	3-(4-(tert-butyl)phenyl)propanal	18127-01-0	BDHJK
603	Bornyl isobutyrate	24717-86-0	BDEFHIJK
604	Bornyl acetate	76-49-3	ADEFHIJKL
606	2-ethoxy-2,6,6-trimethyl-9-methylenebicyclo[3.3.1]nonane	68845-00-1	BDEFHJK
607	(ethoxymethoxy)cyclododecane	58567-11-6	DEFHJK
608	Bisabolene	495-62-5	DEFHJK
609	Bigarade oxide	72429-08-4	ADEFHJKL
610	beta-Vetivone	18444-79-6	DHJK
611	beta-Terpinyl acetate	10198-23-9	BDHJK
612	beta-Terpineol	138-87-4	BCGIJK
613	beta-Sinensal	60066-88-8	DHJK
614	beta-Sesquiphellandrene	20307-83-9	DEFHJK
615	beta-Selinene	17066-67-0	BDEFGJK
616	beta-Santalol	77-42-9	DEFHJK
618	beta-Pinene	127-91-3	ADEFGIJKL
620	beta-Naphthyl ethyl ether	93-18-5	BDEFHJK
621	beta-Patchoulline	514-51-2	BDEFGJKL
624	beta-Himachalene Oxide	57819-73-5	BDFHJK
625	beta-Himachalene	1461-03-6	DEFHJKL
626	beta-Guaiene	88-84-6	DEFHJKL
627	(2,2-dimethoxyethyl)benzene	101-48-4	DHJK
628	beta-Farnesene	18794-84-8	DEFHJK
631	beta-Copaene	18252-44-3	BDEFHJKL
632	beta-Cedrene	546-28-1	BDEFGJKL
633	beta-Caryophyllene	87-44-5	DEFHJKL
635	beta-Bisabolol	15352-77-9	DFHJK
636	Beta ionone epoxide	23267-57-4	BDEFHIJK
638	Bergaptene	484-20-8	CGJ
639	Benzyl-tert-butanol	103-05-9	CEFGJK
644	Benzyl laurate	140-25-0	DEFHJ
649	Benzyl dimethyl carbinol	100-86-7	BCEFGIK
650	Benzyl cinnamate	103-41-3	DHJ
653	Benzyl benzoate	120-51-4	DHJ
655	Benzophenone	119-61-9	DEFHK
658	7-isopentyl-2H-benzo[b][1,4]dioxepin-3(4H)-one	362467-67-2	DHJ
659	2'-isopropyl-1,7,7-trimethylspiro[bicyclo[2.2.1]heptane-2,4'-[1,3]dioxane]	188199-50-0	DEFHJK
660	4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbonitrile	21690-43-7	DEFHJK
661	Aurantiol	89-43-0	DEFHJ
663	Anisyl phenylacetate	102-17-0	DFHJ
668	Methyl (E)-octa-4,7-dienoate	189440-77-5	ACEFHKL

671	Amyl Cinnamate	3487-99-8	DEFHJK
673	(3aR,5aS,9aS,9bR)-3a,6,6,9a-tetramethyldodecahydronaphtho[2,1-b]furan	6790-58-5	DEFHJK
674	(4aR,5R,7aS,9R)-2,2,5,8,8,9a-hexamethyloctahydro-4H-4a,9-methanoazuleno[5,6-d][1,3]dioxole	211299-54-6	DEFHJK
675	2,5,5-trimethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-ol	71832-76-3	DEFHJK
676	2,5,5-trimethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-ol	41199-19-3	DEFHJK
677	1-((2-(tert-butyl)cyclohexyl)oxy)butan-2-ol	139504-68-0	DEFHJK
678	(3S,5aR,7aS,11aS,11bR)-3,8,8,11a-tetramethyldodecahydro-5H-3,5a-epoxynaphtho[2,1-c]oxepine	57345-19-4	DEFHJ
679	2,2,6,6,7,8,8-heptamethyldecahydro-2H-indeno[4,5-b]furan	476332-65-7	ADEFHJK
680	2,2,6,6,7,8,8-heptamethyldecahydro-2H-indeno[4,5-b]furan	647828-16-8	ADEFHJK
681	Amber acetate	37172-02-4	BDEFHJK
682	Alpinofix®	811436-82-5	DEFHJ
683	alpha-Thujone	546-80-5	ADEFGIJKL
684	alpha-Vetivone	15764-04-2	DHJK
686	alpha-Terpinyl propionate	80-27-3	BDEFHJK
691	alpha-Sinensal	17909-77-2	DHJK
692	alpha-Selinene	473-13-2	BDEFHJK
693	alpha-Santalene	512-61-8	ADEFHJKL
694	alpha-Santalol	115-71-9	DEFHJK
696	alpha-Patchoulene	560-32-7	ADEFHJKL
697	alpha-neobutenone	56973-85-4	BDHJK
698	alpha-Muurolene	10208-80-7	DEFHJKL
700	alpha-methyl ionone	127-42-4	BDHJK
702	alpha-Limonene	138-86-3	ADEFGIJKL
704	alpha-Irone	79-69-6	BDHJK
706	alpha-Humulene	6753-98-6	DEFHJK
707	alpha-Himachalene	186538-22-7	BDEFHJK
708	alpha-Gurjunene	489-40-7	BDEFHJKL
709	alpha-Guaiene	3691-12-1	DEFHJKL
710	alpha-Farnesene	502-61-4	DEFHJK
711	alpha-Fenchene	471-84-1	ADEFGIJKL
712	alpha-Eudesmol	473-16-5	DEFHJK
713	alpha-Curcumene	4176-17-4	DEFHJK
714	alpha-Cubebene	17699-14-8	ADEFHJKL
715	alpha-Cedrene epoxide	13567-39-0	ADEFHJK
716	alpha-Cadinol	481-34-5	DEFHJK
717	alpha-Cadinene	24406-05-1	DEFHJKL
718	alpha-Bisabolol	515-69-5	DFHJK

719	alpha-bisabolene	17627-44-0	DEFHJK
720	alpha-Bergamotene	17699-05-7	BDEFHJKL
721	alpha-Amylcinnamyl alcohol	101-85-9	DEFHJ
722	alpha-Amylcinnamyl acetate	7493-78-9	DEFHJ
723	alpha-Amylcinnamaldehyde diethyl acetal	60763-41-9	DEFHJ
724	alpha-Amylcinnamaldehyde	122-40-7	DHJK
725	alpha-Amorphene	23515-88-0	DEFHJKL
726	alpha-Agarofuran	5956-12-7	BDEFHJK
727	1-methyl-4-(4-methyl-3-penten-1-yl)-3-Cyclohexene-1-carboxaldehyde	52475-86-2	DFHJK
730	1-Phenyl-2-pentanol	705-73-7	CEFHK
731	1-Phenyl-3-methyl-3-pentanol	10415-87-9	CEFHJK
733	2,3,4-trimethoxy-benzaldehyde	2103-57-3	BCGI
735	2,4,5-trimethoxy-benzaldehyde	4460-86-0	BCG
736	2,4,6-trimethoxybenzaldehyde	830-79-5	BCGI
738	2,4-Nonadienal	6750-03-4	ACHKL
741	2,6,10-Trimethylundecanal	105-88-4	BDFGJK
742	alpha,4-Dimethyl benzenepropanal	41496-43-9	ACHJK
746	Allyl cyclohexyl propionate	2705-87-5	BDEFHJK
748	Allyl amyl glycolate	67634-00-8	BCEFGJK
750	Allo-aromadendrene	25246-27-9	BDEFHJKL
752	Aldehyde C-11	143-14-6	ADHJK
754	Methyl (E)-2-(((3,5-dimethylcyclohex-3-en-1-yl)methylene)amino)benzoate	94022-83-0	DEFHJ
757	2,6,10-trimethylundec-9-enal	141-13-9	BDFHJK
758	Acetoxymethyl-isolongifolene (isomers)	59056-62-1	BDEFHJK
763	Acetate C9	143-13-5	BDEFHJKL
764	Acetarolle®	744266-61-3	DFHJK
766	Acetaldehyde phenylethyl propyl acetal	7493-57-4	CEFHJK
767	Acetaldehyde dipropyl acetal	105-82-8	ACEFGIKL
768	Acetaldehyde benzyl 2-methoxyethyl acetal	7492-39-9	BCEFHJK
769	(Z)-2-(4-methylbenzylidene)heptanal	84697-09-6	DHJ
770	9-decenal	39770-05-3	ADHKL
771	8-Hexadecenolide	123-69-3	DGJ
772	7-Methoxycoumarin	531-59-9	CHK
774	7-epi-alpha-Selinene	123123-37-5	BDEFHJK
775	7-eip-alpha-Eudesmol	123123-38-6	DEFHJK
776	7-Acetyl-1,1,3,4,4,6-hexamethyltetralin	1506-02-1	DEFHJ
778	6-Isopropylquinoline	135-79-5	CEFHJK
781	6,6-dimethyl-2-norpinene-2-propionaldehyde	33885-51-7	BCFHJK
782	6,10,14-trimethyl-2-Pentadecanone	502-69-2	DEFHJK

786	5-Isopropenyl-2-methyl-2-vinyltetrahydrofuran	13679-86-2	ACGIJKL
788	5-Cyclohexadecenone	37609-25-9	DEFGJK
791	4-Terpinenol	562-74-3	BCHIJK
792	4-Pentenophenone	3240-29-7	BCEFHIK
800	4-Carvomenthenol	28219-82-1	BCHIJK
802	4,5,6,7-Tetrahydro-3,6-dimethylbenzofuran	494-90-6	BCEFHIJKL
803	4-(p-Methoxyphenyl)-2-butanone	104-20-1	BCEFHJK
804	3-Thujopsanone	25966-79-4	BDEFHJK
805	3-Propylidenephthalide	17369-59-4	CEFHK
806	3-Nonylacrolein	20407-84-5	BDFHJK
807	3-Methyl-5-phenyl-1-pentanal	55066-49-4	BDFHJK
814	3-Hexenyl isovalerate	10032-11-8	ADEFHJKL
821	3,6-Dimethyl-3-octanyl acetate	60763-42-0	ADEFHIJKL
824	3,4,5-trimethoxybenzaldehyde	86-81-7	BCGIK
826	3-(p-Isopropylphenyl)propionaldehyde	7775-00-0	BDFHJK
827	2-Undecenenitrile	22629-48-7	BDEFHJK
828	2-Undecenal	2463-77-6	ADHJK
829	2-trans-6-trans-Nonadienal	17587-33-6	ACHKL
831	2-Phenylethyl butyrate	103-52-6	DEFHJK
833	2-Phenyl-3-(2-furyl)prop-2-enal	57568-60-2	CHJ
834	2-Phenoxyethanol	122-99-6	BCEFGIK
837	2-Nonen-1-al	2463-53-8	ADHKL
839	2-Nonanol	628-99-9	BDEFGIKL
840	2-Nonanone	821-55-6	ADFHIKL
849	2-Isobutyl quinoline	93-19-6	CEFHJK
850	2-Hexylidene cyclopentanone	17373-89-6	DFHJKL
852	2-Heptyl tetrahydrofuran	2435-16-7	BDEFHJKL
856	2-Decenal	3913-71-1	ADHKL
864	2,6-Nonadienal	26370-28-5	ACHKL
865	2,6-Nonadien-1-ol	7786-44-9	ACEFHK
866	2,6-dimethyl-octanal	7779-07-9	ADFGIJKL
868	1-Decanol	112-30-1	BDEFGJK
869	1-Hepten-1-ol, 1-acetate	35468-97-4	ACEFHKL
870	10-Undecen-1-ol	112-43-6	DEFHJK
871	10-Undecenal	112-45-8	ADHJK
872	10-epi-gamma-Eudesmol	15051-81-7	DFHJK
873	1,8-Thiocineol	68391-28-6	ADEFHIJKL
876	1,3,5-undecatriene	16356-11-9	ADEFHJKL
877	1,2-Dihydrolinalool	2270-57-7	BCEFGIJKL
878	1,3,3-trimethyl-2-norbornanyl acetate	13851-11-1	ADEFHIJKL
879	1,1,2,3,3-Pentamethylindan	1203-17-4	ADHIJKL
881	(Z)-6,10-dimethylundeca-5,9-dien-2-yl acetate	3239-37-0	DEFHJK
884	(Z)-3-Dodecenal	68141-15-1	BCFHJK

885	(S)-gamma-Undecalactone	74568-05-1	DEFHJKL
886	(R)-gamma-Undecalactone	74568-06-2	DEFHJKL
890	(E)-6,10-dimethylundeca-5,9-dien-2-yl acetate	3239-35-8	DEFHJK
892	(2Z)-3-methyl-5-phenyl-2-Pentenenitrile	53243-59-7	DEFHJK
893	(2S,5S,6S)-2,6,10,10-tetramethyl-1-oxaspiro[4_5]decan-6-ol	65620-50-0	DFHIJK
894	(2E)-3-methyl-5-phenyl-2-pentenenitrile	53243-60-0	CEFHJK
897	(+)-Dihydrocarveol	22567-21-1	BCEFHIJKL
905	Menthone	89-80-5	ADEFGIJKL
908	(R,E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol	185068-69-3	CHJK
912	2-(8-isopropyl-6-methylbicyclo[2.2.2]oct-5-en-2-yl)-1,3-dioxolane	68901-32-6	DEFHJK
913	gamma-methyl ionone	7388-22-9	BDHIJK
914	3-(3-isopropylphenyl)butanal	125109-85-5	BDHJK
916	3-(1-ethoxyethoxy)-3,7-dimethylocta-1,6-diene	40910-49-4	BDEFHJK
919	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate	17511-60-3	CEFHJK
920	Bulnesol	22451-73-6	DEFHJK
922	Benzyl phenylacetate	102-16-9	DHJ
923	Benzoin	119-53-9	CEFHJ
924	(E)-1,2,4-trimethoxy-5-(prop-1-en-1-yl)benzene	2883-98-9	BCFGJK
925	alpha,alpha,6,6-tetramethyl bicyclo[3.1.1]hept-2-ene-propanal	33885-52-8	BDFHJK
926	7-epi-sesquithujene	159407-35-9	DEFHJKL
927	5-Acetyl-1,1,2,3,3,6-hexamethylindan	15323-35-0	DEFHJK
928	3-Methylphenethyl alcohol	1875-89-4	BCEFHIK
929	3,6-Nonadien-1-ol	76649-25-7	ACEFHK
930	2-Tridecenal	7774-82-5	BDFHJK
933	Patchouli alcohol	5986-55-0	DEFHIJK
937	p-Cresyl isobutyrate	103-93-5	BDHJK
939	p-Cresyl n-hexanoate	68141-11-7	DEFHJK
941	5-hexyl-4-methyldihydrofuran-2(3H)-one	67663-01-8	BDEFHIJKL
942	Ethyl (2Z,4E)-deca-2,4-dienoate	3025-30-7	BDEFHJK
943	Pelargene	68039-40-7	DEFHJK
945	2-cyclohexylidene-2-phenylacetonitrile	10461-98-0	DFHJK
946	Perillaldehyde	2111-75-3	ACHIJK
947	Perillyl acetate	15111-96-3	DFHJK

948	Perillyl alcohol	536-59-4	CHIJK
950	(2-isopropoxyethyl)benzene	68039-47-4	ACEFHJKL
951	Ethyl (2Z,4E)-deca-2,4-dienoate	313973-37-4	BDEFHJK
953	(2-(cyclohexyloxy)ethyl)benzene	80858-47-5	DEFHJK
954	Phenethyl 2-methylbutyrate	24817-51-4	DEFHJK
955	Phenethyl alcohol	60-12-8	BCEFGIK
959	Phenethyl phenylacetate	102-20-5	DHJ
962	Phenoxanol	55066-48-3	DEFHJK
965	Phenyl benzoate	93-99-2	DFHJK
967	Phenyl ethyl benzoate	94-47-3	DHJ
969	Phenylacetaldehyde ethyleneglycol acetal	101-49-5	BCEFGIK
973	2-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)acetaldehyde	30897-75-7	ACFHIJKL
974	Pinocarveol	5947-36-4	BCEFGIJKL
976	Piperonyl acetone	55418-52-5	CEFGJ
978	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl pivalate	68039-44-1	DEFHJK
980	(4aR,8aS)-7-methyloctahydro-1,4-methanonaphthalen-6(2H)-one	41724-19-0	CEFGJKL
982	p-Menth-3-en-1-ol	586-82-3	BCGIJK
985	(E)-3,3-dimethyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pent-4-en-2-ol	107898-54-4	DHJK
988	1-methyl-4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbaldehyde	52474-60-9	DFHJK
993	Propylene glycol	57-55-6	ACEFGIKL
998	p-Tolyl phenylacetate	101-94-0	DFHJ
1000	Ethyl 2,4,7-decatrienoate	78417-28-4	BDEFHJK
1003	2-benzyl-4,4,6-trimethyl-1,3-dioxane	67633-94-7	DEFHJK
1006	2,4-dimethyl-4-phenyltetrahydrofuran	82461-14-1	BDEFHJK
1007	(2R,4a'R,8a'R)-3,7'-dimethyl-3',4',4a',5',8',8a'-hexahydro-1'H-spiro[oxirane-2,2'-[1,4]methanonaphthalene]	41816-03-9	DEFHJK
1008	(Z)-6-ethylideneoctahydro-2H-5,8-methanochromene	93939-86-7	BCEFHJKL
1009	2-((S)-1-((S)-3,3-dimethylcyclohexyl)ethoxy)-2-oxoethyl propionate	236391-76-7	DFHJ
1010	Methyl 2,2-dimethyl-6-methylenecyclohexane-1-carboxylate	81752-87-6	ADHIJKL
1012	2-methyl-5-phenylpentan-1-ol	25634-93-9	DEFHJK
1016	4-methyl-2-phenyl-3,6-dihydro-2H-pyran	60335-71-9	BCEFGJK
1020	Sabinol	471-16-9	BCEFHIJKL
1021	Safrole	94-59-7	BCEFHK

1022	2,2,7,9-tetramethylspiro(5.5)undec-8-en-1-one	502847-01-0	DHIJK
1023	3-methyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pentan-2-ol	65113-99-7	DEFHJK
1024	(Z)-2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol	28219-61-6	DEFHJK
1025	(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol	28219-60-5	CHJK
1026	5-methoxyoctahydro-1H-4,7-methanoindene-2-carbaldehyde	86803-90-9	CHJK
1027	5-methoxyoctahydro-1H-4,7-methanoindene-2-carbaldehyde	193425-86-4	CHJK
1028	Sclareol	515-03-7	DEFHJ
1029	Sclareol oxide	5153-92-4	DEFHJK
1031	Selina-3,7(11)-diene	6813-21-4	DEFHJKL
1032	2-(1-(3,3-dimethylcyclohexyl)ethoxy)-2-methylpropyl cyclopropanecarboxylate	477218-42-1	DEFHJ
1033	3-(4-isobutylphenyl)-2-methylpropanal	6658-48-6	DHJK
1035	Spathulenol	6750-60-3	DEFHJK
1036	Spirambrene	533925-08-5	BCEFHJK
1037	Spirodecane	6413-26-9	BCEFGIJKL
1038	1-(spiro[4.5]dec-7-en-7-yl)pent-4-en-1-one	224031-70-3	DGJK
1042	2-(4-methylthiazol-5-yl)ethan-1-ol	137-00-8	CGIKL
1043	2-(heptan-3-yl)-1,3-dioxolane	4359-47-1	ACEFHIJKL
1045	(Z)-dodec-4-enal	21944-98-9	BDFHJK
1046	tau-Cadinol	5937-11-1	DEFHJK
1047	tau-Muurolol	19912-62-0	DEFHJK
1053	Tetrahydrojasmone	13074-63-0	BDFHIJKL
1057	2,6,10,10-tetramethyl-1-oxaspiro[4.5]dec-6-ene	36431-72-8	BDFHIJKL
1059	Thiomenthone	38462-22-5	BDEFHIJKL
1060	Thujopsene	470-40-6	BDEFGJKL
1062	Thymol methyl ether	1076-56-8	ADHIJKL
1063	1-(2,2,6-trimethylcyclohexyl)hexan-3-ol	70788-30-6	DEFHJK
1064	trans,trans-2,4-Nonadienal	5910-87-2	ACHKL
1065	trans,trans-Farnesol	106-28-5	DEFHJK
1066	trans-2,cis-6-Nonadienal	557-48-2	ACHKL
1067	trans-2-Decenal	3913-81-3	ADHKL
1070	trans-2-Nonen-1-al	18829-56-6	ADHKL
1072	trans-3, cis-6-nonadienol	56805-23-3	ACEFHK

1073	trans-4-Decen-1-al	65405-70-1	ADHKL
1075	trans-ambrettolide	51155-12-5	DGJ
1077	trans-beta-ocimene	13877-91-3	ADGIKL
1078	trans-beta-Ocimene	3779-61-1	ADGIKL
1082	trans-Geraniol	106-24-1	BCHIK
1083	trans-Hedione	2570-03-8	DFHJK
1085	7-(1,1-Dimethylethyl)-2H-1,5-benzodioxepin-3(4H)-one	195251-91-3	CEFHJ
1089	Tricyclone	68433-81-8	DEFHJK
1090	Tridecyl alcohol	112-70-9	DEFGJK
1091	Triethyl citrate	77-93-0	CEFGJ
1093	Methyl 2-((1-hydroxy-3-phenylbutyl)amino)benzoate	144761-91-1	DFHJ
1095	1-((2E,5Z,9Z)-2,6,10-trimethylcyclododeca-2,5,9-trien-1-yl)ethan-1-one	28371-99-5	DHJK
1097	Decahydro-2,6,6,7,8,8-hexamethyl-2h-indeno(4,5-b)furan	338735-71-0	BDEFHJK
1099	13-methyl oxacyclopentadec-10-en-2-one	365411-50-3	DEFHJK
1102	Undecanal	112-44-7	BDHJK
1104	(E)-4-methyldec-3-en-5-ol	81782-77-6	BDEFHIJK
1105	Valencene	4630-07-3	BDEFHJK
1107	Valerianol	20489-45-6	DEFHJK
1111	Vanillin isobutyrate	20665-85-4	CHJ
1113	Vaniwhite®	5533-03-9	CGIK
1116	(Z)-2-methyl-4-(2,6,6-trimethylcyclohex-2-en-1-yl)but-2-enal	68555-62-4	BDFHJK
1117	Methyl 2,4-dihydroxy-3,6-dimethylbenzoate	4707-47-5	CGIJ
1120	1-methoxy-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoindene	27135-90-6	ACEFHJKL
1121	Methyl (Z)-2-((3-(4-(tert-butyl)phenyl)-2-methylpropylidene)amino)benzoate	91-51-0	DFHJ
1125	(Z)-hex-3-en-1-yl isobutyrate	41519-23-7	ADEFHJKL
1126	Vertacetal	5182-36-5	BCFHJK
1129	1-((3R,3aR,7R,8aS)-3,6,8,8-tetramethyl-2,3,4,7,8,8a-hexahydro-1H-3a,7-methanoazulen-5-yl)ethan-1-one	32388-55-9	DHJK
1131	Methyl (Z)-2-(((2,4-dimethylcyclohex-3-en-1-yl)methylene)amino)benzoate	68738-99-8	DEFHJ
1135	Vetiverol	89-88-3	CEFHIJK
1136	Vetivert Acetate	117-98-6	DEFHJK
1137	Decahydro-3H-spiro[furan-2,5'-[4,7]methanoindene]	68480-11-5	DEFGJKL

1138	(2Z,6E)-nona-2,6-dienenitrile	67019-89-0	ACEFHKL
1139	(Z)-cyclooct-4-en-1-yl methyl carbonate	87731-18-8	BCHJKL
1140	(1aR,4S,4aS,7R,7aS,7bS)-1,1,4,7-tetramethyldecahydro-1H-cyclopropa[e]azulen-4-ol	552-02-3	DEFHJK
1142	3,5,5,6,7,8,8-heptamethyl-5,6,7,8-tetrahydronaphthalene-2-carbonitrile	127459-79-4	DHJ
1143	(1S,2S,3S,5R)-2,6,6-trimethylspiro[bicyclo[3.1.1]heptane-3,1'-cyclohexan]-2'-en-4'-one	133636-82-5	DEFHJK
1144	1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene]	154171-76-3	DEFHJK
1145	1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene] K	154171-77-4	DEFHJK
1146	4-(4-hydroxy-3-methoxyphenyl)butan-2-one	122-48-5	CEFGJ
1147	(1R,8aR)-4-isopropyl-1,6-dimethyl-1,2,3,7,8,8a-hexahydronaphthalene	41929-05-9	DEFHJKL
1148	4,5-epoxy-4,11,11-trimethyl-8-methylenebicyclo(7.2.0)undecane	1139-30-6	DEFHJK
1149	1,3,4,6,7,8alpha-hexahydro-1,1,5,5-tetramethyl-2H-2,4alpha-methanophtalen-8(5H)-one	23787-90-8	DEFHIJK

Table 2
List of materials with at least one MORV greater than 5 to 10

Number	Material Name	CAS Number	Comment Code
2	2,4-dimethyl-2-(5,5,8,8-tetramethyl-5,6,7,8-tetrahydronaphthalen-2-yl)-1,3-dioxolane	131812-67-4	DFHJ
23	3a,5,6,7,8,8b-hexahydro-2,2,6,6,7,8,8-heptamethyl-4H-indeno(4,5-d)-1,3-dioxole	823178-41-2	DEFHJK
141	2,4-dimethyl-4,4a,5,9b-tetrahydroindeno[1,2-d][1,3]dioxine	27606-09-3	CEFHJK
185	(1-methyl-2-((1,2,2-trimethylbicyclo[3.1.0]hexan-3-yl)methyl)cyclopropyl)methanol	198404-98-7	DEFHJK
227	Isobornylcyclohexanol	68877-29-2	DEFHJK
230	Isobornyl cyclohexanol	66072-32-0	DEFHJK
246	Indol/Hydroxycitronellal Schiff base	67801-36-9	DEFHJ
248	Hydroxymethyl isolongifolene	59056-64-3	DEFHJK

343	8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate	76842-49-4	DEFHJK
359	(E)-4-((3aR,4R,7R,7aR)-1,3a,4,6,7,7a-hexahydro-5H-4,7-methanoinden-5-ylidene)-3-methylbutan-2-ol	501929-47-1	DEFHJK
565	Cedryl methyl ether	19870-74-7	BDEFHJK
631	beta-Copaene	18252-44-3	BDEFHJKL
659	2'-isopropyl-1,7,7-trimethylspiro[bicyclo[2.2.1]heptane-2,4'-[1,3]dioxane]	869292-93-3	BDEFHJK
674	(4aR,5R,7aS,9R)-2,2,5,8,8,9a-hexamethyloctahydro-4H-4a,9-methanoazuleno[5,6-d][1,3]dioxole	211299-54-6	DEFHJK
678	(3S,5aR,7aS,11aS,11bR)-3,8,8,11a-tetramethyldodecahydro-5H-3,5a-epoxynaphtho[2,1-c]oxepine	57345-19-4	DEFHJ
679	2,2,6,6,7,8,8-heptamethyldecahydro-2H-indeno[4,5-b]furan	476332-65-7	DEFHJK
715	alpha-Cedrene epoxide	13567-39-0	BDEFHJK
758	Acetoxymethyl-isolongifolene (isomers)	59056-62-1	DEFHJK
1028	Sclareol	515-03-7	DEFHJ
1097	Decahydro-2,6,6,7,8,8-hexamethyl-2h-indeno(4,5-b)furan	338735-71-0	DEFHJK

Table 3
List of materials with at least one MORV from 0.5 to less than 1

Number	Material Name	CAS Number	Comment Code
12	1-ethoxy-4-(tert-pentyl)cyclohexane	181258-89-9	ADEFHJK
19	(3Z)-1-(2-buten-1-yloxy)-3-hexene	888744-18-1	ADEFHJKL
20	4-(2-methoxypropan-2-yl)-1-methylcyclohex-1-ene	14576-08-0	ADHIJKL
24	O-Methyl linalool	60763-44-2	ADHIJKL
26	o-Methoxycinnamaldehyde	1504-74-1	ACHK
27	Octanal, 3,7-dimethyl-	25795-46-4	ADGIJKL
53	3,3-Dimethyl-5(2,2,3-Trimethyl-3-Cyclopenten-1yl)-4-Penten-2-ol	329925-33-9	CEFHJ
54	n-Hexyl salicylate	6259-76-3	DEFHJ
55	n-Hexyl 2-butenoate	19089-92-0	ADEFHJKL
59	Neryl Formate	2142-94-1	BCEFHJK
72	Methyl-beta-ionone	127-43-5	DHJK
73	Myroxide	28977-57-3	ADGIJKL

81	(E)-3,7-dimethylocta-4,6-dien-3-ol	18479-54-4	BCEFGIJK
84	(Z)-hex-3-en-1-yl cyclopropanecarboxylate	188570-78-7	BCEFHIKL
96	Methyl phenyl carbinyl propionate	120-45-6	BCHJK
97	Methyl phenylacetate	101-41-7	ACEFHIKL
107	2-methyl-6-oxaspiro[4.5]decan-7-one	91069-37-3	BCEFGIKL
111	Methyl geraniate	2349-14-6	BCHJKL
115	2-ethoxy-4-(methoxymethyl)phenol	5595-79-9	CFGK
116	Methyl cyclopentylideneacetate	40203-73-4	ACEFHIKL
125	Methoxymelonal	62439-41-2	ACGIJK
133	((1s,4s)-4-isopropylcyclohexyl)methanol	13828-37-0	BDEFHIJK
147	Linalyl propionate	144-39-8	BDFHJK
150	Linalyl formate	115-99-1	ACFHJK
151	Linalyl butyrate	78-36-4	BDEFHJK
154	Linalyl acetate	115-95-7	BDHJK
157	Linalool	78-70-6	BCEFGIJK
163	(Z)-hex-3-en-1-yl methyl carbonate	67633-96-9	ACEFGKL
166	Lepidine	491-35-0	BCEFHIKL
169	L-Carvone	6485-40-1	ACGIJKL
181	Khusinil	75490-39-0	DHJK
191	Isoraldeine	1335-46-2	BDHIJK
194	Isopropylvinylcarbinol	4798-45-2	ACGIKL
198	Isopropyl 2-methylbutyrate	66576-71-4	ACEFGIJKL
201	Isopentyrate	80118-06-5	ADEFGIJKL
204	Isononyl acetate	40379-24-6	BDEFHJKL
205	Isononanol	27458-94-2	BDEFGIKL
213	Isoeugenyl acetate	93-29-8	CFHJK
214	Isoeugenol	97-54-1	CEFHIK
232	Isoborneol	124-76-5	ACEFHIJKL
237	Isoamyl octanoate	2035-99-6	DEFHJK
239	Isoamyl isobutyrate	2050-01-3	ACEFGIJKL
255	Hydrocinnamic acid	501-52-0	CEFHIK
258	Hydratopic alcohol	1123-85-9	BCEFHIK
264	Hexyl propanoate	2445-76-3	ADEFHIKL
270	Hexyl butyrate	2639-63-6	BDEFHJKL
273	Hexyl 2-methylbutanoate	10032-15-2	BDEFHJKL
275	Hexyl 2-furoate	39251-86-0	DEFHJK
282	Heptyl alcohol	111-70-6	ACEFGIKL
283	Heptyl acetate	112-06-1	ADEFHKL
284	Heptaldehyde	111-71-7	ACHIKL
287	Heliotropin	120-57-0	BCGIK

302	Geranyl nitrile	5146-66-7	BCEFHKL
306	Geranyl formate	105-86-2	BCEFHJK
308	Geranyl caprylate	51532-26-4	DEFHJ
310	Geranyl benzoate	94-48-4	DFHJ
312	Geranial	141-27-5	ACHIKL
314	N,2-dimethyl-N-phenylbutanamide	84434-18-4	BCEFHJK
319	gamma-Terpinene	99-85-4	ADEFGIJKL
346	2-(sec-butyl)cyclohexan-1-one	14765-30-1	ADFHIKL
354	3-(2-ethylphenyl)-2,2-dimethylpropanal	67634-14-4	BDHJK
355	2-(tert-butyl)cyclohexyl ethyl carbonate	67801-64-3	BDFHJK
365	2-(tert-butyl)cyclohexyl ethyl carbonate	81925-81-7	ACFHIKL
366	Fenchyl alcohol	1632-73-1	ACGIJKL
376	Eucalyptol	470-82-6	ADEFGIJKL
379	Ethyl vanillin acetate	72207-94-4	CHJ
387	Ethyl octanoate	106-32-1	BDEFHJKL
400	Ethyl cinnamate	103-36-6	BCEFHK
412	Ethyl 2-(cyclohexyl)propionate	2511-00-4	BDFHIJKL
419	d-p-8(9)-Menthen-2-one	5524-05-0	ACGIJKL
420	4-methyl-2-phenyltetrahydro-2H-pyran	94201-73-7	BDEFHJK
437	Dihydromyrcenol	18479-58-8	ADEFGIJK
438	Dihydrojasmone	1128-08-1	BCFHIJKL
439	Dihydroisophorone	873-94-9	ACEFGIJKL
440	Dihydroeugenol	2785-87-7	CEFHIJK
442	Dihydrocoumarin	119-84-6	BCGIKL
443	Dihydrocarvone	7764-50-3	ACGIJKL
447	Dihydro-alpha-terpinyl acetate	80-25-1	BDEFHIJKL
448	Dihydro-alpha-ionone	31499-72-6	BDHIJK
454	Dibenzyl ether	103-50-4	DEFHJK
455	Dibutyl o-phthalate	84-74-2	DEFHJ
469	2-pentylcyclopentan-1-one	4819-67-4	BDFHIKL
472	Decyl anthranilate	18189-07-6	DEFHJ
477	Methyl (1s,4s)-1,4-dimethylcyclohexane-1-carboxylate	23059-38-3	ADEFHIJKL
481	Cyclohexylethyl acetate	21722-83-8	BDEFHJKL
492	Creosol	93-51-6	BCHIK
495	Cosmene	460-01-5	ADEFGIKL
496	4-cyclohexyl-2-methylbutan-2-ol	83926-73-2	BDEFGIJK

504	2-benzyl-2-methylbut-3-enenitrile	97384-48-0	BDHJK
509	Citronellyl nitrile	51566-62-2	BCEFGIKL
510	Citronellyl phenylacetate	139-70-8	DFHJ
512	Citronellyl formate	105-85-1	BCEFGJKL
515	Citronellyl benzoate	10482-77-6	DFHJ
517	Citronellol	106-22-9	BCHIJKL
518	Citronellal	106-23-0	ACHIJKL
522	Citral	5392-40-5	ACHIKL
525	cis-Pinane	6876-13-7	ADEFGIJKL
526	(Z)-3-methyl-2-(pent-2-en-1-yl)cyclopent-2-en-1-one	488-10-8	BCHIJKL
528	cis-iso-Eugenol	5912-86-7	CEFHIK
535	cis-3-Hexenyl valerate	35852-46-1	BDEFHJKL
536	cis-3-Hexenyl tiglate	67883-79-8	BDEFHJK
538	cis-3-Hexenyl propionate	33467-74-2	ACEFHIKL
540	cis-3-Hexenyl butyrate	16491-36-4	ADEFHJKL
542	cis-3-Hexen-1-ol	928-96-1	ACEFHIKL
547	cis-2-Hexenol	928-94-9	ACEFHIKL
549	Cinnamyl nitrile	4360-47-8	ACEFGIK
554	Cinnamic aldehyde	104-55-2	ACHIK
556	Cinnamyl nitrile	1885-38-7	ACEFGIK
557	Chloroxylenol	88-04-0	BCHIJK
575	Carvacrol	499-75-2	DHIJK
576	Carvone	99-49-0	ACGIJKL
579	Carbitol	111-90-0	BCEFGIK
583	Caproyl alcohol	111-27-3	ACEFGIKL
585	2-(2,2,3-trimethylcyclopent-3-en-1-yl)acetonitrile	15373-31-6	ACGIJKL
588	Camphor	76-22-2	ACEFGIJKL
602	(E)-2-methyl-4-(2,6,6-trimethylcyclohex-1-en-1-yl)but-2-enal	3155-71-3	DHJK
605	Borneol	507-70-0	ACEFHIJKL
617	beta-Pinene epoxide	6931-54-0	ACEFGIJKL
619	beta-Phellandrene	555-10-2	ADEFGIJKL
640	Benzylacetone	2550-26-7	ACEFGIK
641	Benzyl salicylate	118-58-1	DFGJ
645	Benzyl isovalerate	103-38-8	BDEFHJK
647	Benzyl isobutyrate	103-28-6	BCHJK
651	Benzyl butyrate	103-37-7	BCEFHJK
652	Benzyl alcohol	100-51-6	ACEFGIKL
662	1-(3,3-dimethylcyclohexyl)ethyl formate	25225-08-5	ADEFHIJKL
664	Anisyl acetate	104-21-2	BCEFGK
665	Anisyl formate	122-91-8	BCEFGK
667	Anethole	104-46-1	ACEFHK

672	Amyl benzoate	2049-96-9	DEFHJK
687	alpha-Terpinyl acetate	80-26-2	BDHJK
699	alpha-methyl-cyclohexanepropanol	10528-67-3	BDEFHIK
701	alpha-methyl cinnamaldehyde	101-39-3	ACHIK
703	alpha-Isomethylionone	127-51-5	BDHIJK
740	2,5-Dimethyl-4-methoxy-3(2H)-furanone	4077-47-8	ACEFGIJKL
743	Allyl phenoxyacetate	7493-74-5	BCGK
744	Allyl Phenethyl ether	14289-65-7	ACEFHK
745	Allyl heptanoate	142-19-8	ADEFHJKL
755	N-ethyl-N-(m-tolyl)propionamide	179911-08-1	CEFHJK
760	3-hydroxybutan-2-one	513-86-0	ACEFGIKL
761	Acetoanisole	100-06-1	BCEFHIK
777	6-Methylquinoline	91-62-3	BCEFHIKL
779	6,8-Diethyl-2-nonanol	70214-77-6	BDEFGIJKL
784	5-Methyl-3-heptanone	541-85-5	ACFGIKL
789	4-Vinylphenol	2628-17-3	BCHIK
796	4-hydroxy-3-methoxy-cinnamaldehyde	458-36-6	CH
797	4-Ethylguaiacol	2785-89-9	CEFHIK
799	4-Damascol	4927-36-0	BDFHJK
808	3-methyl-4-phenylpyrazole	13788-84-6	CEFHK
810	3-Methyl-1,2-cyclopentanedione	765-70-8	ACEFGIKL
811	3-Methoxy-5-methylphenol	3209-13-0	BCHIK
812	3-Methoxy-3-Methyl Butanol	56539-66-3	ACGIKL
817	3-Hexenol	544-12-7	ACEFHIKL
819	3,7-dimethyl-2-methylene-6-octenal	22418-66-2	ADFHIJK
820	3,7-dimethyl-1-octanol	106-21-8	BDEFGIJKL
832	2-Phenylethyl acetate	103-45-7	BCEFHK
835	2-Phenethyl propionate	122-70-3	BCEFHJK
836	2-Pentylcyclopentan-1-ol	84560-00-9	DEFHIKL
838	2-nonanone propylene glycol acetal	165191-91-3	BDEFHJK
845	2-Methoxy-3-(1-methylpropyl)pyrazine	24168-70-5	BCEFGIK
846	2-isopropyl-N,2,3-trimethylbutyramide	51115-67-4	ACEFGIJK
847	2-Isopropyl-5-methyl-2-hexenal	35158-25-9	ADFGIJKL
848	2-Isopropyl-4-methylthiazole	15679-13-7	ACHIJKL
851	2-Hexen-1-ol	2305-21-7	ACEFHIKL
858	2-Butoxyethanol	111-76-2	ACEFGIKL
875	1,4-Cineole	470-67-7	ADGIJKL

880	1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one	43052-87-5	BDHIJK
882	(Z)-3-hepten-1-yl acetate	1576-78-9	ACEFHKL
883	(S)-(1R,5R)-4,6,6-trimethylbicyclo[3.1.1]hept-3-en-2-one	1196-01-6	ACEFGIJKL
888	(R)-(-)-Linalool	126-91-0	BCEFGIJK
889	(l)-Citronellal	5949-05-3	ACHIJKL
891	(d)-Citronellal	2385-77-5	ACHIJKL
899	(+)-Citronellol	1117-61-9	BCHIJKL
900	(-)-Citronellol	7540-51-4	BCHIJKL
901	(+)-alpha-Pinene	7785-70-8	ADEFGIJKL
902	(+)-Carvone	2244-16-8	ACGIJKL
903	(-)-alpha-Pinene	7785-26-4	ADEFGIJKL
904	Methyl 2-methylbutyrate	868-57-5	ACEFGIKL
909	Hexyl tiglate	16930-96-4	BDEFHJKL
918	Allyl 2-(cyclohexyloxy)acetate	68901-15-5	CHJK
921	1,5-dimethylbicyclo[3.2.1]octan-8-one oxime	75147-23-8	CFHIJK
931	alpha-acetoxystyrene	2206-94-2	ACEFHIK
940	p-Cymene	99-87-6	ADGIJKL
956	Phenethyl formate	104-62-1	ACEFHK
958	Phenethyl isobutyrate	103-48-0	DHJK
960	Phenethyl tiglate	55719-85-2	DHJK
971	Phenylethyl methacrylate	3683-12-3	DHJK
977	p-Isopropylphenylacetaldehyde	4395-92-0	BDFHK
981	1,2-dimethyl-3-(prop-1-en-2-yl)cyclopentan-1-ol	72402-00-7	BCEFGIJKL
983	p-Methoxyphenylacetone	122-84-9	BCEFHK
986	(2Z,5Z)-5,6,7-trimethylocta-2,5-dien-4-one	358331-95-0	ADHIJKL
987	p-Propyl anisole	104-45-0	ADEFHKL
994	p-t-butyl phenyl acetaldehyde	109347-45-7	BDHJK
995	p-tert-Amyl cyclohexanol	5349-51-9	BDEFHIJK
1001	Racemic alpha-Pinene	80-56-8	ADEFGIJKL
1002	4-(4-hydroxyphenyl)butan-2-one	5471-51-2	CEFGIK
1004	Rhodinol	141-25-3	BCHIJKL
1005	Ethyl (2,3,6-trimethylcyclohexyl) carbonate	93981-50-1	BDEFHJKL
1011	1-(3,3-dimethylcyclohexyl)ethyl acetate	25225-10-9	ADHIJKL

1017	S)-(+)-Linalool	126-90-9	BCEFGIJK
1018	Sabinene	3387-41-5	ADEFGIJKL
1019	Sabinene hydrate	546-79-2	ADEFGIJKL
1030	Propyl (S)-2-(tert-pentyloxy)propanoate	319002-92-1	BDEFHJK
1039	Spirolide	699-61-6	BCGIKL
1040	(Z)-5-methylheptan-3-one oxime	22457-23-4	BCEFGIJKL
1041	1-phenylethyl acetate	93-92-5	ACEFHIK
1051	Tetrahydrogeranial	5988-91-0	ADGIJKL
1052	Tetrahydroionol	4361-23-3	BDEFHIJK
1054	Tetrahydrolinalool	78-69-3	BDEFGIJKL
1055	Tetrahydrolinalyl acetate	20780-48-7	ADEFHJKL
1058	Ethyl (1R,6S)-2,2,6-trimethylcyclohexane-1-carboxylate	22471-55-2	ADEFHIJKL
1061	Thymol	89-83-8	BDHIJK
1069	trans-2-Hexenol	928-95-0	ACEFHIKL
1071	trans-2-tert-Butylcyclohexanol	5448-22-6	ACGIJKL
1074	trans-alpha-Damascone	24720-09-0	BDHIJK
1076	trans-Anethole	4180-23-8	ACEFHK
1079	trans-Cinnamic acid	140-10-3	CEFHK
1081	trans-Dihydrocarvone	5948-04-9	ACGIJKL
1084	trans-Isoeugenol	5932-68-3	CEFHIK
1088	Trichloromethyl phenyl carbinyl acetate	90-17-5	BDEFGJ
1098	2-mercapto-2-methylpentan-1-ol	258823-39-1	ACEFHIJKL
1110	Vanillin acetate	881-68-5	CH
1112	Vanitrope	94-86-0	CEFHK
1115	2,2,5-trimethyl-5-pentylcyclopentan-1-one	65443-14-3	BDFGIJKL
1118	Veratraldehyde	120-14-9	BCGIK
1119	(1R,5R)-4,6,6-trimethylbicyclo[3.1.1]hept-3-en-2-one	18309-32-5	ACEFGIJKL
1122	Verdol	13491-79-7	ACGIJKL
1127	4-(tert-butyl)cyclohexyl acetate	10411-92-4	BDEFHJK
1128	4-(tert-butyl)cyclohexyl acetate	32210-23-4	BDEFHJK
1133	Vethymine	7193-87-5	CEFGK
1134	4-methyl-4-phenylpentan-2-yl acetate	68083-58-9	BDFHJK
1141	(Z)-1-((2-methylallyl)oxy)hex-3-ene	292605-05-1	ADEFHKL

Table 4
List of materials with ALL MORVs from 1 to 5

Number	Material Name	CAS Number	Comment Code
7	3-methoxy-7,7-dimethyl-10-methylenebicyclo[4.3.1]decane	216970-21-7	BDEFHJK
14	Oxyoctaline formate	65405-72-3	DFHJK
39	2,2,6,8-tetramethyl-1,2,3,4,4a,5,8,8a-octahydronaphthalen-1-ol	103614-86-4	DEFHIJK
48	Nootkatone	4674-50-4	DHJK
183	Khusimol	16223-63-5	CEFHJK
199	Isopimpinellin	482-27-9	CFGJ
206	Iso3-methylcyclopentadecan-1-one	3100-36-5	DEFGJK
212	Isoeugenyl benzyl ether	120-11-6	DFHJ
215	1-((2S,3S)-2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethan-1-one	54464-57-2	DHJK
229	Isobornyl isobutyrate	85586-67-0	BDEFHIJK
260	2,3-dihydro-3,3-dimethyl-1H-indene-5-propanal	173445-44-8	DHJK
261	3-(3,3-dimethyl-2,3-dihydro-1H-inden-5-yl)propanal	173445-65-3	DHJK
281	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl acetate	5413-60-5	CEFGJK
329	gamma-Eudesmol	1209-71-8	DFHJK
335	4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopenta[g]isochromene	1222-05-5	DEFHJK
353	(Z)-6-ethylideneoctahydro-2H-5,8-methanochromen-2-one	69486-14-2	CEFGJK
360	8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl acetate	171102-41-3	DEFHJK
441	Octahydro-1H-4,7-methanoinden-5-yl acetate	64001-15-6	DEFHJKL
484	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl butyrate	113889-23-9	DEFHJK
487	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-5-yl isobutyrate	67634-20-2	DEFHJK
488	Curzerene	17910-09-7	DHJK
501	(E)-cycloheptadec-9-en-1-one	542-46-1	DEFGJ
566	Cedryl formate	39900-38-4	BDEFHJK
567	Cedryl acetate	77-54-3	DEFHJK
569	Cedrol	77-53-2	DEFHJK
570	5-methyl-1-(2,2,3-trimethylcyclopent-3-en-1-yl)-6-oxabicyclo[3.2.1]octane	139539-66-5	DEFHJK
573	Caryophyllene alcohol acetate	32214-91-8	DEFHJK
574	Caryolan-1-ol	472-97-9	DEFHJK
603	Bornyl isobutyrate	24717-86-0	BDEFHIJK

616	beta-Santalol	77-42-9	DEFHJK
621	beta-Patchoulline	514-51-2	BDEFGJKL
624	beta-Himachalene Oxide	57819-73-5	BDFHJK
627	(2,2-dimethoxyethyl)benzene	101-48-4	DHJK
632	beta-Cedrene	546-28-1	BDEFGJKL
663	Anisyl phenylacetate	102-17-0	DFHJ
680	2,2,6,6,7,8,8-heptamethyldecahydro-2H-indeno[4,5-b]furan	647828-16-8	ADEFHJK
684	alpha-Vetivone	15764-04-2	DHJK
694	alpha-Santalol	115-71-9	DEFHJK
696	alpha-Patchoulene	560-32-7	ADEFHJKL
708	alpha-Gurjunene	489-40-7	BDEFHJKL
712	alpha-Eudesmol	473-16-5	DEFHJK
714	alpha-Cubebene	17699-14-8	ADEFHJKL
726	alpha-Agarofuran	5956-12-7	BDEFHJK
750	Allo-aromadendrene	25246-27-9	BDEFHJKL
764	Acetarolle	744266-61-3	DFHJK
775	7-eip-alpha-Eudesmol	123123-38-6	DEFHJK
776	7-Acetyl-1,1,3,4,4,6-hexamethyltetralin	1506-02-1	DEFHJ
788	5-Cyclohexadecenone	37609-25-9	DEFGJK
804	3-Thujopsanone	25966-79-4	BDEFHJK
872	10-epi-gamma-Eudesmol	15051-81-7	DFHJK
919	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate	17511-60-3	CEFHJK
927	5-Acetyl-1,1,2,3,3,6-hexamethylindan	15323-35-0	DEFHJK
933	Patchouli alcohol	5986-55-0	DEFHIJK
978	3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl pivalate	68039-44-1	DEFHJK
1007	(2R,4a'R,8a'R)-3,7'-dimethyl-3',4',4a',5',8',8a'-hexahydro-1'H-spiro[oxirane-2,2'-[1,4]methanonaphthalene]	41816-03-9	DEFHJK
1022	2,2,7,9-tetramethylspiro(5.5)undec-8-en-1-one	502847-01-0	DHIJK
1024	(Z)-2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol	28219-61-6	DEFHJK
1027	5-methoxyoctahydro-1H-4,7-methanoindene-2-carbaldehyde	193425-86-4	CHJK
1029	Sclareol oxide	5153-92-4	DEFHJK
1035	Spathulenol	6750-60-3	DEFHJK
1038	1-(spiro[4.5]dec-7-en-7-yl)pent-4-en-1-one	224031-70-3	DGJK
1060	Thujopsene	470-40-6	BDEFGJKL
1089	Tricyclone	68433-81-8	DEFHJK
1107	Valerianol	20489-45-6	DEFHJK

1129	1-((3R,3aR,7R,8aS)-3,6,8,8-tetramethyl-2,3,4,7,8,8a-hexahydro-1H-3a,7-methanoazulen-5-yl)ethan-1-one	32388-55-9	DHJK
1131	Methyl (Z)-2-(((2,4-dimethylcyclohex-3-en-1-yl)methylene)amino)benzoate	68738-99-8	DEFHJ
1136	Vetivert Acetate	117-98-6	DEFHJK
1137	Decahydro-3H-spiro[furan-2,5'-[4,7]methanoindene]	68480-11-5	DEFGJKL
1140	(1aR,4S,4aS,7R,7aS,7bS)-1,1,4,7-tetramethyldecahydro-1H-cyclopropa[e]azulen-4-ol	552-02-3	DEFHJK
1142	3,5,5,6,7,8,8-heptamethyl-5,6,7,8-tetrahydronaphthalene-2-carbonitrile	127459-79-4	DHJ
1143	(1S,2S,3S,5R)-2,6,6-trimethylspiro[bicyclo[3.1.1]heptane-3,1'-cyclohexan]-2'-en-4'-one	133636-82-5	DEFHJK
1144	1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene]	154171-76-3	DEFHJK
1145	1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene] K	154171-77-4	DEFHJK
1148	4,5-epoxy-4,11,11-trimethyl-8-methylenebicyclo(7.2.0)undecane	1139-30-6	DEFHJK
1149	1,3,4,6,7,8alpha-hexahydro-1,1,5,5-tetramethyl-2H-2,4alpha-methanophtalen-8(5H)-one	23787-90-8	DEFHIJK

Table 5
List of materials with ALL MORVs greater than 5 to 10

Number	Material Name	CAS Number	Comment Code
248	Hydroxymethyl isolongifolene	59056-64-3	BDEFHJK

Table 6
List of materials with ALL MORVs from 0.5 to less than 1

Number	Material Name	CAS Number	Comment Code
472	Decyl anthranilate	18189-07-6	DEFHJ
526	(Z)-3-methyl-2-(pent-2-en-1-yl)cyclopent-2-en-1-one	488-10-8	BCHIJKL

The materials in Tables 1-6 can be supplied by one or more of the following:

Firmenich Inc. of Plainsboro NJ USA; International Flavor and Fragrance Inc. New York, NY

USA; Takasago Corp. Teterboro, NJ USA; Symrise Inc. Teterboro, NJ USA; Sigma-Aldrich/SAFC Inc. Carlsbad, CA USA; and Bedoukian Research Inc. Danbury, CT USA.

Actual MORV values for each material listed in Tables 1-6 above are as follows:

Material No.	MORV value for Equation a.)	MORV Value for Equation b.)	MORV Value for Equation c.)	MORV value for Equation d.)
1	0.548223914	0.876283261	1.22018588	-0.41901144
2	1.520311929	3.493450446	2.70657265	5.11342862
3	2.267801995	-0.81712657	0.43218875	1.595983683
4	-0.591063369	-0.48283571	0.16199804	1.210497701
7	1.437444636	2.131822996	3.81633465	1.318339345
9	2.151445882	-0.46189495	0.56090469	1.206360803
10	2.5733592	-0.58780849	1.39751471	1.258361951
11	3.052627325	1.008519135	-0.30475953	0.076323462
12	0.683776599	-0.01157903	0.82853231	0.326169402
13	1.549643217	1.809183231	0.70864531	2.22799611
14	2.82111224	2.339505033	1.240818	2.502429355
16	-0.31551128	-0.06816599	-0.04371934	2.76742389
17	-1.334904153	-0.5773313	1.75644798	1.898455724
18	-1.34154226	-2.63596666	0.06885109	1.001431671
19	0.15532384	0.09866097	0.64214585	-0.33330779
20	0.640261783	0.693213268	0.54637273	-0.97556029
21	0.936895364	-0.01521118	1.1697513	-0.63510809
22	1.158981042	1.115900089	-0.25859776	1.318200884
23	3.702361074	1.399942641	5.23954766	7.089933671
24	0.773874141	0.146848137	-1.05705847	-0.36193173
25	-1.016103969	-1.18967936	0.78064625	2.944710012
25	-1.016103969	-1.18967936	0.78064625	2.944710012
26	0.615085491	-0.00096877	-0.35697252	-0.18121401
27	0.70261974	-0.22197386	0.19710806	-2.37196477
28	1.366472597	-0.42546942	-0.59394241	-0.01417395
29	1.096043453	-1.02972898	-1.42167356	-0.63817943
30	1.143415203	-0.85945441	-0.41416913	2.499807942
31	1.138642907	-0.19595476	-0.54547769	-0.98828898
32	1.914414495	-0.64487788	0.63212987	1.166699371
33	0.314847366	1.848003955	-1.3905032	-0.62848261
34	-0.113542761	0.981530917	0.32824239	1.126524277
35	0.472382903	1.494882467	-0.07201236	-0.64589543
36	3.158513795	1.084094934	-0.00328981	-0.17786385
37	-1.055631982	2.240172964	0.92596118	2.105391988
38	3.158513795	0.592820874	-0.49326241	0.212867212
39	1.083800659	2.069727985	2.48170879	3.205630609

42	-0.103134861	0.267726008	-0.65350189	1.125952363
43	0.323961628	1.469295081	-0.52991193	0.797908251
47	1.703678841	1.348737095	2.00634162	-0.16505407
48	2.370955056	2.783472865	2.68240273	1.221864405
49	1.670680003	-0.41866107	-0.9173849	1.181929544
50	1.670680003	0.076369374	-0.49915943	-0.85392575
52	0.464485039	0.057512869	1.31230219	-0.11170276
53	0.626671823	-0.46954947	-0.33383736	0.277079201
54	0.666149043	0.009549925	-0.36226343	0.197224432
55	0.723473579	-1.50916383	-0.3848989	-0.71458778
57	0.381273227	1.192994109	1.65593321	-1.65739236
59	0.561360663	-0.17793966	-1.63250554	-0.7564969
61	0.146473611	-0.01535544	-0.16339658	1.738656146
62	1.20162032	-0.3576095	-0.10695443	1.322155191
63	1.084291915	2.258720158	-1.01245416	1.688283974
64	0.744770665	0.155243763	-1.8029919	1.023503542
65	0.972835178	2.797151284	1.53453579	0.857051645
67	2.069410561	0.021831924	0.37855159	-0.67235457
68	0.527636614	0.590831983	1.02843762	2.208655795
69	2.133965691	2.088998449	2.05751412	-0.9433713
70	0.327378959	0.996844599	1.23648533	-1.25138371
71	1.40093669	0.778222691	0.70401172	-0.24075444
72	0.617697349	-0.29503359	0.52404847	0.816184656
73	0.617792473	0.888976061	-0.45289639	0.615659244
74	1.437359024	1.548292147	0.10314807	-0.48982286
75	-1.970885622	3.398008325	4.08025266	-0.89948156
76	-1.32746934	-2.65365233	0.10272816	1.001614125
77	-2.541686116	3.295534192	3.75284227	0.404837808
78	-2.110794	2.109874746	3.13350902	-0.3880285
79	1.641162056	-0.28533994	1.53676145	0.652696023
80	1.594400214	0.283682865	2.23140233	1.111682021
81	0.176566806	-2.0786518	-2.13986952	0.981126964
82	0.980373758	-0.28813159	0.19404501	1.252564677
83	0.941833098	0.317310013	1.17606727	0.72992237
84	0.774237336	-0.27140727	0.72461427	-1.56415746
85	2.092976965	0.810644229	0.82999192	-0.62861806
91	2.061595915	-0.79930338	-0.18285395	-0.66898499
92	2.068748434	-0.24299896	0.07214682	-1.11758276
93	-0.08984279	-1.06025959	-0.05068694	1.560050105
96	0.927758203	-0.44129515	0.89190422	0.744284978
97	0.658667572	-0.68771072	0.46051026	-0.53120883
98	0.853222693	-0.2037738	-0.21414441	1.119784962
100	1.654535066	0.995056228	2.35139085	0.543654824
101	2.173663649	-0.11491477	1.48285148	1.698527571

102	2.066679492	-0.16785146	-0.84780149	0.12159477
103	2.335152618	-0.02866585	0.16993375	-0.98254522
104	2.760588276	0.459513599	1.35310241	0.000336976
105	1.654535066	3.654489674	3.13033965	0.544225478
106	1.750588169	-0.55853348	0.50257773	1.630011313
107	0.896789863	0.73615897	0.53011623	-0.54697747
108	0.532375207	0.826537134	1.21040312	0.690230716
109	2.407655187	0.742651426	1.80322099	0.271832856
110	0.54830833	2.916795026	1.40126098	0.690230716
111	0.939597126	-0.3750368	-1.23479972	-0.89366351
112	1.398518854	1.265740274	4.19618377	-0.12762692
113	1.415726941	0.086297006	3.43559555	-0.12964168
115	-1.557729423	-0.44113526	0.86330536	0.590708892
116	0.193562268	-1.58091165	0.83247813	-0.70978039
117	1.353510875	-0.59062398	-0.31776345	-0.3050158
119	0.830052725	2.28725579	0.38409695	0.219336109
120	1.261997955	-0.22622961	-1.04772194	2.028504137
122	1.505653628	-1.14748206	-0.19760084	-0.81373045
123	-0.658721962	-0.21299878	1.01439841	-0.76731016
125	0.749676998	-1.0761601	0.99563924	-1.15409002
126	0.931054384	-0.35067079	1.06050832	-1.62171794
128	-1.344832644	-0.09451199	1.19145467	1.621274257
130	1.153249538	1.605070708	2.38047907	-0.93842293
133	0.840066046	0.2323025	0.19054023	-0.26588341
134	0.522267541	0.824106618	1.83479545	0.364403434
135	2.142817887	2.142411243	-0.93830995	0.696522652
137	3.052627325	3.606270166	0.50445208	0.076323462
140	-0.153437637	0.246303216	0.76565758	1.800968868
141	2.067620311	1.424830396	2.33536931	7.644025075
142	0.98353103	1.950251373	2.50851828	-0.24499521
143	1.736969725	0.991537809	2.5691601	1.227191656
145	-0.211768579	1.46336231	-0.93580247	-1.48749449
146	1.912710035	0.926306508	1.81253333	0.494121361
147	0.675736703	0.99202385	-0.66034472	-0.66302669
148	0.757176542	1.83006252	0.16210659	0.243674851
149	0.438772371	1.091438092	-0.1560319	-0.61711642
150	0.84399938	0.675302022	-1.69771411	-0.73841711
151	0.633570539	0.988413715	-0.54991825	-0.43550324
152	0.911582356	1.974700218	-0.92267786	0.628660087
153	0.319053885	2.531735341	-0.39139184	0.734629224
154	0.714814512	0.690769753	-2.06588692	-0.73356628
155	-0.161798388	0.032135767	-0.13802086	1.734928461
156	-0.571799976	-1.32834264	-1.65346017	1.856689553
157	0.131224024	0.21510779	-1.70996346	0.964902175

158	1.201616145	-0.21158932	-0.8501176	-0.33330779
159	0.811289908	1.606645397	0.25352447	-1.83775117
159	0.811289908	1.606645397	0.25352447	-1.83775117
161	0.475184006	1.99305646	1.90910177	3.288337059
162	0.833030517	0.487189028	1.76798642	0.104378164
163	0.58993703	-0.46431772	0.74883588	-0.81090824
166	-0.121286831	-0.84664528	-0.32625341	0.778055656
167	0.846400186	-0.25922232	0.69248774	1.183696217
168	-0.310930833	-0.81048493	0.08527131	1.61831109
169	-0.2346025	0.890438419	-0.13206526	-0.83961838
170	-0.169223695	1.172917966	-0.11306441	0.099121666
174	2.863652137	0.236674094	-0.69038707	1.610215283
175	1.789769228	-0.31740428	-0.89529921	-0.09686469
176	2.625947334	0.083548191	0.30634559	-0.35925728
177	1.674319352	-0.22179044	0.42093738	-0.23683577
178	2.863652137	0.727069168	-0.26724686	-0.44888613
179	0.070511885	0.365852864	1.35327505	-0.03748038
181	0.976254543	0.691638796	0.51371978	-0.02503945
182	-1.842503751	-0.12688474	2.56277877	0.111744488
183	3.195758563	3.886545621	4.29482769	3.829845293
184	0.333889534	-0.67236766	2.21605977	4.254612125
185	5.61162203	1.40458529	2.86231343	1.035135749
186	1.068190511	-0.65969343	-0.63104765	-1.36962992
187	1.396358739	0.249705611	0.81449499	-0.15353102
189	1.544466636	-0.33742685	0.8096674	-0.44483677
190	-0.210918777	-1.04086063	0.02614862	3.362615492
191	0.715897301	0.666316436	-0.41719538	0.400723176
192	0.65612864	1.231196814	0.75462061	1.514581532
193	-0.394884432	1.129269425	-0.3157071	-0.61478944
194	-2.111794245	-0.71010521	0.53077207	0.59302222
195	1.18880856	0.704463775	1.99312777	1.419709023
196	1.885714606	0.436434665	1.44657532	1.145809063
197	2.174580668	0.133070149	0.99814905	0.871658496
198	-0.533922573	-2.16213117	0.5812107	-0.92280453
199	1.493919434	1.45125612	1.95141371	4.403441058
201	-0.005520296	-0.83362523	0.65480762	-0.38894276
204	0.732981164	-0.97494758	-0.91192246	-1.00034323
205	0.991838899	-0.60053505	-0.49983634	0.674468753
206	2.147983695	1.291351958	1.64553247	1.626455601
208	-0.386224123	-0.24799559	1.19406353	-1.61243489
209	1.447075297	0.122626462	1.08021156	0.473154634
210	-0.386224123	-0.24799559	1.19406353	-1.61243489
211	2.186118467	1.873949371	0.64852028	-0.59205851
212	1.367811201	1.689658923	1.8017376	2.525531645

213	0.925016223	0.875610609	0.31462609	0.847028648
214	-0.239873321	1.808823425	-0.36105512	-0.07650286
215	2.264275088	1.360001278	3.25759951	2.147928282
218	-0.509585598	-0.93428643	1.63030386	-0.79436377
221	1.876297063	0.026873469	0.45442758	1.538486988
227	5.317676982	2.824566654	1.73360625	3.103310061
228	3.323728685	1.554268023	1.8883835	0.957527434
229	3.218950175	1.464118271	2.47512497	1.214429025
230	5.242356467	3.482206715	3.50441556	1.614847073
230	5.242356467	3.482206715	3.50441556	1.614847073
231	2.710087358	1.517756148	0.35088855	0.603171932
231	2.710087358	1.517756148	0.35088855	0.603171932
232	0.703604481	0.42129186	0.39567696	0.41729786
233	1.312921486	0.816597603	2.17066283	0.472801294
234	0.874145958	0.741410502	1.71105733	-0.47289415
237	0.778921491	-1.02119303	0.4612164	-0.8881184
238	0.681403734	-0.342052	1.27750286	-0.3383341
239	-0.870637933	-2.58292907	0.79173772	-1.27888846
242	0.910211214	0.374558101	1.01712685	1.001043471
243	1.670680003	0.104780951	-0.6545574	-0.46985154
244	1.140332181	0.116513028	1.61110902	3.713305291
246	-0.634992987	0.548746912	4.62542427	7.660969857
247	-1.739729444	-0.91508372	1.18693162	3.108631198
248	5.81821686	6.320330665	6.14379552	5.214046447
249	0.348188924	-0.95333461	-0.08432225	1.866717393
252	2.456287983	-0.02516176	0.76814124	1.756087132
253	1.76915226	0.226389981	-0.18115009	-0.62385199
254	0.658956861	-0.39322197	-0.67153044	1.416053304
255	0.892122738	-0.46985097	0.42813903	-0.46752753
256	0.625043963	-0.65111806	1.4319541	2.110656697
258	-0.187789327	-0.85870492	-0.21766971	0.931521178
259	-1.261365139	-2.33099427	1.33595129	0.43644676
260	2.4020693	2.669351733	2.36395771	1.910609499
261	1.978618006	2.732613301	2.19594212	1.683156477
263	1.350274014	-0.59210334	0.14780643	-0.13113746
264	0.526085484	-1.54983116	-0.17497208	-0.8204696
267	1.175997006	-1.03507906	-0.11004734	-0.50564806
269	2.367197222	0.457286256	0.02211231	0.497925297
270	0.711734628	-1.45058685	-0.17018094	-0.71795736
271	1.073564668	-0.47951936	-0.80269361	0.136837431
273	0.663835001	-1.5674675	0.28509522	-1.12959038
274	1.628173498	-0.58892922	-0.3892777	-0.66728139
275	0.935336765	-0.9522644	-0.87000279	-0.29365972
276	-5.989155804	1.722071272	3.31094703	1.273171428

277	0.904631703	-1.02628534	0.49274649	1.000655271
278	0.293923493	-0.82335619	0.13147975	2.730914048
280	-0.284822555	0.322094188	3.2184015	0.383213731
281	2.201373139	2.228820089	2.03455575	1.720697243
282	0.505189899	-1.01844885	-0.98499144	0.912195522
283	0.775002479	-1.29876341	-1.52162214	-0.77292581
284	0.505189899	-0.57830662	-0.55673047	-1.09870665
285	-0.987611415	0.908212704	2.59089199	1.311154128
286	-2.635687733	-1.53554173	0.68132558	4.350511118
287	-1.890800496	-0.9175912	-0.84177071	0.615422874
288	-0.417807714	-0.27643667	1.06515025	0.958812195
289	1.078763544	0.263281029	1.00763749	0.866949263
290	0.733561298	-0.47493387	0.17088582	1.536463653
292	1.2252731	0.720498276	4.33362953	2.202084022
293	0.947860369	0.93449449	1.85056304	0.355024738
294	-1.051634009	0.136579632	2.17918871	-0.01949057
295	1.039790111	0.81471915	-0.94326824	0.887662055
296	1.009509413	1.364418947	1.42805339	0.429992055
300	0.246930208	1.113809101	0.25540773	0.528760053
301	0.246930208	1.113809101	0.25540773	0.528760053
302	0.697198045	-0.41500676	-2.35076003	-0.60639529
303	0.10667178	3.580489288	0.25893587	2.329367856
306	0.561360663	-0.17793966	-1.63250554	-0.7564969
307	1.583243229	1.398558046	0.152423	-0.13988304
308	-0.067380931	0.74278658	0.29217479	0.180866298
310	0.238202662	0.926241567	-0.66649303	0.508184193
312	0.714965519	-0.45511207	-2.34849436	-0.9953911
314	0.736369931	-0.52068396	0.53882253	-0.7059813
316	2.314558863	-0.25458611	0.22080129	-0.04142716
317	1.095005005	0.057439852	-1.20728654	0.035895107
318	-0.111714595	-0.61079351	-1.16010053	1.102488007
319	-0.264829849	0.540388888	0.10729709	-0.57215449
321	1.243861203	-0.75229123	0.05515858	-0.34659253
322	0.956379568	2.838565742	2.7997689	0.805938034
323	1.884902746	0.813499245	0.86344403	-0.1241887
324	0.189037208	1.105600415	0.48460989	0.285938173
325	0.791400443	2.454239197	1.54315324	1.416449646
328	1.22836182	2.190068443	2.48751772	0.126982574
329	1.800767509	1.372656013	2.09551175	2.849728342
330	2.688999059	0.017422444	0.34929031	0.108155361
331	-0.223648429	0.873635097	1.78683863	0.126324441
332	1.884902746	-0.46695445	0.1761545	-0.11026722
333	0.956379568	2.838565742	2.7997689	0.805938034
334	0.569368001	2.811464091	1.88866785	-0.16122533

335	1.931053264	2.306571877	4.45651797	4.474221307
336	1.355107839	-0.49142588	0.83879083	0.18350392
338	1.025467157	-0.99345477	0.57780149	-0.19101275
339	1.216559787	-0.68632827	0.71921804	0.140021721
342	2.073599715	-0.19777074	-0.44964804	-0.71885866
343	3.375840967	3.294907583	5.0378352	4.14804591
344	0.926453735	1.336260845	2.20088072	0.226359561
346	-0.133453942	-0.27276578	0.95852923	-0.88404805
347	-0.414858428	-0.94736055	1.9452074	-1.32753709
349	0.011110326	0.415952358	1.08076289	2.638925816
350	-1.366284701	-1.3912958	-0.0683659	1.205395618
352	2.592229701	2.014162407	-0.56599991	-0.19676404
353	2.347680291	1.432589328	3.81650185	2.28664738
354	-0.094599823	0.704257624	0.8494127	-0.05632553
355	-0.534528735	-0.26820008	0.69328667	0.63557685
356	0.71431796	0.568464069	1.14931631	0.32594963
358	1.637857828	1.932629993	0.68535871	-1.06298922
359	3.169264285	2.326146291	5.44251947	3.621423972
360	2.824830639	3.29829616	3.43870859	3.771256974
361	0.772183137	0.62924397	1.14549597	0.743423792
362	2.158106604	-0.08901432	0.85035629	-0.37323677
363	1.485114303	-0.85819594	0.70929196	4.132013298
364	-0.661168364	-0.30270875	2.49237859	-0.7675819
365	-0.518303431	-2.08665423	0.5658944	-1.10451499
366	-0.501301831	0.561788544	0.14113617	0.610082057
368	-0.106125097	1.092782715	-0.89571841	-0.08594454
369	1.43532227	1.656262941	-1.09448841	1.674272267
370	1.064083705	-1.08482967	0.35640283	0.866246621
371	1.933819902	0.975863726	1.62799441	1.492919426
372	1.933819902	0.975863726	1.62799441	1.492919426
373	0.274120553	2.246646022	2.93946992	2.617412085
374	0.940949346	2.935858163	0.52084392	0.847114052
375	0.177236108	2.745061961	0.76268843	0.373809692
376	-0.999571921	0.579320229	-0.06019938	-0.94280945
377	0.521811983	-0.8476641	0.7732327	1.729406547
378	-0.532701772	-2.17823188	1.26760147	0.815211357
379	-0.684994963	0.018353057	-0.8170018	0.582030709
381	1.592237677	1.373054134	0.60184939	-0.30300485
385	0.967501839	0.136172137	1.3645564	0.374341215
385	0.967501839	0.136172137	1.3645564	0.374341215
386	1.247138794	-0.97883463	0.03688288	-0.57321578
387	0.785485559	-1.23629818	-0.07759084	-0.71795736
388	1.503632155	-0.13455265	0.86630165	0.102845335
388	1.503632155	-0.13455265	0.86630165	0.102845335

390	0.811363694	0.872605919	-0.17445198	1.358866557
391	1.653006495	-0.44095837	0.46475017	-0.16817306
394	1.043989895	-0.82625074	0.40893134	-0.10417542
397	1.430046723	-0.79407262	0.15684862	-0.4384694
398	-1.401723491	0.271079592	1.35530191	-0.63550333
400	0.762211626	-1.06778628	-0.93642574	-0.13193338
407	0.591198428	-0.8943503	1.41392426	2.694863328
412	-0.067309295	-0.21963004	0.57788677	-1.22740398
413	0.630456164	1.538096427	2.10994563	2.45668637
414	0.460631327	3.678501689	1.18326431	1.28320952
415	0.060485009	-1.37776759	-0.22689728	2.328813337
416	1.864088631	0.2451067	1.63260125	1.855346924
417	-0.747017264	-2.60335412	0.85092701	3.525229717
418	3.678359573	3.437930194	4.42449746	0.716864637
419	-0.131519393	0.731836014	0.81604919	-1.29993979
420	0.11276779	-0.13029453	0.19422843	0.853490939
421	2.819997124	0.193567405	1.15903162	1.748390255
424	-0.211768579	1.46336231	-0.93580247	-1.48749449
425	-1.467980751	-2.41196874	-0.34454968	2.161517022
426	2.176374648	2.131594325	1.99252316	0.002774099
428	2.10568799	0.336366154	-1.41176883	0.827982605
429	2.179080731	0.811454228	-0.58304782	0.827982605
432	0.814675557	-0.13076033	1.07380397	-0.01560954
436	0.003614069	-0.4704298	1.6004974	-1.27605297
437	-0.070955783	-0.17246926	0.32599434	0.682083059
438	0.71141055	-0.62729405	0.6220964	0.498836975
439	-2.152188932	-1.81662702	0.66042162	-1.57001886
440	0.194444196	0.880854446	0.80016905	0.373809692
441	2.349282571	1.734747324	1.71148239	1.274963632
442	0.243841724	0.036287037	0.51243015	0.361825534
443	-0.131519393	0.731836014	0.81604919	-1.29993979
444	0.607958335	1.910541857	-0.42710132	-0.46909656
445	-0.047486491	1.045012945	-0.25220201	-0.31982826
447	0.611981677	0.559261438	-0.31210071	-2.20421695
448	0.45491409	0.804084437	0.03088748	-0.17549737
449	0.323968221	-1.00428076	-1.65151616	1.031096548
450	1.433196296	-0.12277841	3.46809784	-0.14760118
453	1.138642907	0.238344138	-0.56453732	-0.60639529
454	0.689556954	-0.32116049	0.17614165	0.99165159
455	-0.978653338	-0.96381951	0.37950282	0.793341469
457	2.740852074	1.146976436	0.01429902	0.909817098
459	2.034203389	-0.06483391	0.25864307	0.096715771
461	0.405441454	3.029508918	1.66201629	0.621375526
462	1.348588872	2.252065606	1.98535615	0.126982574

463	2.402548765	0.141297665	0.32401564	0.165555831
464	1.396358739	-0.35292634	0.11760582	-0.13960954
465	0.940569103	1.267891616	1.68420132	1.263608034
466	-0.191220659	0.067062979	2.24237992	0.125280183
467	0.940569103	1.267891616	1.68420132	1.263608034
468	0.123370943	1.164309475	0.17099727	-0.95446701
469	0.925252053	-0.57178441	0.69807561	-0.59133195
470	2.237616041	1.810156128	-0.58140154	1.320304914
471	1.714516544	-0.62135116	0.23636624	-0.2706853
472	0.605628283	0.938001104	0.50028363	0.743911872
473	0.093847515	-1.1973016	-0.26960381	1.829684619
474	0.696773849	1.065592689	0.37607733	-0.19214193
475	1.405352842	0.379589036	0.27781476	0.041425889
477	0.237582954	0.629327199	0.45159895	-1.59912382
478	1.360648836	0.598053217	2.00883441	-0.0827715
479	2.214928637	-0.24358938	-0.3486103	0.9190125
480	1.933819902	-0.3826187	0.97439148	1.491603428
480	1.933819902	-0.3826187	0.97439148	1.491603428
481	0.612364301	-0.26364231	-1.3201026	-1.62884377
482	1.604448424	1.286308964	-0.34289284	0.887781648
482	1.604448424	1.286308964	-0.34289284	0.887781648
484	3.269313083	2.336715633	3.65534824	2.158890088
486	1.530484593	1.052491466	3.11297562	0.430146348
487	2.889323404	2.226094104	4.12877599	2.184426542
488	1.062548487	4.75312035	2.78435853	2.01925207
491	0.397432667	-0.20071274	0.842202	1.944142408
493	0.270731661	-0.7406408	-1.17192239	1.401933582
495	0.298981649	0.854414067	-2.2714622	-0.62848261
496	0.565278409	0.659352661	-0.00159534	0.384991859
497	2.972647554	1.210988046	0.08629653	0.991649406
498	2.863652137	0.229707592	-0.75515466	-0.06022029
502	0.478208715	1.827989577	0.67676345	-0.88328385
503	0.845706083	1.117392544	-0.21773539	0.272770415
504	0.837488879	0.874463134	-0.08311625	0.149327397
505	1.749446006	0.076054765	-0.59137073	0.291488011
509	0.716903285	-0.22917288	-1.93027881	-1.52173529
510	0.241638743	0.769444787	-0.07283731	-0.38771737
512	0.556069536	-0.47514685	-1.88388474	-1.67297277
515	0.23291131	0.598998195	-0.99553291	-0.40829542
517	0.784181146	-0.20530019	-1.89414748	0.152726109
518	0.742030255	0.281479436	-1.4156326	-1.91369695
519	0.367442761	-0.50911405	-0.77651804	3.081125259
520	1.28335174	-0.16976166	0.19676128	1.493753388
521	-1.105672292	-1.29204085	-0.95149628	1.817322011

522	0.714965519	-0.45511207	-2.34849436	-0.9953911
524	0.325255266	1.131242708	-2.79377204	-0.62848261
525	-0.210625832	0.979060885	0.37926876	-2.08002977
526	0.698504484	0.548193178	0.92265651	0.500152973
527	0.420012766	1.731459464	-0.23341719	0.139565409
528	0.161304111	0.66712144	0.58401752	0.373809692
529	0.911890585	0.353572744	1.04706167	1.001090055
530	1.670680003	0.86138741	-0.27652639	1.174059185
531	-0.169223695	1.172917966	-0.11306441	0.099121666
532	2.237616041	1.438074134	0.31117554	-0.71786492
534	1.205873658	1.32208026	1.21816392	-0.5027271
535	0.999469738	0.056406435	0.72382479	-0.61170287
536	0.63876931	-0.39111525	0.08747854	-0.66833729
537	0.689953348	1.206425159	0.58870271	0.198159994
538	0.54988634	-0.32842011	0.69258273	-0.81953404
540	0.735538933	-0.20826876	0.6955468	-0.7170218
541	1.097368973	0.740159871	0.12012053	0.137772993
542	-0.24632881	-0.09354384	-0.13580399	0.599029186
544	0.687639306	-0.30861817	1.14537443	-1.12865481
546	1.670680003	1.94609957	0.19633838	1.14825764
547	-0.24632881	-0.23975349	-0.01449288	0.574861147
548	1.349418105	-0.29885837	0.42849141	0.008671721
549	0.623933699	-0.62776258	-1.2835205	-0.23131507
550	1.091300413	-0.33969057	0.91994098	0.043900994
550	1.091300413	-0.33969057	0.91994098	0.043900994
551	1.172668936	-0.39476924	-0.61394794	-0.16425167
552	1.434150355	1.041294025	0.32000606	1.24279868
553	1.040907688	-0.38050079	-0.95306497	-0.03036668
554	0.623933699	-0.65991007	-1.27562979	-0.61529805
555	0.623933699	-0.09654208	-0.6432411	1.36608372
556	0.623933699	-0.62776258	-1.2835205	-0.23131507
557	-1.043779684	0.358151507	0.96578333	-0.7498558
558	3.113548387	0.901949497	-0.07402944	2.171129217
559	1.433732801	2.854621121	1.81079379	0.893806123
560	0.793851811	0.195900744	1.13222828	-0.38432626
561	1.874725149	0.921395625	3.05642524	2.616508159
562	-1.30410643	-2.63450231	0.12574616	1.001870337
563	-0.153585698	2.733591064	2.12854196	3.424603045
565	3.655479783	3.751479035	5.51820797	3.282822615
566	4.034374094	3.755759834	4.82506006	3.190861648
567	4.203811008	3.627632534	4.68751919	3.372829008
568	1.643514525	0.827299302	0.70706274	2.545428997
569	2.692371513	3.589810155	4.40390088	4.506937878
570	1.707556133	2.400065573	1.78745169	2.655458557

571	1.862893827	2.803280605	0.98209954	3.188564781
572	1.203581368	0.798608763	2.67898788	1.659633314
573	2.459623568	2.656773866	3.54771795	2.085649266
574	2.878405284	1.770500246	4.00464111	4.859737959
575	-0.395731956	0.325594009	0.98982713	-0.25791379
576	-0.2346025	0.890438549	-0.13206526	-0.83961838
577	0.484934913	2.001798597	-0.11430063	-0.05230593
578	1.138642907	-0.72228381	-1.0321	-0.60639529
579	-2.722013313	-3.79238321	-1.13572295	0.953543134
580	1.138642907	-0.66601616	-0.95089973	1.036450105
581	1.105119249	-0.82090309	-0.06184517	-0.90904158
582	2.092976965	-0.31228784	0.08755137	-0.62955362
583	-0.24632881	-1.33540368	-0.96483147	0.624830731
584	2.237616041	0.30800753	-0.44296441	-0.71918014
585	0.634021669	-0.28724544	-0.74527157	-1.361765
586	1.313957377	0.449601	1.50810166	-0.30998322
587	0.304876136	-0.43283205	1.23096012	0.398961811
588	0.449793066	0.007950225	0.8004147	-0.63434071
589	-0.681766404	1.08547116	0.54331319	-2.16710754
591	-0.34676031	-0.77573166	1.85884084	0.312272735
592	-1.573190219	2.29028194	1.86285367	0.687279186
594	-1.45374647	0.452156392	2.48970747	0.858468114
595	0.058003677	-1.91126878	1.52586392	-0.07528071
599	1.485777974	1.54384772	0.79002365	-0.09069773
600	1.914093549	0.841364523	0.15173954	0.255445859
601	1.203870517	1.17864533	1.22686262	0.453935114
602	0.771984982	0.66859171	-0.37427136	0.07599515
603	3.218950175	1.464118271	2.47512497	1.214429025
604	2.710087358	1.517756148	0.35088855	0.603171932
605	0.703615734	0.42129186	0.39567696	0.41729786
606	0.055463315	1.972687323	3.42898264	1.395457482
607	-0.146397553	-2.05649732	0.17598641	1.900931587
608	1.473771668	2.08260463	-1.09319437	0.44289209
609	-0.466215117	0.845009196	1.89800228	0.840292062
610	2.14236439	1.079695535	0.29060257	1.329215628
611	1.078583502	1.707732184	-0.73721672	-0.87923138
612	-0.128136098	1.038320983	-0.63703066	0.184527669
613	1.599427115	3.615521066	0.43343413	-0.1515479
614	1.489603514	2.706865637	-0.06242639	-0.47244791
615	1.960664614	4.490550162	2.26962278	0.346542121
616	2.689328335	3.692579375	2.01499213	1.348800283
617	-0.845027889	0.504788036	0.4957383	-0.65628324
618	-0.461016335	1.612995126	1.09551709	-1.62235977
619	-0.222804396	0.361727974	0.62743416	-1.02982449

620	0.745610019	-0.76737462	-0.67364137	1.696394301
621	3.671429366	1.708460032	4.57083156	1.955988764
624	2.139270802	2.093130621	2.5533383	3.30383102
625	0.665423108	1.356936283	1.5515704	1.874119646
626	1.292942787	0.621140137	2.28513785	1.042322574
627	1.14724223	-0.51104438	1.01088446	1.51232276
628	1.44418619	3.825155203	-0.84341678	-0.02251455
631	2.622138509	5.106659136	4.48303003	2.115425367
632	2.450328692	4.670297017	4.54579766	2.15781135
633	1.560465308	2.636096631	2.45546606	0.920962489
635	1.510161132	2.388971583	-0.63579931	1.939575919
636	1.433842763	0.529693203	-0.23195491	1.22356734
638	1.921725015	0.758255259	0.81570609	3.615611357
639	0.422001837	-0.14885323	-0.00660617	1.726576493
640	0.865825265	-0.28827025	-0.54129473	0.283616979
641	0.813978315	0.509726232	0.37457254	0.842075065
644	0.85173251	0.664325682	1.88299246	0.951603698
645	0.417907652	-1.00347186	0.9667556	-0.47157656
647	0.221569324	-1.2239438	0.91464498	-0.19166679
649	-0.560315649	-0.67419393	-0.02482011	1.492767049
650	1.640396187	0.328871961	0.04729888	0.912259803
651	0.672555558	-0.9987845	0.48545476	-0.13530683
652	-0.995969271	-1.38653208	-0.49268035	0.944524468
653	1.203949791	0.0153333	-0.10401424	0.73323846
655	1.334772083	0.418728831	-0.92221842	1.317365259
658	0.414934548	0.314990682	2.78051829	2.656854539
659	3.996948911	1.915319951	3.03990612	5.764113617
660	2.175041013	1.882945358	0.07779745	-0.18323732
661	-0.316755016	1.64607349	2.76327471	2.024910676
662	0.258228842	0.844792644	0.1924797	0.098776211
663	1.521826905	1.097809988	2.13583044	1.30609234
664	0.708920214	-0.27795513	0.15395433	0.014791904
665	0.630772742	-0.34278374	0.49097281	-0.0565644
667	0.812238101	0.195908668	0.21564664	0.219336109
668	1.529097453	2.246515706	1.4678099	-0.81836944
671	1.453855457	-0.51177209	-0.78608937	0.361715513
672	0.771613806	-0.81209599	-0.85297613	0.084880782
673	1.874725149	0.921395625	3.05642524	2.616508159
674	5.912391366	3.468705262	6.81994671	7.217631788
675	0.525794155	0.473286101	2.51749677	2.935001452
676	0.623704257	1.523736626	2.50208859	2.474137331
677	-0.548848405	0.058004962	1.07849806	2.361730638
678	4.818555677	1.506257638	4.96635528	5.508133385
679	4.332202737	2.699343437	5.65576391	5.021298111

680	4.042984412	4.75506829	4.65903898	4.913020939
681	0.5959536	2.091803965	-0.14697928	-0.71889234
683	0.87899671	0.043210589	1.37554648	-0.60198897
684	2.349844428	1.181400632	2.15359469	2.136987013
686	1.024635336	1.040500794	0.9820242	-1.16405004
687	0.551495677	0.66297128	-0.45433071	-1.28827912
691	1.609835015	2.898881191	-0.99203246	-0.15162554
692	2.002379485	3.95875961	1.1705779	0.346542121
693	4.264631423	4.375626605	0.93418004	0.114988571
693	4.264631423	4.375626605	0.93418004	0.114988571
694	4.858313721	4.772826468	3.58732214	2.558402204
696	2.99409154	3.843066736	2.50597637	1.205022789
697	0.407534444	2.829113684	2.16548165	0.756766079
698	0.983060431	2.328872529	1.67788951	0.805938034
699	0.996500165	0.60129571	-0.27496491	-0.22179967
700	0.698400489	0.514637899	1.14265307	0.816064314
701	0.592372435	-0.67812322	-1.75051912	-0.51109618
702	-0.211768579	1.46336231	-0.93580247	-1.48749449
703	0.372029303	0.866016277	-0.91679974	0.347054507
704	1.187861135	0.858978871	0.1265005	0.217668671
706	0.193569186	1.623921627	0.08867618	0.808617424
707	0.819562098	3.57840156	3.38080377	1.26599216
708	2.391828225	1.877690145	3.85935427	1.647356195
709	1.280902077	2.17019575	3.40315777	0.126982574
710	1.454593977	3.128186882	-2.26368122	-0.02251455
711	-0.783387499	1.465620573	1.22912535	-1.41213701
712	1.936489942	2.528373237	2.13424487	2.393940425
713	1.303999908	2.146563611	-0.26420591	-0.01477791
714	2.3584433	3.778880151	3.4396901	1.593719007
715	4.023918591	3.403899942	5.07447567	4.880181625
716	0.981194248	1.73892162	2.21166953	2.738129365
717	0.983060431	2.328872529	1.67788951	0.805938034
718	1.241840746	3.430871861	0.55000978	1.073616332
719	1.483275952	3.037398628	-1.55547275	-0.47244791
720	2.372311412	3.403234423	-0.21191089	-0.08519829
721	2.128185431	0.274654772	0.47626043	2.465333527
722	0.616377169	-0.58753328	0.48821573	1.063402884
723	-1.273274319	-1.12897478	1.71118519	4.067480158
724	2.103515193	0.165377929	-0.18223896	0.288303217
725	0.983060431	2.328872529	1.67788951	0.805938034
726	2.887615733	3.282342953	1.95034945	2.462290186
727	2.241052707	2.13951389	0.36814978	0.371689426
730	1.121105724	-0.20397307	-0.15741334	0.897609916
731	1.437838545	-0.09620743	0.02756967	1.949139525

733	-0.46922259	1.067777032	1.61226345	0.185415155
735	-0.081273581	1.192925027	1.67970188	0.33874614
736	-0.13000788	1.099012031	1.64139691	0.248287146
738	1.670680003	-0.20756775	-0.73755051	-0.84924056
740	-1.532691904	-2.55214711	0.57438104	0.555698696
741	1.407504561	0.048284736	1.01405149	-2.2579901
742	0.644803847	0.644647752	1.35192052	-0.62780087
743	0.174679072	0.169515693	0.62350977	-0.08144308
744	0.02068385	0.648730454	-0.04946215	0.214634634
745	0.741424752	0.523647641	0.52863925	-0.65426285
746	1.285306965	1.929408375	0.85560877	-1.4619958
748	-1.513804897	-1.10823383	1.09397284	-0.88975989
750	2.554017714	3.544542579	4.42317523	1.647356195
752	2.592229701	1.158945916	0.24149847	-0.58379051
754	1.649506181	1.31981993	2.36997533	0.406081966
755	-0.028552173	0.253838465	0.95694896	-0.16565786
757	1.446915042	0.673406021	-0.6641103	-1.80002119
758	5.933043009	5.716461604	6.67410554	4.433272782
760	-3.195604514	-2.60998376	-0.11222221	0.792186468
761	0.286783044	-0.52414055	-0.57593161	0.628896611
763	1.405567948	-0.84372738	-1.32379279	-0.50314577
766	0.279442569	-1.00722191	-0.18524031	2.487147765
767	-1.32777782	-2.36136561	-0.79602501	1.247063893
768	-0.692560954	-1.92177717	0.46687554	2.400762497
769	1.889999468	1.112266205	0.82815523	0.525271623
770	2.237616041	2.282141767	-0.149966	-0.71866539
771	0.909356011	0.368597887	1.03689838	1.001198751
772	1.328601831	0.715296776	0.20358825	1.147403521
774	2.002379485	3.95875961	1.1705779	0.346542121
775	1.936489942	2.528373237	2.13424487	2.393940425
776	1.495019673	4.35984375	2.59969954	2.95313487
777	0.206892499	-0.57813502	-0.32983	0.781221286
778	1.340232187	-0.11034804	0.35759778	1.690582999
779	0.595257521	-0.85639987	0.19436224	-0.73333902
781	2.187955186	2.571774369	2.74817529	-0.52827851
782	0.893855657	0.63313304	1.19104388	-1.61620514
784	-0.275919571	-1.64491584	0.60429762	-1.5580623
786	-0.043537347	1.337721065	-0.56551398	-0.02167052
788	2.147983695	1.250042565	1.72576392	1.626956379
789	-0.624451013	0.76248127	-0.79219481	-0.73513092
791	0.227060873	-0.04783658	-0.16862915	1.166609659
792	0.90746622	1.643598677	0.26467094	0.396081003
796	0.811374104	0.766579899	0.10161642	0.135186519
797	-0.185638022	0.53853264	0.65441562	-0.25681926

799	0.657769581	0.095543194	0.89522656	0.558428618
800	0.227060873	-0.04783658	-0.16862915	1.166609659
802	-0.660595577	1.597474466	1.49106895	-0.20429128
803	1.706162052	0.623892414	0.59662073	0.7745661
804	3.478490379	2.348697011	3.96279011	2.456963386
805	0.377241729	0.83329773	0.1712741	1.057125999
806	2.863652137	0.771287371	-0.4183972	-0.44551461
807	1.794279084	0.711717977	0.35187068	-1.0208486
808	0.408210632	0.633556897	-0.37022584	0.717270748
810	-2.506277966	-2.61703099	0.87880054	-0.72832121
811	-0.789075789	-0.15346024	0.64720487	-0.48507671
812	-1.395132583	-2.59063834	0.14973761	0.623759794
814	0.414608216	-0.23108581	1.15081653	-1.10351559
817	-0.24632881	-0.09354384	-0.13580399	0.599029186
819	0.805916178	0.96701754	-0.8811308	-1.23858491
820	0.744770665	-0.73855596	-0.2249849	-0.2981968
821	1.099377934	-0.55297074	-0.58846144	-1.64325365
824	-0.183625049	1.183962609	1.63494269	0.25504959
826	1.678825829	1.234136613	1.45948258	0.224375571
827	2.592229701	0.621958527	-0.52522117	-0.19676404
828	2.592229701	0.57915141	-0.51767373	-0.58077497
829	1.670680003	1.284791367	0.14864516	-0.84985664
831	1.116827432	-0.75462162	0.39137278	-0.04171761
832	0.516805788	-0.98195801	-1.03806082	-0.25383454
833	1.490368312	0.080687244	-0.97130296	0.833722265
834	-0.369014518	-1.35841128	-1.27372214	1.351157886
835	0.914072736	-0.8695664	0.36889122	-0.08606658
836	0.998848923	-0.42464651	-0.23731009	0.395895785
837	1.670680003	0.070165381	-0.64700996	-0.85055617
838	0.810918992	-0.75696962	-0.21854084	0.836677293
839	1.066219316	-0.66764691	-0.49983634	0.669914
840	1.078821776	-0.72511699	-1.00012288	-0.15789319
845	-0.163950017	-0.21616766	0.65276069	-0.52575739
846	0.665621985	-3.16625248	0.34329102	-1.44312939
847	-0.233400992	-1.15488444	0.83051343	-1.85751897
848	-0.631135606	0.037691556	0.57903451	-0.9926
849	1.707541313	0.010345383	0.48581606	1.513341091
850	1.447075297	0.022864201	0.99130501	0.473154634
851	-0.24632881	-0.23975349	-0.01449288	0.574861147
852	1.176028423	-0.85747031	-0.72464089	0.30542841
856	2.237616041	0.345329597	-0.60597063	-0.71581056
858	-1.47960224	-2.5770536	-1.03619781	0.847300104
864	1.670680003	1.284791101	0.14864516	-0.84985664
865	1.670680003	1.916382859	0.6998144	1.124089601

866	1.024819853	-0.7521596	0.35073152	-2.14193241
868	2.237616041	-0.17986241	-0.86317199	1.325805381
869	1.747776963	-0.25802105	-1.11614995	-0.77093434
870	2.592229701	2.030913569	-0.50618719	1.463926567
871	2.592229701	2.510587108	-0.07540594	-0.58371481
872	1.800767509	1.372656013	2.09551175	2.849728342
873	1.849432484	4.556065495	-0.39732139	-0.67726477
875	0.201768224	0.618509503	-0.39732139	-0.67726477
876	2.237616041	1.553468488	-0.72864242	-0.33330779
877	0.323968221	-1.00428076	-1.65151616	1.031096548
878	0.783570663	2.023288951	-0.03975252	0.474038265
879	1.187592149	1.464239711	0.67009263	1.103774764
880	-0.192632911	0.142411101	0.79310676	0.125548041
881	1.071875228	0.911734331	-1.50008456	0.185176261
882	0.798806784	-0.1516478	-0.64900063	-0.77199025
883	-0.671908804	-0.65984824	0.5238174	-0.85314111
884	2.863652137	1.896850773	0.06443558	-0.44689505
885	2.314558863	-0.25458637	0.22080129	-0.04142716
886	2.314558863	-0.25458637	0.22080129	-0.04142716
888	0.131224024	0.21510779	-1.70996346	0.964902175
889	0.742030255	0.281479436	-1.4156326	-1.91369695
890	1.071875228	0.911734331	-1.50008456	0.185176261
891	0.742030255	0.281479436	-1.4156326	-1.91369695
892	1.749446006	0.076054765	-0.59137073	0.291488011
893	0.869958847	0.843158237	0.61532515	3.158279932
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897	-0.047486491	1.045012945	-0.25220201	-0.31982826
899	0.784181146	-0.20530019	-1.89414748	0.152726109
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901	-0.440378333	0.918089245	0.03050609	-1.62235977
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903	-0.440378333	0.918089245	0.03050609	-1.62235977
904	-1.320466583	-2.49763118	0.9787365	-1.85867969
905	-0.386224123	-0.24799559	1.19406353	-1.61243489
908	1.878331515	1.287303121	0.11530502	1.132065786
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912	0.530707518	0.774109528	3.0396125	4.394775258
913	0.337020095	1.531840025	0.10544973	0.347450471
914	0.774589061	1.224705331	1.87994281	-0.11684579
916	-0.363201351	0.35600238	-1.20673542	2.056973054
918	0.153047955	0.702054562	0.76757802	0.096096862
919	2.891894151	2.295157633	3.54101626	1.984030826
920	1.292959895	0.808281618	2.92956952	2.204248324
921	-0.465333775	0.862817284	0.1439546	0.64701735

922	1.54265003	0.291977233	0.79089158	0.801314068
923	1.340862559	0.503169303	0.53213093	3.164832031
924	0.158497146	1.507280765	2.25315926	1.173977914
925	1.23162703	1.671882685	3.1838372	-0.22917041
926	2.608734063	3.080604939	-0.69726361	-0.36219702
927	1.879182741	3.409153142	2.48473663	3.409954437
928	-0.093106169	0.019939108	0.15932154	1.229749745
929	1.670680003	1.94609957	0.19633838	1.14825764
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931	0.367631287	0.501274945	-1.31074554	-0.39331005
933	3.702965303	3.03402795	4.33630831	4.238503729
937	0.570011387	0.097928934	1.03350455	-0.13392581
939	1.801474588	0.770314085	0.70188154	0.22333959
940	-0.412950838	-0.1781887	0.50649275	-0.57215449
941	1.691004766	-0.42331992	0.66279648	0.0318465
942	1.451782586	-0.565439	-0.32447381	-0.43378383
943	1.188491672	0.120632811	0.20106994	3.078484746
945	1.214814941	0.806987609	0.47605587	1.372949466
946	0.561732094	1.21448402	0.35542793	-1.03704442
947	0.956565856	1.505997176	0.88115653	-0.60583691
948	0.592575441	1.383482681	0.93567635	1.058669028
950	0.343657562	-0.85471906	-0.21125904	1.184648122
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953	1.836389049	0.755753735	-0.36014522	1.262853393
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955	-0.122918652	-0.846489	-0.63367729	1.182912962
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958	0.715082397	-0.90020686	0.86817768	0.030652004
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962	1.836429446	0.208275147	-0.14300625	1.067462181
965	1.9158432	0.35211823	-1.02174589	0.625657932
967	1.383869627	0.274520494	-0.11659267	0.840327437
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973	1.073465817	2.18418874	2.01361447	-0.93754437
974	0.130904221	1.882440008	1.85101055	0.112524893
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983	0.889215441	0.24321159	0.06877629	0.816247177
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988	1.596170102	1.592158381	0.30052357	0.283467897
993	-3.549941097	-2.6847861	-0.17502622	1.41034664
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998	2.197271885	1.578871826	0.90563334	1.056619658
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1003	1.64412453	-0.09343399	0.70197344	3.710273595
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1006	-0.320452673	-0.33232662	-0.52315783	1.406273663
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1010	-0.689737481	0.547928768	1.98805626	-0.76653376
1011	0.343668917	0.931501008	-0.05483722	0.395369857
1012	1.926713131	0.124849138	-0.09654906	1.126499382
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1042	-0.513264812	-0.22001961	0.36339519	1.03208599
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1046	0.981194248	1.73892162	2.21166953	2.738129365
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1104	1.018876287	0.025163067	-0.1106021	0.838914654
1105	2.387326861	3.865456674	2.2251199	0.728667998
1107	2.352582059	2.595496601	3.20492728	2.844590737
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1116	0.873381263	1.544324176	0.13703728	-0.38172701
1117	-0.682983903	1.798204302	2.42110319	-0.39173951
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1119	-0.671908804	-0.65984824	0.5238174	-0.85314111
1120	0.953790113	1.106552668	3.00006904	1.585038764
1121	-1.184630973	2.476138312	4.80971952	2.450646806
1122	-1.02687397	-0.36244273	0.13010074	0.535909448
1125	0.387315524	-0.36101406	1.14153708	-0.75303953
1126	1.021783831	-0.0070257	-0.14327539	3.954381426
1127	0.990592079	0.305612583	0.14155512	-0.29526854
1128	0.990592079	0.305612583	0.14155512	-0.29526854
1129	3.18966648	3.284362987	4.49398568	3.950809104
1131	1.650621055	1.545704806	2.37535081	1.259373143
1133	-1.519747805	-0.60804324	0.02746106	0.590708892
1134	0.815942067	-0.16126019	-0.54117238	0.613093526
1135	0.626973385	1.998305877	2.61706075	1.570404253
1136	2.812199484	1.353198146	2.05618426	1.869204406
1137	2.208307057	1.387136198	3.21521374	2.069795393
1138	1.670680003	1.316442078	0.14822999	-0.46985154
1139	1.408517438	0.890457374	1.24524408	0.685687797
1140	2.765860952	2.525539595	4.12464228	3.833744077
1141	-0.484394663	0.677713073	-0.22783646	-0.37267608
1142	2.54335679	4.298105601	3.36234238	2.684404542
1143	4.204367611	3.062126931	3.4234313	2.072899554
1144	2.479165229	3.226545885	4.65897152	4.952127235
1145	2.479158921	3.226545885	4.65897152	4.952127235
1146	0.774334025	1.075800774	1.06893156	1.011113116
1147	0.844648531	1.21935371	2.59138595	0.805938034
1148	2.906236436	1.550674121	3.56959167	2.832126896
1149	2.837627443	3.707154326	4.53384262	2.625871865

Articles and Methods

An article comprising

a) a substrate, preferably a flexible substrate, more preferably a flexible substrate that is a sheet; preferably said substrate comprises a fabric softening active, preferably said fabric softening active coats all or a portion of said substrate;

b) a sum total from about 0.00025% to about 1%, preferably from about 0.0025% to about 0.1%, more preferably from about 0.005% to about 0.075%, most preferably from about 0.01% to about 0.05% of 1 or more malodor reduction materials, preferably 1 to about 20 malodor reduction materials, more preferably 1 to about 15 malodor reduction materials, most preferably 1 to about 10 malodor reduction materials, each of said malodor reduction materials having a MORV of at least 0.5, preferably from 0.5 to 10, more preferably from 1 to 10, most preferably from 1 to 5, and preferably each of said malodor reduction materials having a Universal MORV, said sum total of malodor reduction materials having a Blocker Index of less than 3, more preferable less than about 2.5 even more preferably less than about 2 and still more preferably less than about 1 and most preferably 0 and/or a Blocker Index average of 3 to about 0.001

is disclosed.

In one aspect of said article, said malodor reduction materials have a Fragrance Fidelity Index of from about less than 3, more preferable less than about 2.5 even more preferably less than about 2 and still more preferably less than about 1 and most preferably 0 or a Fragrance Fidelity Index average of 3 to about 0.001.

In one aspect of said article, said article comprises a perfume, said article having a weight ratio of parts of malodor reduction composition to parts of perfume of from about 1:20,000 to about 3000:1, preferably from about 1:10,000 to about 1,000:1, more preferably 5,000:1 to about 500:1 and most preferably from about 1:15 to about 1:1.

In one aspect of said article, said article comprises one or more malodor reduction materials having a log P greater than 3, preferably greater than 3 but less than 8, preferably said one or more malodor reduction materials are selected from the group consisting of Table 1 materials 1; 2; 3; 7; 9; 10; 11; 13; 14; 18; 21; 22; 23; 25; 28; 29; 30; 31; 32; 33; 35; 36; 38; 39; 47; 48; 49; 50; 52; 57; 62; 63; 64; 67; 68; 69; 71; 74; 75; 76; 77; 78; 79; 80; 83; 85; 91; 92; 93; 100; 101; 102; 103; 104; 105; 109; 114; 119; 120; 122; 123; 128; 134; 135; 137; 140; 142; 145; 148; 149; 152; 153; 158; 159; 161; 162; 174; 175; 176; 177; 178; 182; 183; 184; 185; 186; 189;

192; 195; 196; 197; 206; 208; 209; 210; 211; 212; 215; 221; 227; 228; 229; 230; 231; 233; 234; 238; 242; 243; 244; 246; 252; 253; 260; 261; 263; 267; 269; 271; 274; 276; 277; 280; 285; 289; 290; 292; 293; 294; 295; 296; 300; 301; 303; 307; 316; 317; 318; 322; 324; 325; 328; 329; 330; 331; 333; 334; 335; 336; 338; 339; 342; 343; 344; 349; 352; 356; 358; 359; 360; 361; 362; 363; 364; 368; 369; 370; 371; 372; 378; 381; 385; 386; 388; 390; 391; 397; 398; 413; 414; 416; 418; 421; 424; 426; 428; 429; 432; 441; 444; 449; 453; 457; 459; 461; 462; 463; 465; 466; 467; 468; 470; 471; 473; 475; 478; 479; 480; 482; 484; 486; 487; 488; 497; 498; 501; 502; 503; 505; 519; 520; 521; 524; 529; 532; 534; 537; 541; 544; 548; 550; 552; 558; 559; 560; 561; 562; 563; 565; 566; 567; 568; 569; 570; 571; 572; 573; 574; 577; 578; 582; 584; 589; 591; 592; 594; 599; 600; 601; 603; 604; 606; 607; 608; 609; 610; 611; 613; 614; 615; 616; 618; 620; 621; 624; 625; 626; 628; 631; 632; 633; 635; 644; 650; 653; 659; 660; 661; 663; 671; 673; 674; 675; 676; 677; 678; 679; 680; 681; 684; 686; 691; 692; 693; 694; 696; 697; 698; 700; 702; 704; 706; 707; 708; 709; 710; 711; 712; 713; 714; 715; 716; 717; 718; 719; 720; 721; 722; 723; 724; 725; 726; 727; 731; 741; 746; 750; 752; 754; 757; 758; 763; 766; 769; 770; 771; 774; 775; 776; 778; 781; 782; 788; 791; 800; 802; 804; 806; 814; 821; 826; 827; 828; 831; 837; 839; 840; 849; 850; 852; 856; 866; 868; 869; 870; 871; 872; 873; 876; 877; 878; 879; 881; 884; 885; 886; 890; 892; 893; 894; 905; 908; 912; 913; 914; 916; 919; 920; 922; 925; 926; 927; 930; 933; 939; 941; 942; 943; 945; 947; 948; 950; 951; 953; 954; 959; 965; 967; 973; 978; 985; 988; 998; 1000; 1003; 1006; 1007; 1008; 1009; 1010; 1016; 1022; 1023; 1024; 1025; 1028; 1029; 1031; 1032; 1033; 1035; 1038; 1045; 1046; 1047; 1053; 1057; 1060; 1062; 1063; 1065; 1067; 1070; 1073; 1075; 1077; 1078; 1082; 1089; 1090; 1093; 1095; 1097; 1099; 1102; 1104; 1105; 1107; 1116; 1120; 1121; 1126; 1129; 1131; 1135; 1136; 1137; 1138; 1140; 1142; 1143; 1144; 1145; 1147; 1148; 1149; Table 2 materials 2; 23; 185; 227; 230; 246; 248; 343; 359; 565; 631; 659; 674; 678; 679; 715; 758; 1028; 1097; Table 3 materials 1; 9; 12; 13; 19; 20; 21; 24; 25; 27; 32; 38; 54; 55; 59; 64; 68; 71; 72; 79; 81; 83; 85; 100; 105; 109; 111; 114; 119; 133; 134; 135; 137; 140; 142; 147; 148; 150; 151; 152; 153; 154; 157; 159; 162; 178; 181; 189; 191; 192; 195; 197; 204; 211; 228; 231; 233; 234; 237; 238; 242; 246; 252; 264; 270; 273; 275; 277; 283; 285; 289; 290; 292; 293; 295; 300; 301; 302; 306; 308; 310; 312; 319; 322; 325; 331; 333; 334; 336; 338; 339; 344; 346; 354; 355; 356; 358; 361; 362; 363; 370; 371; 372; 378; 381; 385; 387; 388; 390; 412; 413; 418; 420; 428; 429; 432; 437; 438; 444; 447; 448; 454; 455; 457; 461; 465; 467; 472; 477; 478; 479; 480; 481; 482; 495; 496; 497; 502; 503; 504; 509; 510; 512; 515; 517; 518; 522; 525; 529; 535; 536; 537; 540; 541; 544; 550; 557; 558; 559; 560; 561; 568; 571; 572; 575; 589; 592; 594; 599; 600; 602; 604; 609; 619; 620; 625; 626; 633; 641; 644; 645; 650; 653; 662; 667; 672; 673; 675; 676; 681;

686; 687; 693; 697; 698; 700; 703; 704; 706; 707; 716; 717; 718; 722; 725; 744; 745; 746; 757; 769; 771; 779; 782; 799; 806; 819; 820; 827; 828; 836; 838; 839; 847; 850; 875; 878; 879; 880; 881; 888; 889; 890; 891; 893; 899; 900; 901; 903; 909; 912; 914; 920; 922; 930; 939; 940; 941; 945; 947; 948; 953; 954; 958; 959; 960; 965; 967; 971; 986; 987; 994; 995; 998; 1000; 1001; 1003; 1005; 1008; 1009; 1010; 1011; 1017; 1018; 1023; 1031; 1032; 1046; 1047; 1051; 1052; 1053; 1054; 1055; 1057; 1058; 1061; 1062; 1063; 1074; 1075; 1076; 1082; 1088; 1093; 1095; 1099; 1102; 1104; 1105; 1115; 1116; 1120; 1127; 1128; 1134; 1135; 1141; 1147;1148, 1149, and mixtures thereof; preferably said malodor reduction materials are selected from the group consisting of Table 1 materials 1; 2; 3; 7; 9; 10; 11; 13; 14; 18; 21; 22; 23; 25; 28; 29; 30; 31; 32; 33; 35; 36; 38; 39; 47; 48; 49; 50; 52; 57; 62; 63; 64; 67; 68; 69; 71; 74; 75; 76; 77; 78; 79; 80; 83; 85; 91; 92; 93; 100; 101; 102; 103; 104; 105; 109; 114; 119; 120; 122; 123; 128; 134; 135; 137; 140; 142; 145; 148; 149; 152; 153; 158; 159; 161; 162; 174; 175; 176; 177; 178; 182; 183; 184; 185; 186; 189; 192; 195; 196; 197; 206; 208; 209; 210; 211; 212; 215; 221; 227; 228; 229; 230; 231; 233; 234; 238; 242; 243; 244; 246; 252; 253; 260; 261; 263; 267; 269; 271; 274; 276; 277; 280; 285; 289; 290; 292; 293; 294; 295; 296; 300; 301; 303; 307; 316; 317; 318; 322; 324; 325; 328; 329; 330; 331; 333; 334; 335; 336; 338; 339; 342; 343; 344; 349; 352; 356; 358; 359; 360; 361; 362; 363; 364; 368; 369; 370; 371; 372; 378; 381; 385; 386; 388; 390; 391; 397; 398; 413; 414; 416; 418; 421; 424; 426; 428; 429; 432; 441; 444; 449; 453; 457; 459; 461; 462; 463; 465; 466; 467; 468; 470; 471; 473; 475; 478; 479; 480; 482; 484; 486; 487; 488; 497; 498; 501; 502; 503; 505; 519; 520; 521; 524; 529; 532; 534; 537; 541; 544; 548; 550; 552; 558; 559; 560; 561; 562; 563; 565; 566; 567; 568; 569; 570; 571; 572; 573; 574; 577; 578; 582; 584; 589; 591; 592; 594; 599; 600; 601; 603; 604; 606; 607; 608; 609; 610; 611; 613; 614; 615; 616; 618; 620; 621; 624; 625; 626; 628; 631; 632; 633; 635; 644; 650; 653; 659; 660; 661; 663; 671; 673; 674; 675; 676; 677; 678; 679; 680; 681; 684; 686; 691; 692; 693; 694; 696; 697; 698; 700; 702; 704; 706; 707; 708; 709; 710; 711; 712; 713; 714; 715; 716; 717; 718; 719; 720; 721; 722; 723; 724; 725; 726; 727; 731; 741; 746; 750; 752; 754; 757; 758; 763; 766; 769; 770; 771; 774; 775; 776; 778; 781; 782; 788; 791; 800; 802; 804; 806; 814; 821; 826; 827; 828; 831; 837; 839; 840; 849; 850; 852; 856; 866; 868; 869; 870; 871; 872; 873; 876; 877; 878; 879; 881; 884; 885; 886; 890; 892; 893; 894; 905; 908; 912; 913; 914; 916; 919; 920; 922; 925; 926; 927; 930; 933; 939; 941; 942; 943; 945; 947; 948; 950; 951; 953; 954; 959; 965; 967; 973; 978; 985; 988; 998; 1000; 1003; 1006; 1007; 1008; 1009; 1010; 1016; 1022; 1023; 1024; 1025; 1028; 1029; 1031; 1032; 1033; 1035; 1038; 1045; 1046; 1047; 1053; 1057; 1060; 1062; 1063; 1065; 1067; 1070; 1073; 1075; 1077; 1078; 1082; 1089; 1090; 1093; 1095; 1097; 1099; 1102; 1104; 1105; 1107; 1116;

1120; 1121; 1126; 1129; 1131; 1135; 1136; 1137; 1138; 1140; 1142; 1143; 1144; 1145; 1147; 1148; 1149; Table 2 materials 2; 23; 185; 227; 230; 246; 248; 343; 359; 565; 631; 659; 674; 678; 679; 715; 758; 1028; 1097 and mixtures thereof; more preferably said malodor reduction materials are selected from the group consisting of Table 4 materials 7; 14; 39; 48; 183; 206; 212; 215; 229; 260; 261; 329; 335; 360; 441; 484; 487; 488; 501; 566; 567; 569; 570; 573; 574; 603; 616; 621; 624; 632; 663; 680; 684; 694; 696; 708; 712; 714; 726; 750; 775; 776; 788; 804; 872; 919; 927; 933; 978; 1007; 1022; 1024; 1029; 1035; 1038; 1060; 1089; 1107; 1129; 1131; 1136; 1137; 1140; 1142; 1143; 1144; 1145; 1148, 1149 Table 5 material 248 and mixtures thereof, most preferably said material is selected from the group consisting of Table 4 materials 261; 680; 788;1129, 1148, 1149 and mixtures thereof. All of the aforementioned materials have a log P that is equal to or greater than 3, thus they deposit through the wash especially well. The more preferred and most preferred of the aforementioned material are particularly preferred as they are effective at counteracting all of the key malodors.

In one aspect of said article, said malodor reduction materials are not selected from the group consisting of Table 1-3 malodor reduction materials 302; 288; 50; 157; 1017; 888; 64; 1054; 832; 375; 390; 745; 504; 505; 140; 1012; 498; 362; 103; 356; 1074; 908; 1127; 475; 918; 687; 611; 317; 9; 141; 550; 602; 913; 1005; 521; 10; 215; 370; 335; 378; 1121; 360; 565; 1136; 1129; 655; 369; 1065; 914; 757; 601; 478; 889; 891; 358; 973; 162; 554; 522; 312; 125; 26; 418; 92; 586; 1026; 218; 31; 828; 871; 829; 1066; 287; 269; 769; 701; 1118; 70; 946; 142; 109; 108 or mixtures thereof.

In one aspect of said article, said article having a weight ratio of fabric softener active to dry substrate ranging from about 10:1 to about 0.5:1, preferably from about 5:1 to about 1:1, preferably said fabric softener active is selected from the group consisting of a quaternary ammonium compound, a silicone polymer, a polysaccharide, a clay, an amine, a fatty ester, a dispersible polyolefin, a polymer latex and mixtures thereof.

In one aspect of said article, said article comprises a quaternary ammonium compound selected from the group consisting of bis-(2-hydroxypropyl)-dimethylammonium methylsulphate fatty acid ester, 1,2-di(acyloxy)-3-trimethylammoniopropane chloride., N, N-bis(stearoyl-oxy-ethyl) N,N-dimethyl ammonium chloride, N,N-bis(tallowoyl-oxy-ethyl) N,N-dimethyl ammonium chloride, N,N-bis(stearoyl-oxy-ethyl) N-(2 hydroxyethyl) N-methyl ammonium methylsulfate., 1, 2 di (stearoyl-oxy) 3 trimethyl ammoniumpropane chloride, dicanoladimethylammonium chloride, di(hard)tallowdimethylammonium chloride dicanoladimethylammonium methylsulfate, 1-methyl-1-stearoylamidoethyl-2-

stearoylimidazolinium methylsulfate, 1-tallowylamidoethyl-2-tallowylimidazoline, Dipalmethyl Hydroxyethylammoinum Methosulfate and mixtures thereof.

In one aspect of said article, said article comprises a fabric softening active having an Iodine Value of between 0-140, preferably 5-100, more preferably 10-80, even more preferably, 15-70, most preferably 18-25.

In one aspect of said article, said article comprises an adjunct ingredient selected from the group consisting of surfactants, builders, chelating agents, dye transfer inhibiting agents, dispersants, enzymes, and enzyme stabilizers, catalytic materials, bleach activators, hydrogen peroxide, sources of hydrogen peroxide, preformed peracids, polymeric dispersing agents, clay soil removal/anti-redeposition agents, brighteners, suds suppressors, dyes, hueing dyes, perfumes, perfume delivery systems, structure elasticizing agents, carriers, structurants, hydrotropes, processing aids, solvents, pigments and mixtures thereof.

A method of controlling malodors comprising: contacting a situs comprising a malodor or that will develop a malodor with an one or more of the articles Applicants' disclose herein, is disclosed.

In one aspect of said method, said situs comprises a fabric and said contacting step comprises contacting said fabric with a sufficient amount of Applicants' article containing Malodor reducing composition to provide said fabric with a level of malodor reduction material at least 0.0025 mg of malodor reduction material/kg of fabric, preferably from about 0.00025 mg of malodor reduction material /kg of fabric to about 25mg of malodor reduction material /kg of fabric, more preferably from about 0.025mg of malodor reduction material/kg of fabric to about 20mg of malodor reduction material/kg of fabric, most preferably from about 0.25 of malodor reduction material/kg of fabric to about 10mg of malodor reduction material/kg of fabric of said sum of malodor reduction materials.

<u>Softener Actives</u>

The article of the present invention can comprise at least one fabric conditioning compound. Typical levels of said fabric conditioning compounds within the conditioning compositions are from 1% to 99% by weight of the compositions. However, compositions of the present invention can also contain from about 1% to about 80%, preferably from about 20% to about 70%, more preferably from about 25% to about 60% of fabric conditioning component.

The fabric conditioning compound, or compounds, can be selected from cationic, nonionic, amphoteric and/or anionic fabric conditioning compounds. Cationic and/or nonionic

conditioning compounds are preferred as they provide effective fabric softening and/or anti-static benefits and/or care benefits when applied to fabrics in the dryer. These compounds also aid in the delivery of odor/freshening ingredients and benefits when transferred to fabrics in the dryer.

Cationic Fabric Conditioning Compounds

The typical cationic fabric conditioning compounds include the quaternary-ammonium fabric conditioning actives, the most commonly used having been di(long alkyl chain)dimethylammonium (C1-C4 alkyl) sulfate or chloride, preferably the methyl sulfate. Quaternary ammonium fabric conditioning compounds include the following:

DTDMAMS
dipalmityldimethylammonium methyl sulfate
distearyldimethylammonium methyl sulfate;
dioleyldimethylammonium methyl sulfate;
di(tallowoyl)dimethylammonium methyl sulfate (DTDMAMS);
di(hydrogenated tallowoyl)dimethylammonium methyl sulfate;
di(C_{12-16} alkyl)dimethylammonium methyl sulfate;

MTDMAMS
palmoyltrimethylammonium methyl sulfate
stearoyltrimethylammonium methyl sulfate
oleoyltrimethylammonium methyl sulfate
tallowoyltrimethylammonium methyl sulfate
(hydrogenated tallowoyl)trimethylammonium methyl sulfate;
(C_{12-16} alkyl)trimethylammonium methyl sulfate

OTHERS NonBiodegradable
di(hydrogenated tallowoyl)dimethylammonium chloride (DTDMAC);
stearylbenzyldimethylammonium methyl sulfate;
ditallowalkylimidazolinium methyl sulfate;

The currently preferred compounds are more environmentally-friendly materials, being rapidly biodegradable quaternary ammonium compounds that are alternatives to the traditionally used di(long alkyl chain)dimethylammonium methyl sulfate. Such quaternary ammonium

compounds can contain long chain alk(en)yl groups interrupted by functional groups such as carboxy groups.

A preferred fabric conditioning compound is an ester quaternary ammonium compound (EQA), their ester amine precursors, and mixtures thereof. By "amine precursors thereof" is meant the secondary or tertiary amines corresponding to the above quaternary ammonium compounds.

The preferred compounds can be considered to be diester quaternary ammonium salts (DEQA). At least about 25% of the DEQA is in the diester form, and from 0% to about 40%, preferably less than about 30%, more preferably less than about 20%, can be EQA monoester (As used herein, when the diester is specified, it will include the monoester that is normally present. For the optimal antistatic benefit the percentage of monoester should be as low as possible, preferably less than about 2.5%. The level of monoester present can be controlled in the manufacturing of the EQA.

EQA compounds prepared with fully saturated acyl groups are excellent softeners. However, it has now been discovered that compounds prepared with at least partially unsaturated acyl groups have advantages (i.e., antistatic benefits) and are highly acceptable for consumer products when certain conditions are met. Variables that must be adjusted to obtain the benefits of using unsaturated acyl groups include the Iodine Value of the fatty acids, the odor of fatty acid starting material, and/or the EQA. Any reference to Iodine Value values hereinafter refers to Iodine Value of fatty acyl groups and not to the resulting EQA compound.

Some highly desirable, readily available sources of fatty acids such as tallow, possess odors that remain with the compound EQA despite the chemical and mechanical processing steps which convert the raw tallow to finished EQA. Such sources must be deodorized, e.g., by absorption, distillation (including stripping such as steam stripping), etc., as is well known in the art. In addition, care must be taken to minimize contact of the resulting fatty acyl groups to oxygen and/or bacteria by adding antioxidants, antibacterial agents, etc.

Generally, hydrogenation of fatty acids to reduce polyunsaturation and to lower Iodine Value to insure good color and odor stability leads to a high degree of trans configuration in the molecule. Therefore, diester compounds derived from fatty acyl groups having low Iodine Value values can be made by mixing fully hydrogenated fatty acid with touch hydrogenated fatty acid at a ratio which provides an Iodine Value of from about 3 to about 60. The polyunsaturation content of the touch hardened fatty acid should be less than about 5%, preferably less than about 1%. During touch hardening the cis/trans isomer weight ratios are controlled by methods known

in the art such as by optimal mixing, using specific catalysts, providing high availability, etc.

It has also been found that for good chemical stability of the diester quaternary compound in molten storage, water levels in the raw material must be minimized to preferably less than about 8% and more preferably less than about 5%. Storage temperatures should be kept as low as possible and still maintain a fluid material, ideally in the range of from about 45.degree. C. to about 70.degree. C. The optimum storage temperature for stability and fluidity depends on the specific Iodine Value of the fatty acid used to make the diester quaternary and the level/type of solvent selected. Also, exposure to oxygen should be minimized to keep the unsaturated groups from oxidizing. It can therefore be important to store the material under a reduced oxygen atmosphere such as a nitrogen blanket. It is important to provide good molten storage stability to provide a commercially feasible raw material that will not degrade noticeably in the normal transportation/storage/handling of the material in manufacturing operations.

A specific example of a EQA compound suitable for use in the fabric softening compositions herein is: 1,2-bis(tallowyl oxy)-3-trimethyl ammoniopropane methylsulfate (DTTMAPMS).

Other examples of suitable EQA compounds are obtained by, e.g., replacing "tallowyl" in the above compounds with, for example, cocoyl, lauryl, oleyl, stearyl, palmityl, or the like; replacing "methyl" in the above compounds with ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, or the hydroxy substituted analogs of these radicals; and/or replacing "methylsulfate" in the above compounds with chloride, ethylsulfate, bromide, formate, sulfate, lactate, nitrate, and the like, but methylsulfate is preferred. Another example of a suitable EQA compound is: N-2-hydroxyethyl ammonium methylsulfate. A preferred compound is N-methyl, N,N-di-(2-oleyloxyethyl) N-2-hydroxyethyl ammonium methylsulfate.

Another example of a suitable compound is methyl bis (oleyl amidoethyl) 2-hydroxyethyl ammonium methyl sulfate.

The compounds herein can be prepared by standard esterification and quaternization reactions, using readily available starting materials. General methods for preparation are disclosed in U.S. Pat. No. 4,137,180, which is incorporated herein by reference.

Specific examples of EQA compounds include:

di(tallowoyloxyethyl)dimethylammonium methyl sulfate;

(tallowoyl)hydroxyethyldimethylammonium methyl sulfate;

di(tallowoylhydroxyethyl)methylammonium methyl sulfate;

tallowoyl(dihydroxyethyl)methylammonium methyl sulfate;

tri(tallowoylhydroxyethyl)ammonium methyl sulfate

(2-tallowylamidoethyl)-2-tallowylimidazolinium methyl sulfate; and
N-(tallowoyloxyethyl)-N-(tallowyl)-N,N-dimethyl-ammonium methyl sulfate;
methyl bis (oleyl amidoethyl) 2-hydroxyethyl ammonium methyl sulfate;
1,2-bis(tallowoyloxyethyl)-3,3,3-trimethyl ammoniopropane methylsulfate (DTTMAPMS); and mixtures of any of the above materials.

Particularly preferred is N,N-di(tallowoyloxyethyl)-N,N-dimethyl ammonium methyl sulfate, where the tallow chains are fully hydrogenated or partially unsaturated.

Other examples of suitable compounds can be obtained by, e.g., replacing "tallowoyl" in the above compounds with, for example, cocoyl, lauroyl, oleoyl, stearoyl, palmitoyl, or the like, the fatty acyl chains being either fully saturated, or preferably at least partly unsaturated; The fatty acyl chains maybe mixed from natural or purified sources or blended from one or more sources; replacing "methyl" in the above compounds with ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, or the hydroxy substituted analogs of these radicals; and/or replacing "methylsulfate" in the above compounds with chloride, ethylsulfate, bromide, formate, sulfate, lactate, nitrate, and the like, but methylsulfate is preferred.

The level of unsaturation of the acyl chain mixture can be measured by the Iodine Value (IV) of the corresponding fatty acid, which in the present case should preferably be in the range of from 5 to 100.

Tertiary Amines and Salts Thereof

Another fabric conditioning active useful in the articles of the present invention is a carboxylic acid salt of a tertiary amine and/or ester amine said materials have a thermal softening point of from about 35.degree. C. to about 100.degree. C.

This component can provide superior odor and/or improved fabric softening performance, compared to similar articles which utilize primary amine or ammonium compounds as the sole fabric conditioning agent. Particularly preferred tertiary amines for static control performance are those containing unsaturation; e.g., oleyldimethylamine and/or soft tallowdimethylamine.

Examples of preferred tertiary amines as starting material for the reaction between the amine and carboxylic acid to form the tertiary amine salts are: lauryldimethylamine, myristyldimethylamine, stearyldimethylamine, tallowdimethylamine, coconutdimethylamine, dilaurylmethyl amine, distearylmethyl amine, ditallowmethylamine, oleyldimethylamine, dioleylmethylamine, lauryldi(3-hydroxypropyl)amine, stearyldi(2-hydroxyethyl)amine, trilaurylamine, laurylethylmethylamine, and

Examples of specific carboxylic acids as a starting material are: formic acid, acetic acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, oxalic acid, adipic acid, 12-hydroxy stearic acid, benzoic acid, 4-hydroxy benzoic acid, 3-chloro benzoic acid, 4-nitro benzoic acid, 4-ethyl benzoic acid, 4-(2-chloroethyl)benzoic acid, phenylacetic acid, (4-chlorophenyl)acetic acid, (4-hydroxyphenyl)acetic acid, and phthalic acid. Preferred carboxylic acids are stearic, oleic, lauric, myristic, palmitic, and mixtures thereof. The amine salt can be formed by a simple addition reaction, well known in the art and disclosed in U.S. Pat. No. 4,237,155, Kardouche, issued Dec. 2, 1980, which is incorporated herein by reference. Excessive levels of free amines may result in odor problems, and generally free amines provide poorer softening performance than the amine salts. The amine and the acid, respectively, used to form the amine salt will often be of mixed chain lengths rather than single chain lengths, since these materials are normally derived from natural fats and oils, or synthetic processed which produce a mixture of chain lengths. Also, it is often desirable to utilize mixtures of different chain lengths in order to modify the physical or performance characteristics of the softening composition. Specific preferred amine salts for use in the present invention are oleyldimethylamine stearate, stearyldimethylamine stearate, stearyldimethylamine myristate, stearyldimethylamine oleate, stearyldimethylamine palmitate, distearylmethylamine palmitate, distearylmethylamine laurate, and mixtures thereof. A particularly preferred mixture is oleyldimethylamine stearate and distearylmethylamine myristate, in a ratio of 1:10 to 10:1, preferably about 1:1.

Nonionic Softening Actives

A softening active that can also be employed in the present invention is a nonionic fabric softener material. Typically, such nonionic fabric softener materials have an HLB of from about 2 to about 9, and more typically from about 3 to about 7. In general, the materials selected should be relatively crystalline and higher melting, (e.g., >25.degree. C.). The level of optional nonionic softener in the solid composition is typically from about 0.1% to about 50%, preferably from about 5% to about 30%. Preferred nonionic softeners are fatty acid partial esters of polyhydric alcohols, or anhydrides thereof, wherein the alcohol or anhydride contains from about 2 to about 18 and preferably from about 2 to about 8 carbon atoms, and each fatty acid moiety contains from about 8 to about 30 and preferably from about 12 to about 20 carbon atoms. Typically, such softeners contain from about one to about 3 and preferably about 2 fatty acid groups per molecule. The polyhydric alcohol portion of the ester can be ethylene glycol, glycerol, poly (e.g., di-, tri-, tetra, penta-, and/or hexa-) glycerol, xylitol, sucrose, erythritol, pentaerythritol, sorbitol or sorbitan. The fatty acid portion of the ester is normally derived from fatty acids

having from about 8 to about 30 and preferably from about 12 to about 22 carbon atoms. Typical examples of said fatty acids being lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, and behenic acid. Highly preferred optional nonionic softening agents for use in the present invention are C_{10}- C_{26} acyl sorbitan esters and polyglycerol monostearate. Sorbitan esters are esterified dehydration products of sorbitol. The preferred sorbitan ester comprises a member selected from the group consisting of C_{10}- C_{26} acyl sorbitan monoesters and C_{10}- C_{26} acyl sorbitan diesters and ethoxylates of said esters wherein one or more of the unesterified hydroxyl groups in said esters contain from about 1 to about 6 oxyethylene units, and mixtures thereof. For the purpose of the present invention, sorbitan esters containing unsaturation (e.g., sorbitan monooleate) can be utilized. Sorbitol, which is typically prepared by the catalytic hydrogenation of glucose, can be dehydrated in well known fashion to form mixtures of 1,4- and 1,5-sorbitol anhydrides and small amounts of isosorbides.

The preferred sorbitan softening agents of the type employed herein can be prepared by esterifying the "sorbitan" mixture with a fatty acyl group in standard fashion, e.g., by reaction with a fatty acid halide, fatty acid ester, and/or fatty acid. The esterification reaction can occur at any of the available hydroxyl groups, and various mono-, di-, etc., esters can be prepared. In fact, mixtures of mono-, di-, tri-, etc., esters almost always result from such reactions, and the stoichiometric ratios of the reactants can be simply adjusted to favor the desired reaction product. Certain derivatives of the preferred sorbitan esters herein, especially the "lower" ethoxylates thereof (i.e., mono-, di-, and tri-esters wherein one or more of the unesterified --OH groups contain one to about twenty oxyethylene moieties (Tweens.RTM.) are also useful in the composition of the present invention. Therefore, the term "sorbitan ester" is intended to include such derivatives. For the purposes of the present invention, it is preferred that a significant amount of di- and tri-sorbitan esters are present in the ester mixture. Ester mixtures having from about 20-50% mono-ester, about 25-50% di-ester and about 10-35% of tri- and tetra-esters are preferred. Material which is sold commercially as sorbitan mono-ester (e.g., monostearate) typically contains significant amounts of di- and tri-esters. A typical analysis of commercial sorbitan monostearate indicates that it comprises about 27% mono-, about 32% di- and about 30% tri- and tetra-esters and is therefore a preferred material. Mixtures of sorbitan stearate and sorbitan palmitate having stearate/palmitate weight ratios varying between 10:1 and 1:10, and 1,5-sorbitan esters are also useful. In addition, both the 1,4- and 1,5-sorbitan esters are useful herein.

Other useful alkyl sorbitan esters for use in the softening compositions herein include

sorbitan monolaurate, sorbitan monomyristate, sorbitan monopalmitate, sorbitan monobehenate, sorbitan monooleate, sorbitan dilaurate, sorbitan dimyristate, sorbitan dipalmitate, sorbitan distearate, sorbitan dibehenate, sorbitan dioleate, and mixtures thereof, and mixed tallowalkyl sorbitan mono- and di-esters. Such mixtures are readily prepared by reacting the foregoing hydroxy-substituted sorbitans, particularly the 1,4- and 1,5-sorbitans, with the corresponding acid, ester, or acid chloride in a simple esterification reaction. It is to be recognized, of course, that commercial materials prepared in this manner will comprise mixtures usually containing minor proportions of uncyclized sorbitol, fatty acids, polymers, isosorbide structures, and the like. In the present invention, it is preferred that such impurities are present at as low a level as practical. The preferred sorbitan esters employed herein can contain up to about 15% by weight of esters of the C_{20}- C_{26}, and higher, fatty acids, as well as minor amounts of C_8, and lower, fatty esters. Glycerol and polyglycerol esters, especially glycerol, diglycerol, triglycerol, and polyglycerol mono- and/or di-esters, preferably mono-, are also preferred herein (e.g., polyglycerol monostearate with a trade name of Radiasurf 7248). Glycerol esters can be prepared from naturally occurring triglycerides by normal extraction, purification and/or interesterification processes or by esterification processes of the type set forth hereinbefore for sorbitan esters. Partial esters of glycerin can also be ethoxylated to form usable derivatives that are included within the term "glycerol esters." Useful glycerol and polyglycerol esters include mono-esters with stearic, oleic, palmitic, lauric, isostearic, myristic, and/or behenic acids and the diesters of stearic, oleic, palmitic, lauric, isostearic, behenic, and/or myristic acids. It is understood that the typical mono-ester contains some di- and tri-ester, etc. The "glycerol esters" also include the polyglycerol, e.g., diglycerol through octaglycerol esters. The polyglycerol polyols are formed by condensing glycerin or epichlorohydrin together to link the glycerol moieties via ether linkages. The mono- and/or diesters of the polyglycerol polyols are preferred, the fatty acyl groups typically being those described hereinbefore for the sorbitan and glycerol esters.

Alkanolamides

Alkanolamide are also suitable.

Fatty Acids

The fabric conditioning active in the articles of the present invention may further comprise one or more fatty acids. Typically, the fatty acid is present to improve the processability of the composition, and is admixed with any material, or materials, that are difficult to process,

especially as a result of having a high viscosity. The fatty acid provides improved viscosity and/or processability, without harming softening or antistatic performance of the fabric conditioning composition. Preferred fatty acids are those containing a long chain, unsubstituted alkenyl group of from about 8 to about 30 carbon atoms, more preferably from about 11 to about 18 carbon atoms. Examples of specific carboxylic acids are: oleic acid, linoleic acid, and mixtures thereof. Although unsaturated fatty acids are preferred, the unsaturated fatty acids can be used in combination with saturated fatty acids like stearic, palmitic, and/or lauric acids. Preferred carboxylic acids are oleic, linoleic, tallow fatty acids, and mixtures thereof.

Another type of preferred softener is high molecular weight fatty acid containing at least 20 carbon atoms. These fatty acids can be used in combination with the quaternary softener actives or as part of the fatty acid tertiary amine salts, or mixtures of free fatty acids and fatty acid tertiary amine salts. These fatty acids normally have higher melting ranges, thus can be used to elevate the melting range of the total softener composition if necessary. Non-limiting examples of high molecular weight fatty acids useful in the present invention are arachidic acid (C_{20}, eicosanoic acid), docosanoic acid (C_{22}, behenic acid), tetracosanoic acid (C_{24}, lignoceric acid), triacontanoic acid (C_{30}, melissic acid), and mixtures thereof. Behenic acid, arachidic acid, and mixtures thereof are preferred. Behenic acid is most preferred.

Preferably, the fatty acid is added to the quaternization reaction mixture used to form the biodegradable quaternary ammonium compounds of Formulas II, III, and/or IV as described hereinbefore to lower the viscosity of the reaction mixture to less than about 1500 cps, preferably less than about 1000 cps, more preferably less than about 800 cps. The solvent level of added fatty acid is from about 5% to about 30%, preferably from about 10% to about 25%, more preferably from about 10% to about 20%. The unsaturated fatty acid can be added before the start of the quaternization reaction or, preferably, during the quaternization reaction when it is needed to reduce the viscosity which increases with increased level of quaternization. Preferably the addition occurs when at least about 60% of the product is quaternized. This allows for a low viscosity for processing while minimizing side reactions that can occur when the quaternizing agent reacts with the fatty acid. The resulting quaternized biodegradable fabric softening actives can be used without removal of the unsaturated fatty acid, and, in fact, are more useful since the mixture is more fluid and more easily handled.

Coating Mix

In one embodiment, the coat mix comprises a low level of water. Adding too much water to a coat mix may cause the coat mix to solidify or gel. This will cause problems in the manufacturing process as the phase changed coat mix may clog pipes or no longer have desirable flow characteristics for processing. In one embodiment, the coat mix comprises less than about 10%, alternatively less than about 9%, or 8%, or 7%, or 6%, or 5%, or 4%, or 3%, or 2%, or 1%, or 0.5%, or about 0.1% of water by weight of the coat mix. Alternatively the coat mix may comprise at least about 0.001% water, by weight of the coat mix. Alternatively the coat mix is free or substantially free of water.

Additional Suitable Fabric Softening Actives

The fluid fabric enhancer compositions disclosed herein comprise a fabric softening active ("FSA"). Suitable fabric softening actives, include, but are not limited to, materials selected from the group consisting of quaternary ammonium compounds, amines, fatty esters, sucrose esters, silicones, dispersible polyolefins, clays, polysaccharides, fatty acids, softening oils, polymer latexes and mixtures thereof.

Non-limiting examples of water insoluble fabric care benefit agents include dispersible polyethylene and polymer latexes. These agents can be in the form of emulsions, latexes, dispersions, suspensions, and the like. In one aspect, they are in the form of an emulsion or a latex. Dispersible polyethylenes and polymer latexes can have a wide range of particle size diameters (χ_{50}) including but not limited to from about 1 nm to about 100 μm; alternatively from about 10 nm to about 10 μm. As such, the particle sizes of dispersible polyethylenes and polymer latexes are generally, but without limitation, smaller than silicones or other fatty oils.

Generally, any surfactant suitable for making polymer emulsions or emulsion polymerizations of polymer latexes can be used to make the water insoluble fabric care benefit agents of the present invention. Suitable surfactants consist of emulsifiers for polymer emulsions and latexes, dispersing agents for polymer dispersions and suspension agents for polymer suspensions. Suitable surfactants include anionic, cationic, and nonionic surfactants, or combinations thereof. In one aspect, such surfactants are nonionic and/or anionic surfactants. In one aspect, the ratio of surfactant to polymer in the water insoluble fabric care benefit agent is about 1:100 to about 1:2; alternatively from about 1:50 to about 1:5, respectively. Suitable water insoluble fabric care benefit agents include but are not limited to the examples described below.

Quats - Suitable quats include but are not limited to, materials selected from the group consisting of ester quats, amide quats, imidazoline quats, alkyl quats, amidoester quats and mixtures thereof. Suitable ester quats include but are not limited to, materials selected from the group consisting of monoester quats, diester quats, triester quats and mixtures thereof. In one aspect, a suitable ester quat is bis-(2-hydroxypropyl)-dimethylammonium methylsulfate fatty acid ester having a molar ratio of fatty acid moieties to amine moieties of from 1.85 to 1.99, an average chain length of the fatty acid moieties of from 16 to 18 carbon atoms and an iodine value of the fatty acid moieties, calculated for the free fatty acid, which has an Iodine Value of between 0-140, preferably 5-100, more preferably 10-80, even more preferably 15-70, even more preferably 18-55, most preferably 18-25. When a soft tallow quaternary ammonium compound softener is used, most preferably range is 25-60. In one aspect, the cis-trans-ratio of double bonds of unsaturated fatty acid moieties of the bis (2 hydroxypropyl)-dimethylammonium methylsulfate fatty acid ester is from 55:45 to 75:25, respectively. Suitable amide quats include but are not limited to, materials selected from the group consisting of monoamide quats, diamide quats and mixtures thereof. Suitable alkyl quats include but are not limited to, materials selected from the group consisting of mono alkyl quats, dialkyl quats, trialkyl quats, tetraalkyl quats and mixtures thereof.

Amines - Suitable amines include but are not limited to, materials selected from the group consisting of amidoesteramines, amidoamines, imidazoline amines, alkyl amines, amidoester amines and mixtures thereof. Suitable ester amines include but are not limited to, materials selected from the group consisting of monoester amines, diester amines, triester amines and mixtures thereof. Suitable amido quats include but are not limited to, materials selected from the group consisting of monoamido amines, diamido amines and mixtures thereof. Suitable alkyl amines include but are not limited to, materials selected from the group consisting of mono alkylamines, dialkyl amines quats, trialkyl amines, and mixtures thereof.

In one embodiment, the fabric softening active is a quaternary ammonium compound suitable for softening fabric in a rinse step. In one embodiment, the fabric softening active is formed from a reaction product of a fatty acid and an aminoalcohol obtaining mixtures of mono-, di-, and in one embodiment, tri-ester compounds. In another embodiment, the fabric softening active comprises one or more softener quaternary ammonium compounds such, but not limited to, as a monoalkyquaternary ammonium compound, dialkylquaternary ammonium compound, a diamido quaternary compound, a diester quaternary ammonium compound, or a combination thereof.

In one aspect, the fabric softening active comprises a diester quaternary ammonium or protonated diester ammonium (hereinafter "DQA") compound composition. In certain embodiments of the present invention, the DQA compound compositions also encompass diamido fabric softening actives and fabric softening actives with mixed amido and ester linkages as well as the aforementioned diester linkages, all herein referred to as DQA.

In one aspect, said fabric softening active may comprise, as the principal active, compounds of the following formula:

$$\{R_{4-m} - N^{+} - [X - Y - R^{1}]_{m}\} X^{-} \qquad (1)$$

wherein each R comprises either hydrogen, a short chain C_1-C_6, in one aspect a C_1-C_3 alkyl or hydroxyalkyl group, for example methyl, ethyl, propyl, hydroxyethyl, and the like, poly(C_{2-3} alkoxy), polyethoxy, benzyl, or mixtures thereof; each X is independently $(CH_2)n$, CH_2-$CH(CH_3)$- or CH-(CH_3)-CH_2-; each Y may comprise -O-(O)C-, -C(O)-O-, -NR-C(O)-, or -C(O)-NR-; each m is 2 or 3; each n is from 1 to about 4, in one aspect 2; the sum of carbons in each R^1, plus one when Y is -O-(O)C- or -NR-C(O) -, may be C_{12}-C_{22}, or C_{14}-C_{20}, with each R^1 being a hydrocarbyl, or substituted hydrocarbyl group; and X^- may comprise any softener-compatible anion. In one aspect, the softener-compatible anion may comprise chloride, bromide, methylsulfate, ethylsulfate, sulfate, and nitrate. In another aspect, the softener-compatible anion may comprise chloride or methyl sulfate.

In another aspect, the fabric softening active may comprise the general formula:

$$[R_3N^{+}CH_2CH(YR^1)(CH_2YR^1)] X^{-}$$

wherein each Y, R, R^1, and X^- have the same meanings as before. Such compounds include those having the formula:

$$[CH_3]_3 N^{(+)}[CH_2CH(CH_2O(O)CR^1)O(O)CR^1] C1^{(-)} \qquad (2)$$

wherein each R may comprise a methyl or ethyl group. In one aspect, each R^1 may comprise a C_{15} to C_{19} group. As used herein, when the diester is specified, it can include the monoester that is present.

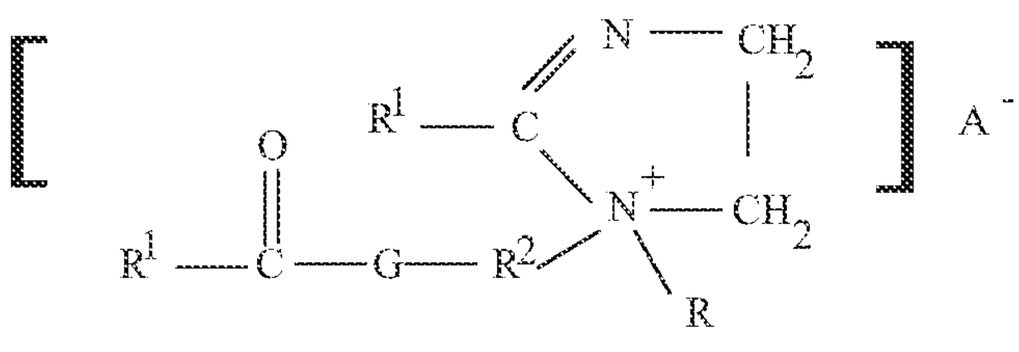
These types of agents and general methods of making them are disclosed in U.S.P.N. 4,137,180. An example of a suitable DEQA (2) is the "propyl" ester quaternary ammonium fabric softener active comprising the formula 1,2-di(acyloxy)-3-trimethylammoniopropane chloride.

A third type of useful fabric softening active has the formula:

$$[R_{4-m} - N^+ - R^1{}_m] X^- \qquad (3)$$

wherein each R, R^1, m and X^- have the same meanings as before.

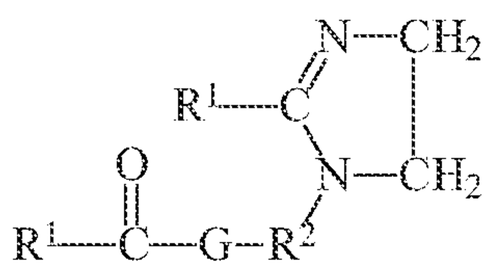
In a further aspect, the fabric softening active may comprise the formula:



(4)

wherein each R, R^1, and A^- have the definitions given above; R^2 may comprise a C_{1-6} alkylene group, in one aspect an ethylene group; and G may comprise an oxygen atom or an -NR- group;

In a yet further aspect, the fabric softening active may comprise the formula:



(5)

wherein R^1, R^2 and G are defined as above.

In a further aspect, the fabric softening active may comprise condensation reaction products of fatty acids with dialkylenetriamines in, e.g., a molecular ratio of about 2:1, said reaction products containing compounds of the formula:

$$R^1{-}C(O){-}NH{-}R^2{-}NH{-}R^3{-}NH{-}C(O){-}R^1 \qquad (6)$$

wherein R^1, R^2 are defined as above, and R^3 may comprise a C_{1-6} alkylene group, in one aspect, an ethylene group and wherein the reaction products may optionally be quaternized by the

additional of an alkylating agent such as dimethyl sulfate. Such quaternized reaction products are described in additional detail in U.S.P.N. 5,296,622.

In a yet further aspect, the fabric softening active may comprise the formula:

$$[R^1\text{---}C(O)\text{---}NR\text{---}R^2\text{---}N(R)_2\text{---}R^3\text{---}NR\text{---}C(O)\text{---}R^1]^+ A^- \quad (7)$$

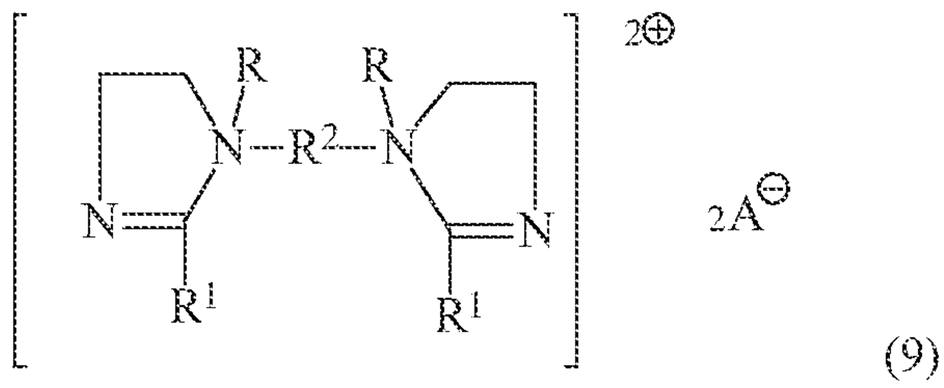
wherein R, R^1, R^2, R^3 and A^- are defined as above;

In a yet further aspect, the fabric softening active may comprise reaction products of fatty acid with hydroxyalkylalkylenediamines in a molecular ratio of about 2:1, said reaction products containing compounds of the formula:

$$R^1\text{-}C(O)\text{-}NH\text{-}R^2\text{-}N(R^3OH)\text{-}C(O)\text{-}R^1 \quad (8)$$

wherein R^1, R^2 and R^3 are defined as above;

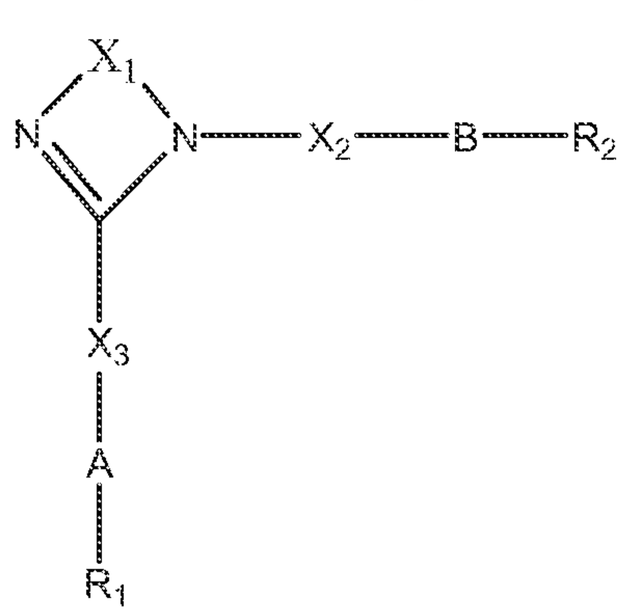
In a yet further aspect, the fabric softening active may comprise the formula:



(9)

wherein R, R^1, R^2, and A^- are defined as above.

In yet a further aspect, the fabric softening active may comprise the formula:



(10)

wherein;

X_1 is a C_{2-3} alkyl group, in one aspect, an ethyl group;

X_2 and X_3 are independently C_{1-6} linear or branched alkyl or alkenyl groups, in one aspect, methyl, ethyl or isopropyl groups;

R_1 and R_2 are independently C_{8-22} linear or branched alkyl or alkenyl groups;

characterized in that;

A and B are independently selected from the group comprising -O-(C=O)-, -(C=O)-O-, or mixtures thereof, in one aspect, -0-(C=0)-

Non-limiting examples of fabric softening actives comprising formula (1) are N,N-bis(stearoyl-oxy-ethyl)-N,N-dimethylammonium chloride, N,N-bis(tallowoyl-oxy-ethyl)-N,N-dimethylammonium chloride, N,N-bis(stearoyl-oxy-ethyl)-N-(2 hydroxyethyl)-N-methylammonium methylsulfate.

Non-limiting examples of fabric softening actives comprising formula (2) is 1,2-di-(stearoyl-oxy)-3-trimethyl ammoniumpropane chloride.

Non-limiting examples of fabric softening actives comprising formula (3) include dialkylenedimethylammonium salts such as dicanoladimethylammonium chloride, di(hard)tallowdimethylammonium chloride, dicanoladimethylammonium methylsulfate, and mixtures thereof. An example of commercially available dialkylenedimethylammonium salts usable in the present invention is dioleyldimethylammonium chloride available from Witco Corporation under the trade name Adogen® 472 and dihardtallow dimethylammonium chloride available from Akzo Nobel Arquad 2HT75.

A non-limiting example of fabric softening actives comprising formula (4) is 1-methyl-1-stearoylamidoethyl-2-stearoylimidazolinium methylsulfate wherein R^1 is an acyclic aliphatic C_{15}-C_{17} hydrocarbon group, R^2 is an ethylene group, G is a NH group, R^5 is a methyl group and A^- is a methyl sulfate anion, available commercially from the Witco Corporation under the trade name Varisoft®.

A non-limiting example of fabric softening actives comprising formula (5) is 1-tallowylamidoethyl-2-tallowylimidazoline wherein R^1 is an acyclic aliphatic C_{15}-C_{17} hydrocarbon group, R^2 is an ethylene group, and G is a NH group.

A non-limiting example of a fabric softening active comprising formula (6) is the reaction products of fatty acids with diethylenetriamine in a molecular ratio of about 2:1, said reaction product mixture containing N,N"-dialkyldiethylenetriamine with the formula:

$$R^1\text{-}C(O)\text{-}NH\text{-}CH_2CH_2\text{-}NH\text{-}CH_2CH_2\text{-}NH\text{-}C(O)\text{-}R^1$$

wherein R^1 is an alkyl group of a commercially available fatty acid derived from a vegetable or animal source, such as Emersol® 223LL or Emersol® 7021, available from Henkel Corporation, and R^2 and R^3 are divalent ethylene groups.

In one aspect, said fatty acid may be obtained, in whole or in part, from a renewable source, via extraction from plant material, fermentation from plant material, and/or obtained via genetically modified organisms such as algae or yeast.

A non-limiting example of Compound (7) is a di-fatty amidoamine based softener having the formula:

$$[R^1\text{-}C(O)\text{-}NH\text{-}CH_2CH_2\text{-}N(CH_3)(CH_2CH_2OH)\text{-}CH_2CH_2\text{-}NH\text{-}C(O)\text{-}R^1]^+ CH_3SO_4^-$$

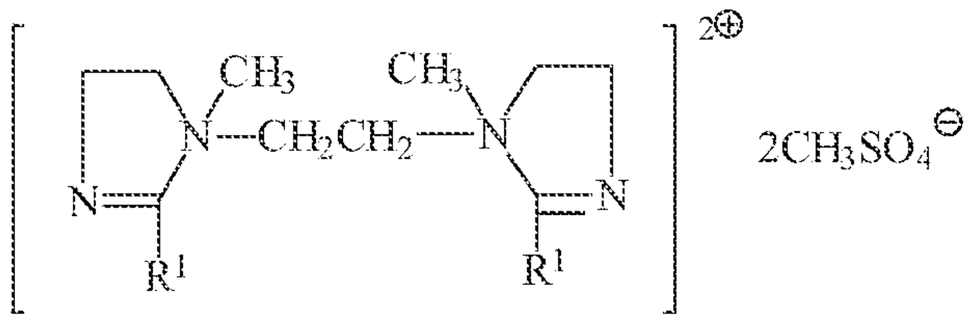
wherein R^1 is an alkyl group. An example of such compound is that commercially available from the Witco Corporation e.g. under the trade name Varisoft® 222LT.

An example of a fabric softening active comprising formula (8) is the reaction products of fatty acids with N-2-hydroxyethylethylenediamine in a molecular ratio of about 2:1, said reaction product mixture containing a compound of the formula:

$$R^1\text{-}C(O)\text{-}NH\text{-}CH_2CH_2\text{-}N(CH_2CH_2OH)\text{-}C(O)\text{-}R^1$$

wherein R^1-C(O) is an alkyl group of a commercially available fatty acid derived from a vegetable or animal source, such as Emersol® 223LL or Emersol® 7021, available from Henkel Corporation.

An example of a fabric softening active comprising formula (9) is the diquaternary compound having the formula:



wherein R^1 is derived from fatty acid. Such compound is available from Witco Company.

A non-limiting example of a fabric softening active comprising formula (10) is a dialkyl imidazoline diester compound, where the compound is the reaction product of N-(2-hydroxyethyl)-1,2-ethylenediamine or N-(2-hydroxyisopropyl)-1,2-ethylenediamine with glycolic acid, esterified with fatty acid, where the fatty acid is (hydrogenated) tallow fatty acid, palm fatty acid, hydrogenated palm fatty acid, oleic acid, rapeseed fatty acid, hydrogenated rapeseed fatty acid or a mixture of the above.

It will be understood that combinations of softener actives disclosed above are suitable for use in this invention.

Anion A

In the cationic nitrogenous salts herein, the anion A^-, which comprises any softener compatible anion, provides electrical neutrality. Most often, the anion used to provide electrical neutrality in these salts is from a strong acid, especially a halide, such as chloride, bromide, or iodide. However, other anions can be used, such as methylsulfate, ethylsulfate, acetate, formate, sulfate, carbonate, fatty acid anions and the like. In one aspect, the anion A may comprise chloride or methylsulfate. The anion, in some aspects, may carry a double charge. In this aspect, A^- represents half a group.

In one embodiment, the fabric softening agent is chosen from at least one of the following: ditallowoyloxyethyl dimethyl ammonium chloride, dihydrogenated-tallowoyloxyethyl dimethyl ammonium chloride, ditallow dimethyl ammonium chloride, dihydrogenatedtallow dimethyl ammonium chloride, ditallowoyloxyethyl methylhydroxyethylammonium methyl sulfate, dihydrogenated-tallowoyloxyethyl methyl hydroxyethylammonium chloride, or combinations thereof.

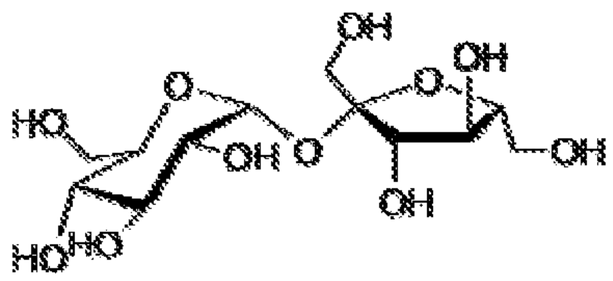
Polyssacharides

One aspect of the invention provides a fabric enhancer composition comprising a cationic starch as a fabric softening active. In one embodiment, the fabric care compositions of the present invention generally comprise cationic starch at a level of from about 0.1% to about 7%, alternatively from about 0.1% to about 5%, alternatively from about 0.3% to about 3%, and alternatively from about 0.5% to about 2.0%, by weight of the composition. Suitable cationic starches for use in the present compositions are commercially-available from Cerestar under the trade name C*BOND® and from National Starch and Chemical Company under the trade name CATO® 2A.

Sucrose esters

Nonionic fabric care benefit agents can comprise sucrose esters, and are typically derived from sucrose and fatty acids. Sucrose ester is composed of a sucrose moiety having one or more of its hydroxyl groups esterified.

Sucrose is a disaccharide having the following formula:



Alternatively, the sucrose molecule can be represented by the formula: $M(OH)_8$, wherein M is the disaccharide backbone and there are total of 8 hydroxyl groups in the molecule.

Thus, sucrose esters can be represented by the following formula:

$$M(OH)_{8-x}(OC(O)R^1)_x$$

wherein x is the number of hydroxyl groups that are esterified, whereas (8-x) is the hydroxyl groups that remain unchanged; x is an integer selected from 1 to 8, alternatively from 2 to 8, alternatively from 3 to 8, or from 4 to 8; and R^1 moieties are independently selected from C_1-C_{22} alkyl or C_1-C_{30} alkoxy, linear or branched, cyclic or acyclic, saturated or unsaturated, substituted or unsubstituted.

In one embodiment, the R^1 moieties comprise linear alkyl or alkoxy moieties having independently selected and varying chain length. For example, R^1 may comprise a mixture of linear alkyl or alkoxy moieties wherein greater than about 20% of the linear chains are C_{18},

alternatively greater than about 50% of the linear chains are C_{18}, alternatively greater than about 80% of the linear chains are C_{18}.

In another embodiment, the R^1 moieties comprise a mixture of saturate and unsaturated alkyl or alkoxy moieties; the degree of unsaturation can be measured by "Iodine Value" (hereinafter referred as "IV", as measured by the standard AOCS method). The IV of the sucrose esters suitable for use herein ranges from about 1 to about 150, or from about 2 to about 100, or from about 5 to about 85. The R^1 moieties may be hydrogenated to reduce the degree of unsaturation. In the case where a higher IV is preferred, such as from about 40 to about 95, then oleic acid and fatty acids derived from soybean oil and canola oil are the starting materials.

In a further embodiment, the unsaturated R^1 moieties may comprise a mixture of "cis" and "trans" forms about the unsaturated sites. The "cis" / "trans" ratios may range from about 1:1 to about 50:1, or from about 2:1 to about 40:1, or from about 3:1 to about 30:1, or from about 4:1 to about 20:1.

Dispersible Polyolefins

Generally, all dispersible polyolefins that provide fabric care benefits can be used as water insoluble fabric care benefit agents in the present invention. The polyolefins can be in the format of waxes, emulsions, dispersions or suspensions. Non-limiting examples are discussed below.

In one embodiment, the polyolefin is chosen from a polyethylene, polypropylene, or a combination thereof. The polyolefin may be at least partially modified to contain various functional groups, such as carboxyl, alkylamide, sulfonic acid or amide groups. In another embodiment, the polyolefin is at least partially carboxyl modified or, in other words, oxidized.

For ease of formulation, the dispersible polyolefin may be introduced as a suspension or an emulsion of polyolefin dispersed by use of an emulsifying agent. The polyolefin suspension or emulsion may comprise from about 1% to about 60%, alternatively from about 10% to about 55%, alternatively from about 20% to about 50% by weight of polyolefin. The polyolefin may have a wax dropping point (see ASTM D3954- 94, volume 15.04 --- "Standard Test Method for Dropping Point of Waxes") from about 20° to about 170°C, alternatively from about 50° to about 140°C. Suitable polyethylene waxes are available commercially from suppliers including but not limited to Honeywell (A-C polyethylene), Clariant (Velustrol® emulsion), and BASF (LUWAX®).

When an emulsion is employed with the dispersible polyolefin, the emulsifier may be any suitable emulsification agent. Non-limiting examples include an anionic, cationic, nonionic surfactant, or a combination thereof. However, almost any suitable surfactant or suspending agent may be employed as the emulsification agent. The dispersible polyolefin is dispersed by use of an emulsification agent in a ratio to polyolefin wax of about 1:100 to about 1:2, alternatively from about 1:50 to about 1:5, respectively.

Polymer Latexes

Polymer latex is made by an emulsion polymerization which includes one or more monomers, one or more emulsifiers, an initiator, and other components familiar to those of ordinary skill in the art. Generally, all polymer latexes that provide fabric care benefits can be used as water insoluble fabric care benefit agents of the present invention. Additional non-limiting examples include the monomers used in producing polymer latexes such as: (1) 100% or pure butylacrylate; (2) butylacrylate and butadiene mixtures with at least 20% (weight monomer ratio) of butylacrylate; (3) butylacrylate and less than 20% (weight monomer ratio) of other monomers excluding butadiene; (4) alkylacrylate with an alkyl carbon chain at or greater than C_6; (5) alkylacrylate with an alkyl carbon chain at or greater than C_6 and less than 50% (weight monomer ratio) of other monomers; (6) a third monomer (less than 20% weight monomer ratio) added into an aforementioned monomer systems; and (7) combinations thereof.

Polymer latexes that are suitable fabric care benefit agents in the present invention may include those having a glass transition temperature of from about –120°C to about 120°C, alternatively from about –80°C to about 60°C. Suitable emulsifiers include anionic, cationic, nonionic and amphoteric surfactants. Suitable initiators include initiators that are suitable for emulsion polymerization of polymer latexes. The particle size diameter (χ_{50}) of the polymer latexes can be from about 1 nm to about 10 μm, alternatively from about 10 nm to about 1 μm, or even from about 10 nm to about 20 nm.

Fatty Acid

One aspect of the invention provides a fabric softening composition comprising a fatty acid, such as a free fatty acid. The term "fatty acid" is used herein in the broadest sense to include unprotonated or protonated forms of a fatty acid; and includes fatty acid that is bound or unbound to another chemical moiety as well as the various combinations of these species of fatty acid. One skilled in the art will readily appreciate that the pH of an aqueous composition will dictate, in part, whether a fatty acid is protonated or unprotonated. In another embodiment, the

fatty acid is in its unprotonated, or salt form, together with a counter ion, such as, but not limited to, calcium, magnesium, sodium, potassium and the like. The term "free fatty acid" means a fatty acid that is not bound to another chemical moiety (covalently or otherwise) to another chemical moiety.

In one embodiment, the fatty acid may include those containing from about 12 to about 25, from about 13 to about 22, or even from about 16 to about 20, total carbon atoms, with the fatty moiety containing from about 10 to about 22, from about 12 to about 18, or even from about 14 (mid-cut) to about 18 carbon atoms.

The fatty acids of the present invention may be derived from (1) an animal fat, and/or a partially hydrogenated animal fat, such as beef tallow, lard, etc.; (2) a vegetable oil, and/or a partially hydrogenated vegetable oil such as canola oil, safflower oil, peanut oil, sunflower oil, sesame seed oil, rapeseed oil, cottonseed oil, corn oil, soybean oil, tall oil, rice bran oil, palm oil, palm kernel oil, coconut oil, other tropical palm oils, linseed oil, tung oil, etc.; (3) processed and/or bodied oils, such as linseed oil or tung oil via thermal, pressure, alkali-isomerization and catalytic treatments; (4) a mixture thereof, to yield saturated (e.g. stearic acid), unsaturated (e.g. oleic acid), polyunsaturated (linoleic acid), branched (e.g. isostearic acid) or cyclic (e.g. saturated or unsaturated α--disubstituted cyclopentyl or cyclohexyl derivatives of polyunsaturated acids) fatty acids.

Mixtures of fatty acids from different fat sources can be used.

In one aspect, at least a majority of the fatty acid that is present in the fabric softening composition of the present invention is unsaturated, e.g., from about 40% to 100%, from about 55% to about 99%, or even from about 60% to about 98%, by weight of the total weight of the fatty acid present in the composition, although fully saturated and partially saturated fatty acids can be used. As such, the total level of polyunsaturated fatty acids (TPU) of the total fatty acid of the inventive composition may be from about 0% to about 75% by weight of the total weight of the fatty acid present in the composition.

The cis/trans ratio for the unsaturated fatty acids may be important, with the cis/trans ratio (of the C18:1 material) being from at least about 1:1, at least about 3:1, from about 4:1or even from about 9:1 or higher.

Branched fatty acids such as isostearic acid are also suitable since they may be more stable with respect to oxidation and the resulting degradation of color and odor quality.

The Iodine Value or "IV" measures the degree of unsaturation in the fatty acid. In one embodiment of the invention, the fatty acid has an IV from about 10 to about 140, from about 15 to about 100 or even from about 15 to about 60.

Another class of fatty ester fabric care actives is softening oils, which include but are not limited to, vegetable oils (such as soybean, sunflower, and canola), hydrocarbon based oils (natural and synthetic petroleum lubricants, in one aspect polyolefins, isoparaffins, and cyclic paraffins), triolein, fatty esters, fatty alcohols, fatty amines, fatty amides, and fatty ester amines. Oils can be combined with fatty acid softening agents, clays, and silicones.

Clays

In one embodiment of the invention, the fabric care composition may comprise a clay as a fabric care active. In one embodiment clay can be a softener or co-softeners with another softening active, for example, silicone. Suitable clays include those materials classified geologically smectites.

Silicone

In one embodiment, the fabric softening composition comprises a silicone. Suitable levels of silicone may comprise from about 0.1% to about 70%, alternatively from about 0.3% to about 40%, alternatively from about 0.5% to about 30%, alternatively from about 1% to about 20% by weight of the composition. Useful silicones can be any silicone comprising compound. In one embodiment, the silicone polymer is selected from the group consisting of cyclic silicones, polydimethylsiloxanes, aminosilicones, cationic silicones, silicone polyethers, silicone resins, silicone urethanes, and mixtures thereof. In one embodiment, the silicone is a polydialkylsilicone, alternatively a polydimethyl silicone (polydimethyl siloxane or "PDMS"), or a derivative thereof. In another embodiment, the silicone is chosen from an aminofunctional silicone, amino-polyether silicone, alkyloxylated silicone, cationic silicone, ethoxylated silicone, propoxylated silicone, ethoxylated/propoxylated silicone, quaternary silicone, or combinations thereof.

In another embodiment, the silicone may be chosen from a random or blocky organosilicone polymer having the following formula:

$$[R_1R_2R_3SiO_{1/2}]_{(j+2)}[(R_4Si(X\text{-}Z)O_{2/2}]_k[R_4R_4SiO_{2/2}]_m[R_4SiO_{3/2}]_j$$

wherein:

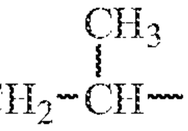
j is an integer from 0 to about 98; in one aspect j is an integer from 0 to about 48; in one aspect, j is 0;

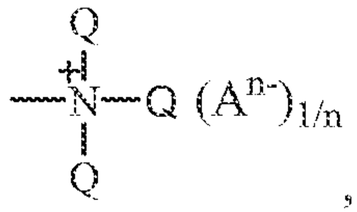
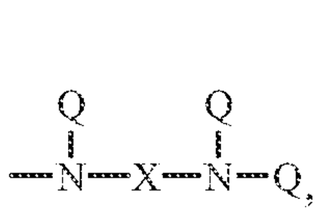
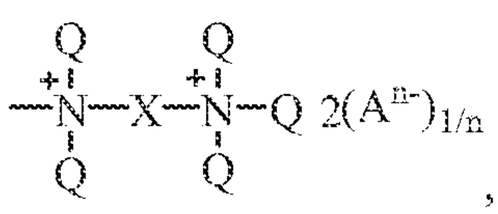
k is an integer from 0 to about 200, in one aspect k is an integer from 0 to about 50; when k = 0, at least one of R_1, R_2 or R_3 is –X—Z;

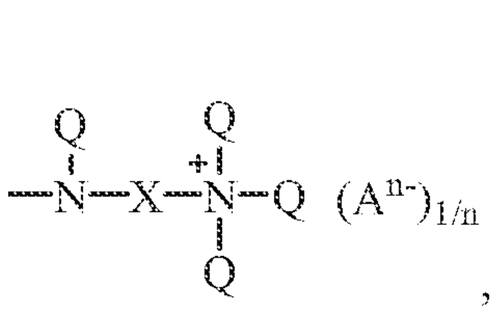
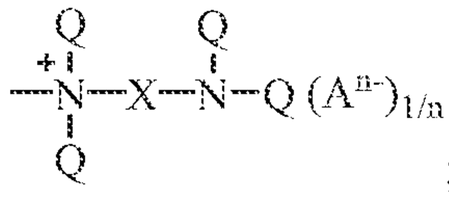
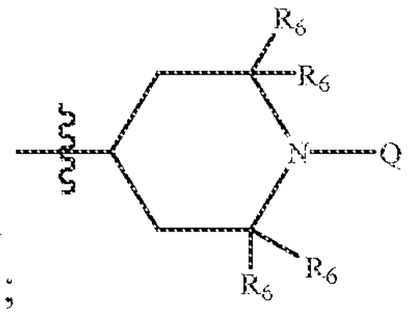
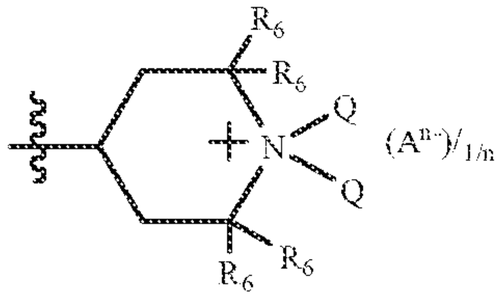
m is an integer from 4 to about 5,000; in one aspect m is an integer from about 10 to about 4,000; in another aspect m is an integer from about 50 to about 2,000;

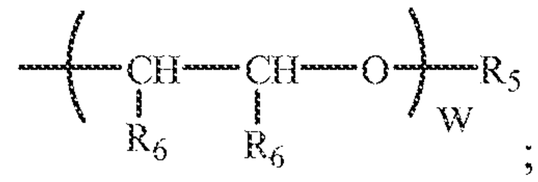
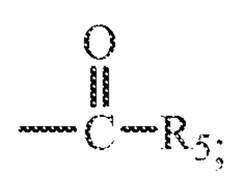
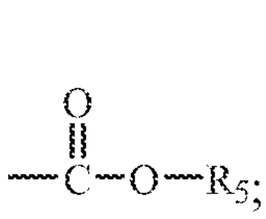
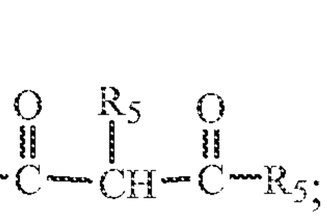
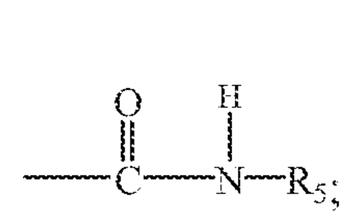
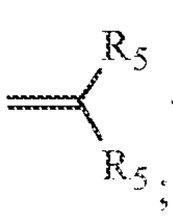
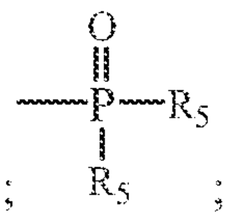
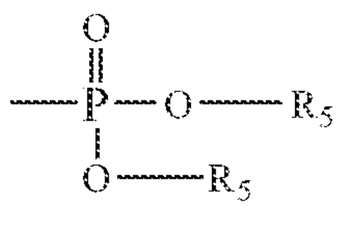
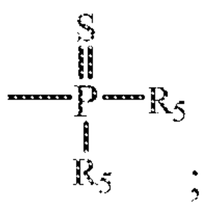
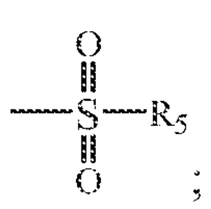
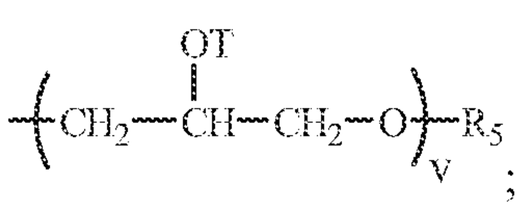
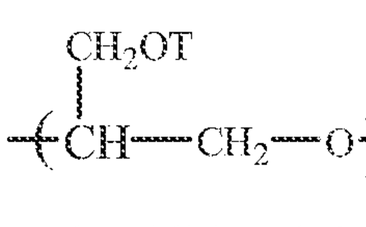
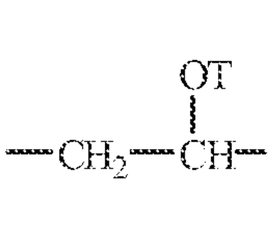
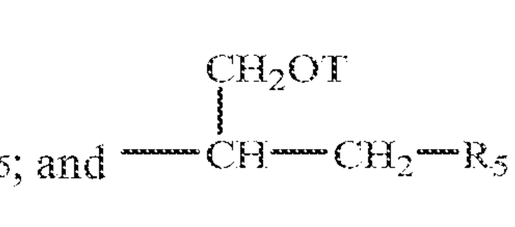
R_1, R_2 and R_3 are each independently selected from the group consisting of H, OH, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, C_6-C_{32} substituted alkylaryl, C_1-C_{32} alkoxy, C_1-C_{32} substituted alkoxy and X-Z;

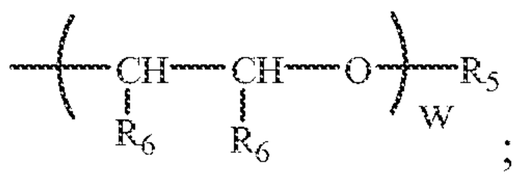
each R_4 is independently selected from the group consisting of H, OH, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, C_6-C_{32} substituted alkylaryl, C_1-C_{32} alkoxy and C_1-C_{32} substituted alkoxy;

each X in said alkyl siloxane polymer comprises a substituted or unsubstituted divalent alkylene radical comprising 2-12 carbon atoms, in one aspect each divalent alkylene radical is independently selected from the group consisting of $-(CH_2)_s-$ wherein s is an integer from about 2 to about 8, from about 2 to about 4; in one aspect, each X in said alkyl siloxane polymer comprises a substituted divalent alkylene radical selected from the group consisting of: $-CH_2-CH(OH)-CH_2-$; $-CH_2-CH_2-CH(OH)-$; and  ;

each Z is selected independently from the group consisting of ,  ,  ,  ,


, 
; 
and 
with the proviso that when Z is a quat, Q cannot be an amide, imine, or urea moiety and if Q is an amide, imine, or urea moiety, then any additional Q bonded to the same nitrogen as said amide, imine, or urea moiety must be H or a C_1-C_6 alkyl, in one aspect, said additional Q is H; for Z A^{n-} is a suitable charge balancing anion. In one aspect A^{n-} is selected from the group consisting of Cl^-, Br^-,I^-, methylsulfate, toluene sulfonate, carboxylate and phosphate; and at least one Q in said organosilicone is independently selected from

$-CH_2-CH(OH)-CH_2-R_5$; 
; 
; 
; 
; 
; 
; 
; 
; 
; 
; 
; 
; 
; and 

each additional Q in said organosilicone is independently selected from the group comprising of H, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, C_6-C_{32} substituted alkylaryl, $-CH_2-CH(OH)-CH_2-R_5$; 
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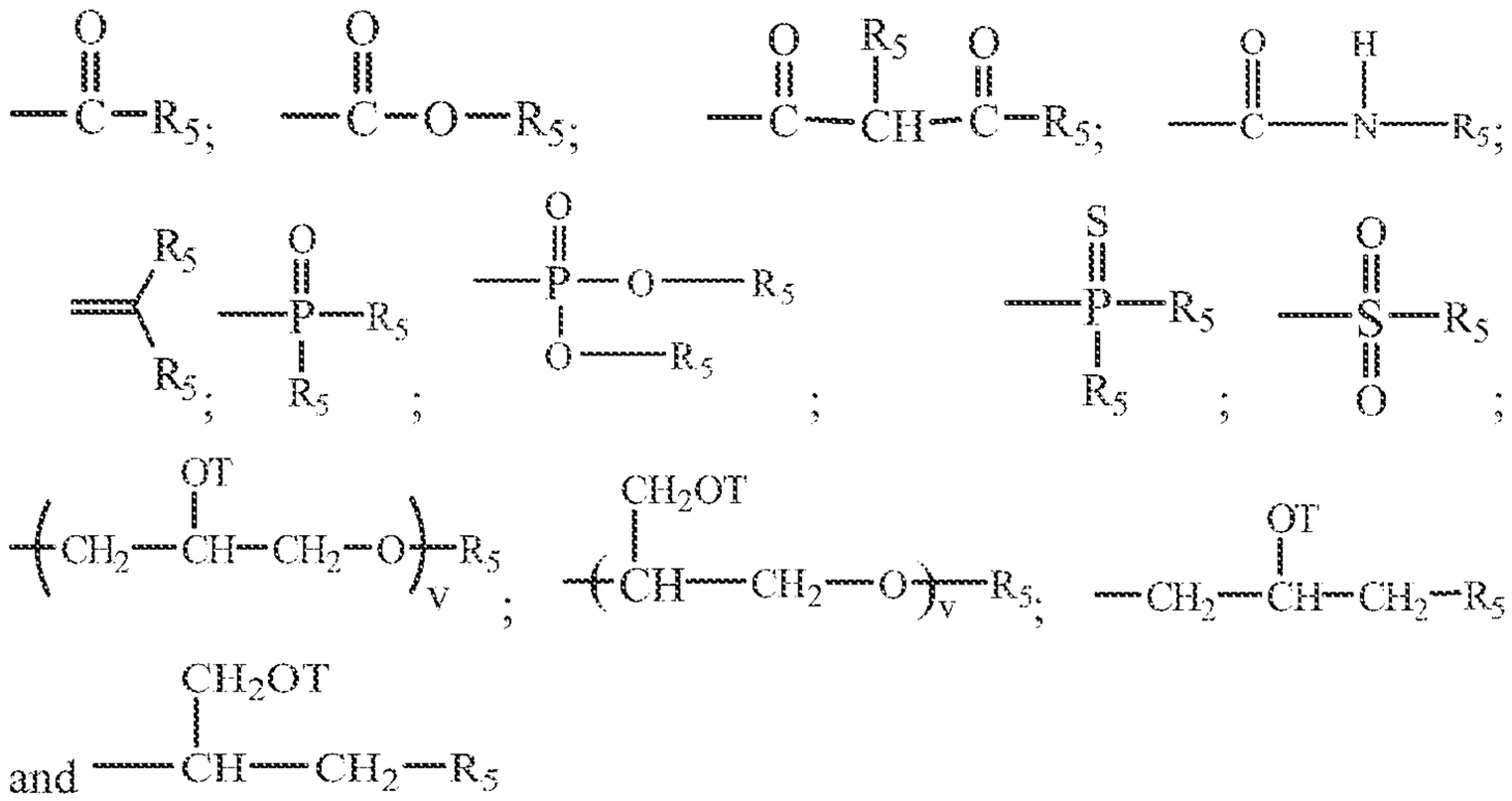


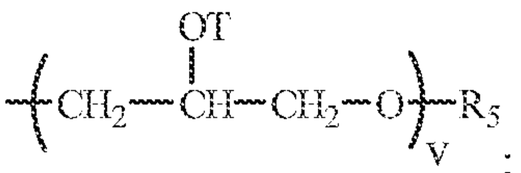
wherein each R_5 is independently selected from the group consisting of H, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, C_6-C_{32} substituted alkylaryl, –$(CHR_6$-CHR_6-O-$)_w$-L and a siloxyl residue;

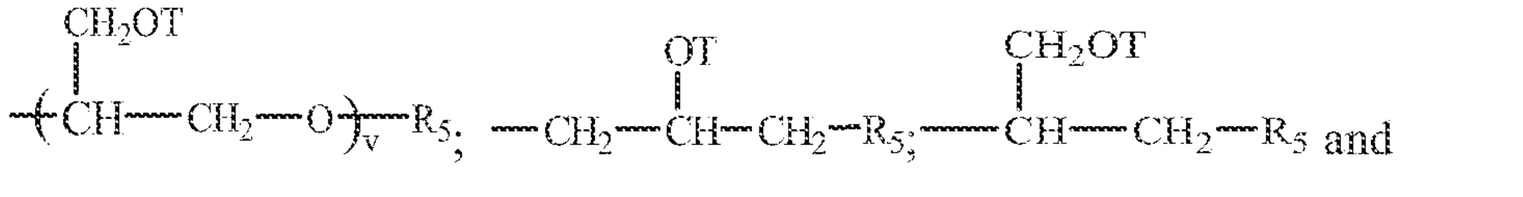
each R_6 is independently selected from H, C_1-C_{18} alkyl

each L is independently selected from –C(O)-R_7 or R_7;

w is an integer from 0 to about 500, in one aspect w is an integer from about 1 to about 200; in one aspect w is an integer from about 1 to about 50;

each R_7 is selected independently from the group consisting of H; C_1-C_{32} alkyl; C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl; C_6-C_{32} substituted alkylaryl and a siloxyl residue;

each T is independently selected from H, and  ;



wherein each v in said organosilicone is an integer from 1 to about 10, in one aspect, v is an integer from 1 to about 5 and the sum of all v indices in each Q in the said organosilicone is an integer from 1 to about 30 or from 1 to about 20 or even from 1 to about 10.

In another embodiment, the silicone may be chosen from a random or blocky organosilicone polymer having the following formula:

$$[R_1R_2R_3SiO_{1/2}]_{(j+2)}[(R_4Si(X\text{-}Z)O_{2/2}]_k[R_4R_4SiO_{2/2}]_m[R_4SiO_{3/2}]_j$$

wherein

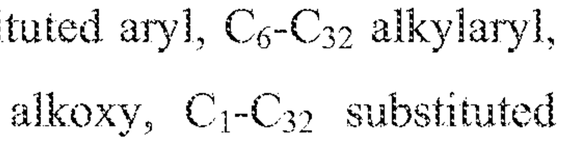
j is an integer from 0 to about 98; in one aspect j is an integer from 0 to about 48; in one aspect, j is 0;

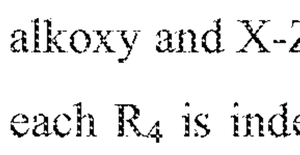
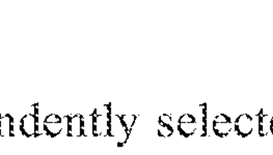
k is an integer from 0 to about 200; when k = 0, at least one of R_1, R_2 or R_3= -X-Z, in one aspect, k is an integer from 0 to about 50

m is an integer from 4 to about 5,000; in one aspect m is an integer from about 10 to about 4,000; in another aspect m is an integer from about 50 to about 2,000;

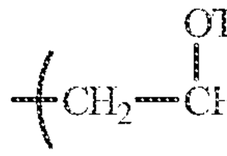
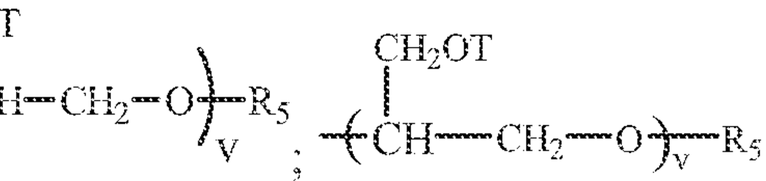
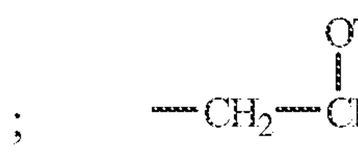
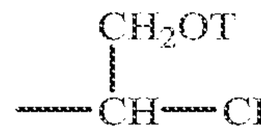
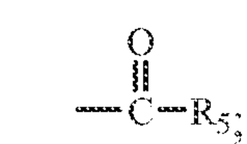
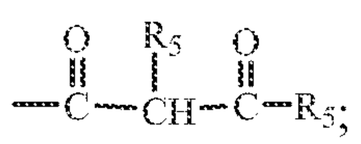
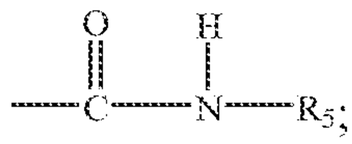
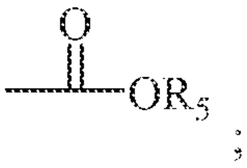
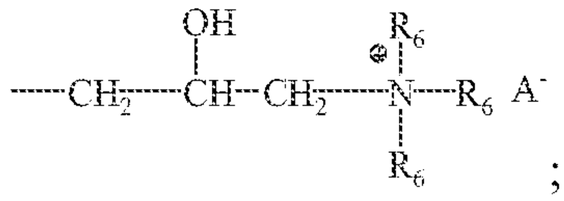
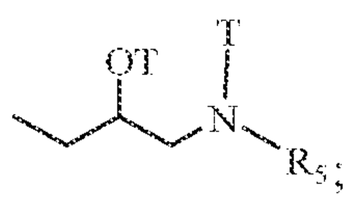
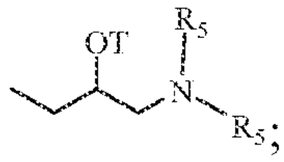
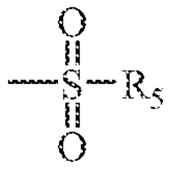
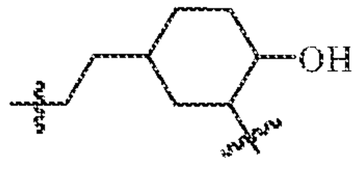
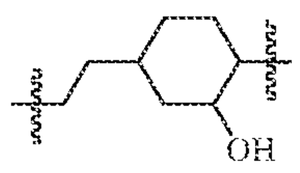
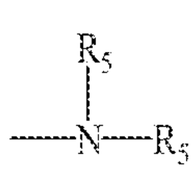
R_1, R_2 and R_3 are each independently selected from the group consisting of H, OH, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, C_6-C_{32} substituted alkylaryl, C_1-C_{32} alkoxy, C_1-C_{32} substituted alkoxy and X-Z;

each R_4 is independently selected from the group consisting of H, OH, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, C_6-C_{32} substituted alkylaryl, C_1-C_{32} alkoxy and C_1-C_{32} substituted alkoxy;

each X comprises of a substituted or unsubstituted divalent alkylene radical comprising 2-12 carbon atoms; in one aspect each X is independently selected from the group consisting of $-(CH_2)_s$-O-; $-CH_2-CH(OH)-CH_2-O$-;  ;

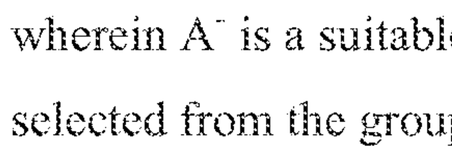
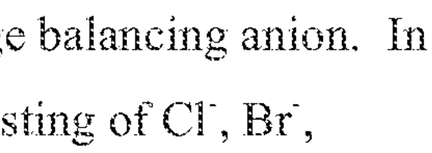
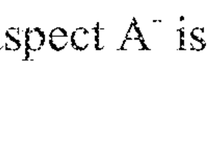
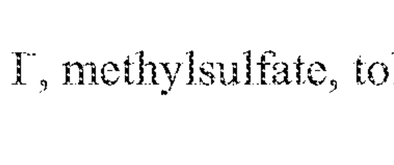
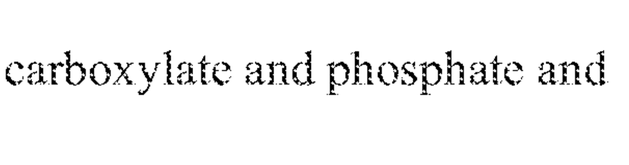
 and 

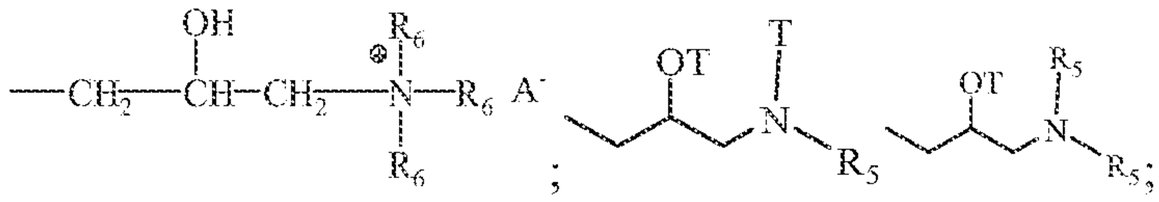
wherein each s independently is an integer from about 2 to about 8, in one aspect s is an integer from about 2 to about 4;

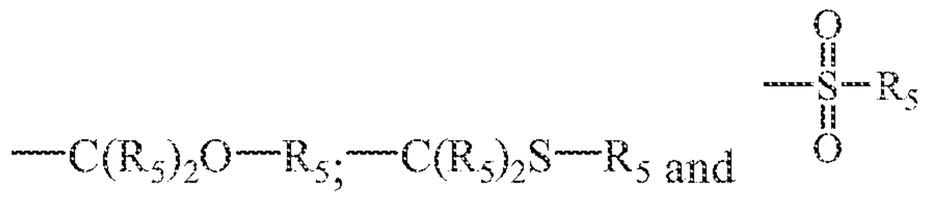
At least one Z in the said organosiloxane is selected from the group consisting of R_5;  ;  ;  ; ;  ;  ;  ;  ;  ;  ;  ;  ;  ; $-C(R_5)_2O-R_5$; $-C(R_5)_2S-R_5$ and provided that when X is  or  then Z = $-OR_5$ or 

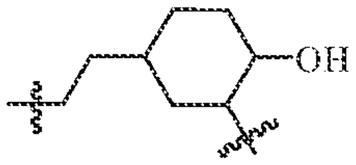
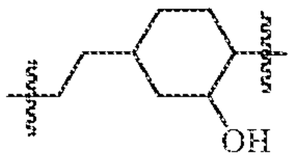
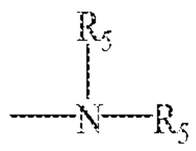
wherein A^- is a suitable charge balancing anion. In one aspect A^- is selected from the group consisting of Cl^-, Br^-,

I^-, methylsulfate, toluene sulfonate, carboxylate and phosphate and

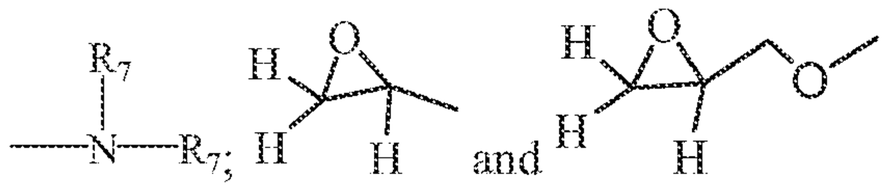
each additional Z in said organosilicone is independently selected from the group comprising of H, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, C_6-C_{32} substituted alkylaryl, R_5, ; ;  ;  ;  ;  ;  ;





provided that when X is  or  then Z = -OR_5 or 

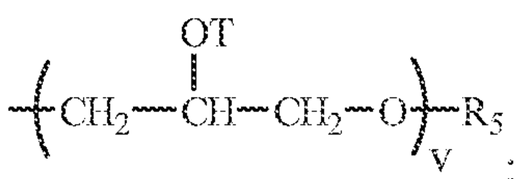
each R_5 is independently selected from the group consisting of H; C_1-C_{32} alkyl; C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl or C_6-C_{32} alkylaryl, or C_6-C_{32} substituted alkylaryl,

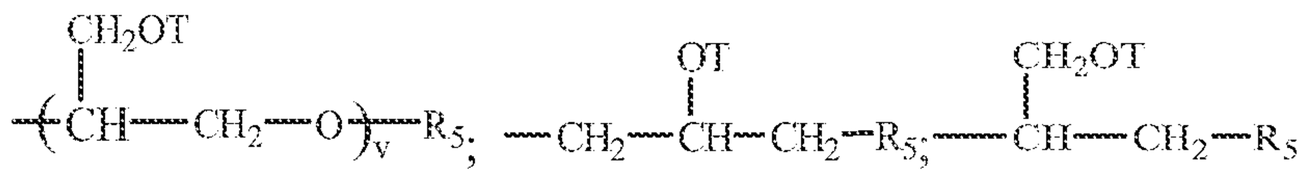
–$(CHR_6$-CHR_6-O-$)_w$-CHR_6-CHR_6-L and siloxyl residue wherein each L is independently selected from -O–C(O)-R_7 or –O-R_7; 

w is an integer from 0 to about 500, in one aspect w is an integer from 0 to about 200, one aspect w is an integer from 0 to about 50;

each R_6 is independently selected from H or C_1-C_{18} alkyl;

each R_7 is independently selected from the group consisting of H; C_1-C_{32} alkyl; C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, and C_6-C_{32} substituted aryl, and a siloxyl residue;

each T is independently selected from H;  ;



wherein each v in said organosilicone is an integer from 1 to about 10, in one aspect, v is an integer from 1 to about 5 and the sum of all v indices in each Z in the said organosilicone is an integer from 1 to

about 30 or from 1 to about 20 or even from 1 to about 10.

In one embodiment, the silicone is one comprising a relatively high molecular weight. A suitable way to describe the molecular weight of a silicone includes describing its viscosity. A high molecular weight silicone is one having a viscosity of from about 10 cSt to about 3,000,000 cSt, or from about100 cSt to about 1,000,000 cSt, or from about 1,000 cSt to about 600,000 cSt, or even from about 6,000 cSt to about 300,000 cSt.

In one embodiment, the silicone comprises a blocky cationic organopolysiloxane having the formula:

$$M_wD_xT_yQ_z$$

wherein:

M = $[SiR_1R_2R_3O_{1/2}]$, $[SiR_1R_2G_1O_{1/2}]$, $[SiR_1G_1G_2O_{1/2}]$, $[SiG_1G_2G_3O_{1/2}]$, or combinations thereof;

D = $[SiR_1R_2O_{2/2}]$, $[SiR_1G_1O_{2/2}]$, $[SiG_1G_2O_{2/2}]$ or combinations thereof;

T = $[SiR_1O_{3/2}]$, $[SiG_1O_{3/2}]$ or combinations thereof;

Q = $[SiO_{4/2}]$;

w = is an integer from 1 to (2+y+2z);

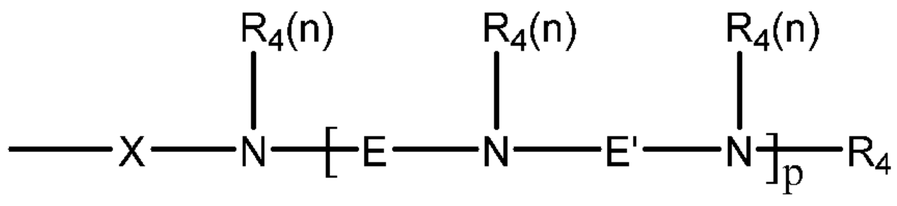
x = is an integer from 5 to 15,000;

y = is an integer from 0 to 98;

z = is an integer from 0 to 98;

R_1, R_2 and R_3 are each independently selected from the group consisting of H, OH, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, C_6-C_{32} substituted alkylaryl, C_1-C_{32} alkoxy, C_1-C_{32} substituted alkoxy, C_1-C_{32} alkylamino, and C_1-C_{32} substituted alkylamino;

at least one of M, D, or T incorporates at least one moiety G_1, G_2 or G_3; and G_1, G_2, and G_3 are each independently selected from the formula:



$k A^{-t}$

wherein:

X comprises a divalent radical selected from the group consisting of C_1-C_{32} alkylene, C_1-C_{32} substituted alkylene, C_5-C_{32} or C_6-C_{32} arylene, C_5-C_{32} or C_6-C_{32} substituted arylene, C_6-C_{32} arylalkylene, C_6-C_{32} substituted arylalkylene, C_1-C_{32} alkoxy, C_1-C_{32} substituted alkoxy, C_1-C_{32} alkyleneamino, C_1-C_{32} substituted alkyleneamino, ring-opened epoxide, and ring-opened glycidyl, with the proviso that if X does not comprise a repeating alkylene oxide moiety then X can further comprise a heteroatom selected from the group consisting of P, N and O;

each R_4 comprises identical or different monovalent radicals selected from the group consisting of H, C_1-C_{32} alkyl, C_1-C_{32} substituted alkyl, C_5-C_{32} or C_6-C_{32} aryl, C_5-C_{32} or C_6-C_{32} substituted aryl, C_6-C_{32} alkylaryl, and C_6-C_{32} substituted alkylaryl;

E comprises a divalent radical selected from the group consisting of C_1-C_{32} alkylene, C_1-C_{32} substituted alkylene, C_5-C_{32} or C_6-C_{32} arylene, C_5-C_{32} or C_6-C_{32} substituted arylene, C_6-C_{32} arylalkylene, C_6-C_{32} substituted arylalkylene, C_1-C_{32} alkoxy, C_1-C_{32} substituted alkoxy, C_1-C_{32} alkyleneamino, C_1-C_{32} substituted alkyleneamino, ring-opened epoxide and ring-opened glycidyl, with the proviso that if E does not comprise a repeating alkylene oxide moiety then E can further comprise a heteroatom selected from the group consisting of P, N, and O;

E' comprises a divalent radical selected from the group consisting of C_1-C_{32} alkylene, C_1-C_{32} substituted alkylene, C_5-C_{32} or C_6-C_{32} arylene, C_5-C_{32} or C_6-C_{32} substituted arylene, C_6-C_{32} arylalkylene, C_6-C_{32} substituted arylalkylene, C_1-C_{32} alkoxy, C_1-C_{32} substituted alkoxy, C_1-C_{32} alkyleneamino, C_1-C_{32} substituted alkyleneamino, ring-opened epoxide and ring-opened glycidyl, with the proviso that if E' does not comprise a repeating alkylene oxide moiety then E' can further comprise a heteroatom selected from the group consisting of P, N, and O;

p is an integer independently selected from 1 to 50;

n is an integer independently selected from 1 or 2;

when at least one of G_1, G_2, or G_3 is positively charged, A^{-t} is a suitable charge balancing anion or anions such that the total charge, k, of the charge-balancing anion or anions is equal to and opposite from the net charge on the moiety G_1, G_2 or G_3, wherein t is an integer independently selected from 1, 2, or 3; and $k \leq (p*2/t) + 1$; such that the total number of cationic charges

balances the total number of anionic charges in the organopolysiloxane molecule; and wherein at least one E does not comprise an ethylene moiety.

Additional Components

The present invention can include other optional components (minor components) conventionally used in textile treatment compositions, for example, anti-oxidants, colorants, preservatives, optical brighteners, opacifiers, stabilizers such as guar gum and polyethylene glycol, anti-shrinkage agents, anti-wrinkle agents, soil release agents, fabric crisping agents, reductive agents, spotting agents, germicides, fungicides, anti-corrosion agents, antifoam agents, Color Care Agents including Chlorine Scavangers, Dye Transfer Inhibitors, Dye Fixatives Chelants and Anti-Abrasion Agents Perfume, PMC's, Cyclodextrin Perfume Complexes, Free Cyclodextrin, Pro-Perfumes; Antioxidants and the like.

Substrate

One aspect of the present invention relates to fabric conditioning compositions which are delivered to fabric via dryer-added substrate that effectively releases the composition in an automatic laundry (clothes) dryer. Such dispensing means can be designed for single usage or for multiple uses. The dispensing means can also be a "carrier material" that releases the fabric conditioning composition and then is dispersed and/or exhausted from the dryer. When the dispensing means is a flexible substrate, e.g., in sheet configuration, the fabric conditioning composition is releasably affixed on the substrate to provide a weight ratio of conditioning composition to dry substrate ranging from about 10:1 to about 0.5:1, preferably from about 5:1 to about 1:1. To insure release, preferred flexible sheets withstand the dryer environment without decomposing or changing shape, e.g. combusting, creating off odors, or shrinking with heat or moisture. Substrates especially useful herein are rayon and/or polyester non-woven fabrics.

Non-limiting examples of the substrates useful herein are cellulosic rayon and/or polyester non-woven fabrics having basis weights of from about 0.4 oz./yd2 to about 1 oz./yd2, preferably from about 0.5 oz./yd2 to about 0.8 oz./yd2, more preferably from about 0.5 oz./yd2 to about 0.6 oz./yd2. These substrates are typically prepared using, e.g., rayon and/or polyester fibers having deniers of from about 1 to about 8, preferably from about 3 to about 6, and more preferably about 4 to 6 or mixtures of different deniers. Typically, the fiber is a continuous filament or a 3/16 inch to 2 inch fiber segment that is laid down, in a pattern that results in a multiplicity of layers and

intersections between overlayed portions of the filament or fiber, on a belt, preferably foraminous, and then the fiber intersections are glued and/or fused into fiber-to-fiber bonds by a combination of an adhesive binder, and/or heat and/or pressure. As non-limiting examples, the substrate may be spun-bonded, melt-bonded, or point bonded or combinations of bonding processes may be chosen. The substrate breaking strength and elasticity in the machine and cross direction is sufficient to enable the substrate to be conveyed through a coating process. The porosity of the substrate article is sufficient to enable air flow through the substrate to promote conditioning active release and prevent dryer vent blinding. The substrate may also have a plurality of rectilinear slits extended along one dimension of the substrate.

The dispensing means will normally carry an effective amount of fabric conditioning composition. Such effective amount typically provides sufficient softness, antistatic effect and/or perfume deposition for at least one treatment of a minimum load in an automatic laundry dryer. Amounts of the fabric conditioning composition irrespective of load size for a single article can vary from about 0.1 g to about 100 g, preferably from about 0.1 g to about 20 g, most preferably from about 0.1 g to about 10 g. Amounts of fabric treatment composition for multiple uses, e.g., up to about 30, can be used.

TEST METHODS

Malodor reduction materials may be separated from mixtures, including but not limited to finished products such as consumer products and identified, by analytical methods that include GC-MS and/or NMR.

Test Method for Determining Saturation Vapour Pressure (VP)

The saturation Vapour Pressure (VP) values are computed for each PRM in the perfume mixture being tested. The VP of an individual PRM is calculated using the VP Computational Model, version 14.02 (Linux) available from Advanced Chemistry Development Inc. (ACD/Labs) (Toronto, Canada) to provide the VP value at 25 °C expressed in units of torr. The ACD/Labs' Vapor Pressure model is part of the ACD/Labs model suite.

Test Method for Determining the Logarithm of the Octanol/Water Partition Coefficient (logP)

The value of the log of the Octanol/Water Partition Coefficient (logP) is computed for each PRM in the perfume mixture being tested. The logP of an individual PRM is calculated

using the Consensus logP Computational Model, version 14.02 (Linux) available from Advanced Chemistry Development Inc. (ACD/Labs) (Toronto, Canada) to provide the unitless logP value. The ACD/Labs' Consensus logP Computational Model is part of the ACD/Labs model suite.

Test Method for the Generation of Molecular Descriptors

In order to conduct the calculations involved in the computed-value test methods described herein, the starting information required includes the identity, weight percent, and molar percent of each PRM in the perfume being tested, as a proportion of that perfume, wherein all PRMs in the perfume composition are included in the calculations. Additionally for each of those PRMs, the molecular structure, and the values of various computationally-derived molecular descriptors are also required, as determined in accordance with the Test Method for the Generation of Molecular Descriptors described herein.

For each PRM in a perfume mixture or composition, its molecular structure is used to compute various molecular descriptors. The molecular structure is determined by the graphic molecular structure representations provided by the Chemical Abstract Service ("CAS"), a division of the American Chemical Society, Columbus, Ohio, U.S.A.. These molecular structures may be obtained from the CAS Chemical Registry System database by looking up the index name or CAS number of each PRM. For PRMs, which at the time of their testing are not yet listed in the CAS Chemical Registry System database, other databases or information sources may be used to determine their structures. For a PRM which has potentially more than one isomer present, the molecular descriptor computations are conducted using the molecular structure of only one of the isomers, which is selected to represent that PRM. The selection of isomer is determined by the relative amount of extension in the molecular structures of the isomers. Of all the isomers of a given PRM, it is the isomer whose molecular structure that is the most prevalent which is the one that is selected to represent that PRM. The structures for other potential isomers of that PRM are excluded from the computations. The molecular structure of the isomer that is the most prevalent is paired with the concentration of that PRM, where the concentration reflects the presence of all the isomers of that PRM that are present.

A molecule editor or molecular sketching software program, such as ChemDraw (CambridgeSoft / PerkinElmer Inc., Waltham, Massachusetts, U.S.A.), is used to duplicate the 2-dimensional molecular structure representing each PRM. Molecular structures should be

represented as neutral species (quaternary nitrogen atoms are allowed) with no disconnected fragments (e.g., single structures with no counter ions). The winMolconn program described below can convert any deprotonated functional groups to the neutral form by adding the appropriate number of hydrogen atoms and will discard the counter ion.

For each PRM, the molecular sketching software is used to generate a file which describes the molecular structure of the PRM. The file(s) describing the molecular structures of the PRMs is subsequently submitted to the computer software program winMolconn, version 1.0.1.3 (Hall Associates Consulting, Quincy, Massachusetts, U.S.A., www.molconn.com), in order to derive various molecular descriptors for each PRM. As such, it is the winMolconn software program which dictates the structure notations and file formats that are acceptable options. These options include either a MACCS SDF formatted file (i.e., a Structure-Data File); or a Simplified Molecular Input Line Entry Specification (i.e., a SMILES string structure line notation) which is commonly used within a simple text file, often with a ".smi" or ".txt" file name extension. The SDF file represents each molecular structure in the format of a multi-line record, while the syntax for a SMILES structure is a single line of text with no white space. A structure name or identifier can be added to the SMILES string by including it on the same line following the SMILES string and separated by a space, e.g.: C1=CC=CC=C1 benzene.

The winMolconn software program is used to generate numerous molecular descriptors for each PRM, which are then output in a table format. Specific molecular descriptors derived by winMolconn are subsequently used as inputs (i.e., as variable terms in mathematical equations) for a variety of computer model test methods in order to calculate values such as: saturation Vapour Pressure (VP); Boiling Point (BP); logarithm of the Octanol/Water Partition Coefficient (logP); Odour Detection Threshold (ODT); Malodour Reduction Value (MORV); and/or Universal Malodour Reduction Value (Universal MORV) for each PRM. The molecular descriptor labels used in the models' test method computations are the same labels reported by the winMolconn program, and their descriptions and definitions can be found listed in the winMolconn documentation. The following is a generic description of how to execute the winMolconn software program and generate the required molecular structure descriptors for each PRM in a composition.

Computing Molecular Structure Descriptors using winMolconn:

1) Assemble the molecular structure for one or more perfume ingredients in the form of a MACCS Structure-Data File, also called an SDF file, or as a SMILES file.

2) Using version 1.0.1.3 of the winMolconn program, running on an appropriate computer, compute the full complement of molecular descriptors that are available from the program, using the SDF or SMILES file described above as input.

a. The output of winMolconn is in the form of an ASCII text file, typically space delimited, containing the structure identifiers in the first column and respective molecular descriptors in the remaining columns for each structure in the input file.

3) Parse the text file into columns using a spreadsheet software program or some other appropriate technique. The molecular descriptor labels are found on the first row of the resulting table.

4) Find and extract the descriptor columns, identified by the molecular descriptor label, corresponding to the inputs required for each model.

a. Note that the winMolconn molecular descriptor labels are case-sensitive.

MORV and Universal MORV calculation

1.) Input Molecular Descriptor values as determined via the method above into the following four equations:

a) $MORV = -8.5096 + 2.8597\times(dxp9) + 1.1253\times(knotpv) - 0.34484\times(e1C2O2) - 0.00046231\times(idw) + 3.3509\times(idcbar) + 0.11158\times(n2pag22)$

b) $MORV = -5.2917 + 2.1741\times(dxvp5) - 2.6595\times(dxvp8) + 0.45297\times(e1C2C2d) - 0.6202\times(c1C2O2) + 1.3542\times(CdCH2) + 0.68105\times(CaasC) + 1.7129\times(idcbar)$

c) $MORV = -0.0035 + 0.8028\times(SHCsatu) + 2.1673\times(xvp7) - 1.3507\times(c1C1C3d) + 0.61496\times(c1C1O2) + 0.00403\times(idc) - 0.23286\times(nd2)$.

d) $MORV = -0.9926 - 0.03882\times(SdO) + 0.1869\times(Ssp3OH) + 2.1847\times(xp7) + 0.34344\times(e1C3O2) - 0.45767\times(c1C2C3) + 0.7684\times(CKetone)$

Equation a) relates a material's effectiveness in reducing the malodor trans-3-methyl-2-hexenoic acid (carboxylic acid based malodors)

Equation b) relates a material's effectiveness in reducing the malodor trimethylamine (amine based malodors)

Equation c) relates a material's effectiveness in reducing the malodor 3-mercapto-3-methylhexan-1-ol (thiol based malodors)

Equation d) relates a material's effectiveness in reducing the malodor skatole (indole based malodors)

2.) For purpose of the present application, a material's MORV is the highest MORV value from equations 1.)a) through 1.)d).

3.) If all MORV values from equations 1.)a) through 1.)d) above are greater than 0.5, the subject material has a Universal MORV.

Method for assigning Fragrance Fidelity Index (FFI) and the Blocker Index (BI) for a Malodor Reduction Compound

Blocker materials suitable for use in consumer products of the present invention are chosen for their ability to decrease malodor, while not interfering with perception of a fragrance. Material selection is done by assigning two indices to a test sample material from two reference scales in order to rank odor strengths. The two reference scales are the Fragrance Fidelity Index (FFI) scale and the Blocker Index (BI) scale. The FFI ranks the ability of the test sample material to impart a perceivable odor which could cause interference when combined with another fragrance and the BI ranks the ability of the test sample material to reduce malodor perception. The two methods for assigning the indices to a test sample on the FFI and the BI reference scales are given below.

Method for assigning the FFI to test samples

The first step in the method for assigning an FFI to the test samples on the FFI reference scale is to create the FFI reference swatches. The swatches for the scale are created by treating clean fabrics swatches with a known amount of a known concentration of an ethyl vanillin solution. Fabric swatches for this test are white knit polycotton (4 inch X 4 inch) swatches from EMC

ordered as PC 50/50. The supplier is instructed to strip the swatches first, stripping involves washing twice with a fragrance-free detergent and rinsing three times.

Making the FFI reference swatches

Make three solutions of ethyl vanillin using a 50%/ 50% EtOH/water as the diluent at the following concentrations: 25 ppm, 120 ppm and 1000 ppm. Pipette 13 µL of each of the three solutions into the middle of a clean swatch resulting in about a 1 cm diameter of the solution in the middle of the swatch. This will create a sensory scale of three swatches with three different odor levels based on the concentration of the solution pipetted onto the swatch. After drying for 30 minutes in a vented hood, the swatches are wrapped in aluminum foil to prevent odor contamination to the treated swatch. A clean untreated swatch is also included as the lowest anchor point of reference for odor strength on the FFI scale. The FFI reference scale swatches should be used within 0.5 to 12 hours and discarded after 12 hours. The swatches are used as scale anchor points when graders evaluate a test sample(s) and are assigned a Fragrance Fidelity Index (FFI) as show in Table 7.

At least four perfumers/ expert graders are used to rank the ethyl vanillin swatches in the FFI scale. The perfumer/ expert grader needs to demonstrate adequate discrimination on the scale. The perfumer/ expert panel is asked to rank order swatches according to a scale between 0 and 3. The panel must demonstrate statistical differences between the swatches as seen in Table 7.

Table 7 Results FFI of reference swatches from six perfumers/ expert graders.

FFI	Swatch	Expert Grader						Ave	Std Dev.
		1	2	3	4	5	6		
0	Control: stripped swatch NIL ethyl vanillin	0	0	0.5	0	0	0	0.08	0.2
1	Stripped swatch with 13 µL 25 ppm ethyl vanillin	0.5	0.5	0.5	1.5	0.5	1.0	0.75	0.4
2	Stripped swatch with 13 µL 120 ppm ethyl vanillin	2.0	1.5	1.5	2.0	2.0	2.0	1.8	0.2
3	Stripped swatch with 13 µL 1000 ppm ethyl vanillin	3.0	2.0	3.0	3.0	3.0	3.0	2.8	0.4

The expert graders must demonstrate a full range of 2.5 over the 4 swatches to be acceptably discriminating. Grader 2 in table 1 has a range of only 2 and is eliminated from the panel. The panel of expert graders must also demonstrated the ability to statistically discriminate between swatches in the scale.

Table 8 This table demonstrates acceptable expert graders with an acceptable range and the panel meets the requirement for discriminating statistics.

FFI	Swatch	Expert Grader					Ave	Std Dev.
		1	3	4	5	6		
0	Control: stripped swatch NIL ethyl vanillin	0	0.5	0	0	0	0.08	0.2
1	Stripped swatch with 13 µL 25 ppm ethyl vanillin	0.5	0.5	1.5	0.5	1.0	0.80	0.4
2	Stripped swatch with 13 µL 120 ppm ethyl vanillin	2.0	1.5	2.0	2.0	2.0	1.9	0.2
3	Stripped swatch with 13 µL 1000 ppm ethyl vanillin	3.0	3.0	3.0	3.0	3.0	3.0	0.0

The reference swatches represent the 0, 1, 2, and 3 FFIs on the FFI reference scale, Table 9. The expert grader should familiarize them self with the strength of the odor on the FFI reference swatches by sniffing each one starting at 0 (the lowest odor strength) and ending at 3 (the highest odor strength). This should be done prior to evaluating the test sample material treated swatch.

Table 9 Swatch treatments comprising the Fragrance Fidelity Index (FFI) reference scale

Swatch treatment	Conc. of ethyl vanillin	FFI
Clean fabric swatch w/ 13 µL ethyl vanillin	1000 ppm ethyl vanillin	3
Clean fabric swatch w/ 13 µL ethyl vanillin	120 ppm ethyl vanillin	2
Clean fabric swatch w/ 13 µL ethyl vanillin	25 ppm ethyl vanillin	1
Clean fabric swatch NIL ethyl vanillin	NIL ethyl vanillin	0

Making swatches treated with the test material

A clean swatch is treated with 13 µL of a known concentration of a test sample material resulting in an about 1 cm of the solution on the clean swatch. Just like the reference swatches, the test

sample material swatch is dried in a vented hood for 30 minutes and then wrapped in aluminum foil to prevent contamination. The test material swatches and the FFI reference swatches should be made within 2 hours of each other. The test material swatch must be used within 0.5 to 12 hours and discarded after 12 hours.

Assigning the FFI to the test material

At least two perfumers/ expert graders are used to assign an FFI grade to a test sample. The perfumer/ expert grader smells the test sample swatch by holding that swatch 1 inch from their nose with their nose centered over the area where the test sample was pipetted on to the fabric and then assigns the test sample an FFI grade using the FFI reference scale anchor swatches as references. The test sample swatch is assigned an FFI grade at or between numbers on the FFI scale shown in Table 9. In cases where the test sample material is graded greater than 3, the test material is not a blocker material or the concentration of the material needs to be lowered and reevaluated to determine if a lower level has a malodor blocker functionality.

Method for assigning the BI to test sample

The first step in the method for assigning a BI to a test sample material on the BI reference scale is to create the BI reference swatches. The swatches for the scale are created by treating clean fabrics swatches with a known amount of a known volume of isovaleric acid solution at a known concentration. Fabric swatches for this test are white knit polycotton (4 inch X 4 inch) swatches from EMC ordered as PC 50/50. The supplier is instructed to strip the swatches first, stripping involves washing twice with a fragrance-free detergent and rinsing three times.

Making the BI reference swatches

Make one solution of 0.08% isovaleric acid using 50%/ 50% EtOH/water as the diluent. The BI scale contains one clean swatch with no malodor applied. Three other swatches each have a different volume of the 0.08% isovaleric acid applied. Pipette 2 µL of the 0.08% isovaleric acid solution to one clean swatch, 5 µL of the 0.08% isovaleric acid solution to the next swatch and 20 µL of isovaleric acid to the final clean swatch. These solutions are pipetted to the middle of the swatches. This will create a sensory scale of three swatches with three different odor levels based on the volume of the 0.08% isovaleric acid solution pipetted onto the swatch. After drying for 30 minutes in a vented hood, the swatches are wrapped in aluminum foil to prevent odor contamination to the treated swatch. A clean untreated swatch is also included as the lowest

anchor point of reference for malodor strength on the BI scale. The BI reference scale swatches should be used within 0.5 to 12 hours and discarded after 12 hours. The swatches are used as scale anchor points when graders evaluate a test sample(s) and are assigned a Blocker Index (BI) as show in Table 12.

At least four perfumers/ expert graders are used to rank the isovaleric acid swatches in the BI scale. The perfumer/ expert grader needs to demonstrate adequate discrimination on the scale. The perfumer/ expert grader is asked to rank order swatches according to a scale between 0 and 3. The panel of graders must demonstrate statistical differences between the swatches as seen in Table 10.

Table 10 Results from six perfumers/ expert graders to create the BI scale.

BI	Swatch	Expert Grader						
		1	2	3	4	5	Ave	Std Dev.
0	Control: stripped swatch NIL isovaleric acid	0	0	0	0	0	0	0
1	Stripped swatch with 2 µL 0.08% isovaleric acid	0.5	2.0	1.0	1.0	0.5	1.0	0.5
2	Stripped swatch with 5 µL 0.08% isovaleric acid	2.0	2.5	2.0	2.0	2.0	2.1	0.2
3	Stripped swatch with 20 µL 0.08% isovaleric acid	3.0	3.0	3.0	3.0	2.5	2.8	0.2

The expert graders must demonstrate a full range of 2.5 over the 4 swatches to be acceptably discriminating. The panel of expert graders must also demonstrated the ability to statistically discriminate between swatches in the scale. Expert grader #2 did not demonstrate the ability to discriminate between the swatches and is eliminated from the panel, see Table 11.

Table 11 This table demonstrates acceptable expert graders with an acceptable range and the panel meets the requirement for discriminating statistics.

BI	Swatch	Expert Grader				Ave	Std Dev.
		1	3	4	5		
0	Control: stripped swatch NIL isovaleric acid	0	0	0	0	0	0
1	Stripped swatch with 2 μL 0.08% isovaleric acid	0.5	1.0	1.0	0.5	0.8	0.3
2	Stripped swatch with 5 μL 0.08% isovaleric acid	2.0	2.0	2.0	2.0	2.0	0
3	Stripped swatch with 20 μL 0.08% isovaleric acid	3.0	3.0	3.0	2.5	2.9	0.2

The reference swatches represent the 0, 1, 2, and 3 BIs on the BI reference scale, Table 12. The expert grader should familiarizes him/herself with the strength of the odor on the BI reference swatches by sniffing each one starting at 0 (the lowest odor strength) and ending at 3 (the highest odor strength). This should be done prior to evaluating the swatch treated with the test material.

Table 12 Swatch treatments comprising the Blocker Index (BI) reference scale.

Swatch/ treatment	Wt of isovaleric acid	BI
Clean fabric swatch w/ 20 μL 0.08% isovaleric acid	16 mg isovaleric acid	3
Clean fabric swatch w/ 5 μL 0.08% isovaleric acid	4 mg isovaleric acid	2
Clean fabric swatch w/ 2 μL 0.08% isovaleric acid	1.6 mg isovaleric acid	1
Clean fabric swatch NIL isovaleric acid	NIL isovaleric acid	0

Making the malodorous swatch and treating it with a test material

To evaluate the BI, the test material is applied to a malodorous swatch to determine how well the test material blocks the malodor. The malodorous swatch is made by treating a clean swatch with 20 μL of a 0.08% solution of isovaleric acid. Dry the malodorous swatch treated with isovaleric acid in a vented hood for 30 minutes. After drying the malodorous swatch a known concentration of test material solution, between 1 ppm and 100 ppm is pipetted onto the malodorous swatch. Apply the test material solution right on top of the spot where the isovaleric acid solution was applied making an about 1 cm diameter spot. Just like the BI reference

swatches, the isovaleric acid + test material swatch is dried in a vented hood for 30 minutes and then wrapped in aluminum foil to prevent contamination. The isovaleric acid + test material swatches and the BI reference swatches should be made within 2 hours of each other. The isovaleric acid + test material swatch must be used between 1-12 hours just like the reference swatches. It is sometimes necessary to evaluate several levels of the test material between about 1 and about 100 ppm to determine the BI.

Assigning the BI to the test material

At least two perfumers/ expert graders are used to assign the BI to the test sample. The expert grader smells the isovaleric acid + test material swatch by holding that swatch one inch from their nose with their nose centered over the area where the test sample was pipetted on to the fabric and then assigns the isovaleric acid + test material swatch a BI based on ranking its odor strength against the odor strength of the swatches in the BI reference scale. The test sample swatch is assigned a BI at or between numbers on the BI in table. In cases where the isovaleric acid + test material swatch odor is greater than 3 on the BI reference scale, this indicates the material is not a blocker or the concentration of the test material needs to be lowered to achieve its blocker functionality.

Malodor Reduction Compounds with FFI and BI Grades based on the aforementioned

Table Ref #	CAS#	log P	Name	Conc	FFI	BI
281	54830-99-8	3.11	3a,4,5,6,7,7a- hexahydro-4,7-methano-1H-indenyl acetate	10 ppm	0	2.0
				50 ppm	0.5	2.0
677	139504-68-0	3.75	1-((2-(tert-butyl)cyclohexyl)oxy)butan-2-ol	10 ppm	0	2.3
				50 ppm	1.8	2.0
962	55066-48-3	3.17	3-methyl-5-phenylpentan-1-ol	10 ppm	0	2.3
				50 ppm	0.5	1.7
261	173445-65-3	3.29	3-(3,3-dimethyl-2,3-dihydro-1H-inden-5-yl)propanal	10 ppm	0	1.8
				50 ppm	1.3	1.3

1139	87731-18-8	2.11	(Z)-cyclooct-4-en-1-yl methyl carbonate	10 ppm	0	2.0
				50 ppm	1.0	2.7
	4430-31-3	1.43	3,4,4a,5,6,7,8,8a-octahydrochromen-2-one	10 ppm	0	2.0
				50 ppm	0	2.0
204	40379-24-6	3.89	7-methyloctyl acetate	10 ppm	0	2.0
				50 ppm	0	2.7
1005	93981-50-1	5.59	ethyl (2,3,6-trimethylcyclohexyl) carbonate	50 ppm	0.5	2.6
391	106-33-2	5.73	Ethyl laurate	50 ppm	0.3	2.2
1148	1139-30-6	4.06	Caryophyllene Oxide	50 ppm	0.5	2.3
524	13877-91-3 3338-55-4	4.31	3,7-Dimethyl-1,3,6-Octatriene(cis-β ocimene 70%)	50 ppm	0	2.8
1149	23787-90-8	4	1,3,4,6,7,8alpha- hexahydro-1,1,5,5-tetramethyl-2H-2,4alpha-methanophtalen-8(5H)-one	10 ppm	0	1.5
				50 ppm	0.8	2.3
	112-42-5	4.62	Undecanol	50 ppm	0.8	2.3
174	112-53-8	5.17	1-dodecanol	50 ppm	0.5	2.3
	98-52-2	2.78	4-tert-butyl cyclohexane	10 ppm	0	2.0
				50 ppm	0.3	2.0
109	112-39-0	6.41	Methyl palmitate	10 ppm		2.0

Malodor control compounds with improved performance at lower levels.

Below are some non-limiting examples of preferred behavior by which the malodor control compound gives improved malodor control at lower concentration. These nonlimiting data provide additional compelling data that malodor is being blocked, not masked.

Table Ref #	CAS#	Name	Conc	FFI	BI
N/A	68912-13-0	8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate	10 ppm	0	1.5
			50 ppm	0	2.2
N/A	TBD	4,8-dimethyl-1-(methylethyl)-7-oxybiciclo [4.3.0]nonane	10 ppm		2.0
			50 ppm	0.3	2.2

Retesting malodor reduction compounds at lower levels.

The example below demonstrates that while a malodor control compound could fail to demonstrate odor blocking (BI > 2.5) at a higher concentration it should be retested at a lower concentration to determine if it passes.

Table Ref #	CAS #	Name	Conc	FFI	BI
N/A	173445-65-3	1H-Indene-5-propanal, 2,3-dihydro-3,3-dimethyl-	10 ppm	0	1.5
			50 ppm	0.5	2.7

Example 1 Compositions comprising malodor reduction compounds.

In the present invention blends enable more potent malodor reduction because blends are useful at a higher % of the product composition before becoming olfactively noticeable. Below are non-limiting examples of malodor reduction compounds.

Component	CAS#	% wt Active				
		A	B	C	D	E
2,2,8,8-tetramethyl-octahydro-1H-2,4a-methanonapthalene-10-one	29461-14-1	35-45	15-25	5-20	10 -30	15-25
1H-Indene-ar-propanal,2,3-dihydro-1,1-dimethyl-	300371-33-9	10-20	1-30	NIL	5 - 10	1-5
Hexadecanoic acid, (2E)-3,7-dimethyl-2,6-octadien-1-yl ester	3681-73-0	35-45	10-25	NIL	30 -40	35-50
1-Pentanol-3-methyl-5-phenyl	55066-48-3	10-20	10-25	2-10	5 - 17	10
4,7-Methano-1H-inden-5-ol, 3a,4,5,6,7,7a-hexahydro-, 5-acetate	171102-41-3	0-5	10-25	NIL	1 - 6	1-5
4,8-dimethyl-1-(methylethyl)-7-oxybiciclo [4.3.0]nonane	N/A	0-5	NIL	NIL	NIL	1-5
(3Z)-3,7-dimethylocta-1,3,6-triene	3338-55-4	NIL	NIL	10-20	2 -5	NIL
1H-Indene-5-propanal, 2,3-dihydro-3,3-dimethyl-	173445-65-3	NIL	NIL	NIL	7.5 - 16	1-15
3,4,4a,5,6,7,8,8a-octahydrochromen-2-one	4430-31-3	NIL	NIL	NIL	3 - 7	1-15

1-(2-tert-butylcyclohexyl)oxybutan-2-ol	139504-68-0	NIL	NIL	NIL	0.25 - 1.5	NIL
ethyl (2,3,6-trimethylcyclohexyl) carbonate	93981-50-1	NIL	NIL	15 - 30	NIL	2
benzyl 2-hydroxypropanoate	2051-96-9	NIL	NIL	2-5	NIL	NIL
(3,5-dimethylcyclohex-3-en-1-yl)methanol	67634-16-6	NIL	NIL	5-30	NIL	NIL
2-Dodecanol	10203-28-8	NIL	0.25-1	NIL	0.5-3	NIL

EXAMPLE 2 Compositions comprising malodor reduction compounds.

		% wt Active					
Ingredient	**CAS #**	**A**	**B**	**C**	**B**	**D**	**E**
(E)-1-(2,6,6-trimethyl-1-cyclohex-2-enyl)pent-1-en-3-one	127-42-4	4	8	2	8	3	2
ethyl dodecanoate	106-33-2	NIL	1	NIL	3	NIL	NIL
3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-1-yl propanoate	68912-13-0	8	30	1	4	1	3.5
[1R-(1R*,4R*,6R*,10S*)]-4,12,12-trimethyl-9-methylene-5-oxatricyclo[8.2.0.04,6]dodecane	1139-30-6	NIL	0.3	2	0.5	NIL	0.5
(8E)-cyclohexadec-8-en-1-one	3100-36-5	NIL	5	NIL	7	NIL	NIL
3,5,5-trimethylhexyl acetate	58430-94-7	25	15	50	35	60	56

ethyl (2,3,6-trimethylcyclohexyl) carbonate	93981-50-1	NIL	1	NIL	5	NIL	NIL
2,4-dimethyl-4,4a,5,9b-tetrahydroindeno[1,2-d][1,3]dioxine	27606-09-3	25	10	15	15	16	15
2,2,7,7-tetramethyltricyclo[6.2.1.01,6] undecan-5-one	23787-90-8	8	9	5	7	5	5
(3,5-dimethylcyclohex-3-en-1-yl)methanol	67634-16-6	NIL	0.7	NIL	0.5	NIL	NIL
3-(7,7-dimethyl-4-bicyclo[3.1.1]hept-3-enyl)-2,2-dimethylpropanal	33885-52-8	30	20	25	15	15	18
Total		100	100	100	100	100	100

EXAMPLE 3 Malodor reduction composition.

		% wt Active		
Ingredient	**CAS #**	**A**	**B**	**C**
5-Cyclohexadecen-1-One	37609-25-9	15.0	2.00	2.00
decahydro-2,2,7,7,8,9,9-heptamethylindeno(4,3a-b)furan	476332-65-7	0.005	0.01	0.01
2,3-Dihydro-5,6-dimethoxy-2-(4-piperidinylmethylene)-1H-inden-1-one	33704-61-9	0.3	0.5	0.5
Cedryl Methyl Ether	19870-74-7	6.0	10.0	4.0
Trans-4-Decenal	65405-70-1	0.005	0.002	0.002
Decyl Aldehyde	112-31-2	3.74	2.0	2.0
3- methyl cyclopentadecenone	63314-79-4	0.4	1.0	1.0
Diphenyl Oxide	101-84-8	0.5	1.0	1.0
3a,4,5,6,7,7a- hexahydro-4,7-methano-1H-indenyl acetate	54830-99-8	5.0	8.0	8.0

3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-1-yl propanoate	68912-13-0	6.0	8.0	8.0
2-(5-methyl-2-propan-2-yl-8-bicyclo[2.2.2]oct-5-enyl)-1,3-dioxolane	68901-32-6	10.0	15.0	15.0
(E)-3,7-dimethyl-2,6-octadienylhexadecanoate	3681-73-0	10.0	10.0	16.0
Iso Nonyl Acetate	58430-94-7	6.65	8.0	3.0
2,2,7,7-tetramethyltricyclo[6.2.1.01,6]undecan-5-one	23787-90-8	10.0	8.0	8.0
(1-Methyl-2-(1,2,2-trimethylbicyclo[3.1.0]-hex-3-ylmethyl)cyclopropyl)methanol	198404-98-7	0.1	0.3	0.3
Lauric Aldehyde	112-54-9	0.625	1.0	0.7
Methyl Iso Eugenol	93-16-3	18.000	10.0	13.0
Methyl hexadecanoate	112-39-0	3.000	10.0	12.0
2,3-dihydro-1,1-1H-dimethyl-indene-ar-propanal	300371-33-9	0.400	0.0	0.3
4-tert-butylcyclohexanol	98-52-2	0.400	0.1	0.1
2-isobutyl-4-hydroxy-4-methyltetrahydropyran	63500-71-0	1.600	2.0	2.0
Undecyl Aldehyde	112-44-7	1.725	2.888	1.888
Undecylenic Aldehyde	112-45-8	0.550	0.2	1.2
Total		100	100.0	100.0

Examples 4 Dryer Added Fabric Softener Sheet Composition

An example of a dryer added fabric softener sheet composition prepared with malodor reduction composition, according to the compositions shown in Example 1.

	Example 10.1	**Example 10.2**	**Example 10.3**	**Example 10.4**
Ingredient	**Wt% Active**	**Wt% Active**	**Wt% Active**	**Wt% Active**
DEQA[1]	0 - 50	50	---	---
DEQA[2]	0 - 50	---	---	30
DTDMAMS[3]	0 - 50	---	50	---

7018FA[4]	0 - 50	---	50	---
TS-20[5]	0 - 15	---	---	15
SMS[6]	0 - 15	---	---	15
SDASA[7]	0 - 19	25	---	19
TPED[8]	---	3	---	---
Complex[9]	0 - 16.5	16.5	---	8.0
Clay[10]	Balance	Balance	Balance	Balance
Free (Neat) Perfume	0 - 4	0 -1.5	0 - 3	0 - 1.5
Free (Neat) malodor reducing composition	0 to 0.5	0 to 0.5	0 - 0.5	0 – 0.5
Encapsulated Perfume/malodor reducing composition [11]	0 – 2	0 – 2	0 – 2	0 – 2
Encapsulated Perfume[11]	0 – 4	0 – 4	0 – 2	0 – 2
Encap. malodor reducing composition[11]	0 – 4	0 – 2	0 – 2	0 – 2
Active Weight (g/sheet)	2.4	2.4	1.9	2.4

(1) DEQA[1]: Di(soft tallowoyloxyethyl)dimethylammonium methyl sulfate with 25%> 7018 FA, as described below, as solvent

(2) DEQA[2]: Di(soft tallowoyloxyethyl)hydroxyethylmethylammoniun methyl sulfate with 18%» partially hydrogenated tallow fatty acid solvent

(3) DTDMAMS: Di(hydrogenated tallowalkyl)dimethylammonium methyl sulfate

(4) 7018FA: 70:30 Stearic Acid:Palmitic Acid (IV=0) Industrene 7018 sold by Witco

(5) TS-20: Polyoxyethylene-20 Sorbitan Tristearate (Glycosperse TS-20, sold by Lonza

(6) SMS: Sorbitan Mono Stearate

(7) SDASA: 1 :2 ratio of stearyl dimethyl amine: triple pressed stearic acid

(8) TPED: N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine (Quadrol, sold by BASF)

(9) Complex: Beta-Cyclodextrin/Perfume Complex

(10) Clay: Calcium Bentonite Clay (Bentonite L sold by Southern Clay Products

Free (Neat) Perfume

(11) PMC is a friable shell. About 50% water by weight of the PMC (including encapsulated perfume and/ or blocker) is assumed. The micro capsule encapsulates perfume, malodor reduction composition, or combinations thereof with the total internal phase at about 32% active

The compositions of Example 6 are mixed homogeneously and impregnated onto a non- woven polyester sheet having dimensions of about 6% in x 12" (about 17.1 cm x 30.5 cm) and weighing about 1 gram.

The resulting dryer added fabric softener sheet product when added to an automatic dryer is effective at reducing malodor on the clothing.

The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as "40 mm" is intended to mean "about 40 mm."

Every document cited herein, including any cross referenced or related patent or application, is hereby incorporated herein by reference in its entirety unless expressly excluded or otherwise limited. The citation of any document is not an admission that it is prior art with respect to any invention disclosed or claimed herein or that it alone, or in any combination with any other reference or references, teaches, suggests, or discloses any such invention. Further, to the extent that any meaning or definition of a term in this document conflicts with any meaning or definition of the same term in a document incorporated by reference, the meaning or definition assigned to that term in this document shall govern.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is, therefore, intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

CLAIMS

What is claimed:

1. An article comprising

a) a substrate, preferably a flexible substrate, more preferably a flexible substrate that is a sheet; preferably said substrate comprises a fabric softening active, preferably said fabric softening active coats all or a portion of said substrate;

b) a sum total from 0.00025% to 1%, preferably from 0.0025% to 0.1%, more preferably from 0.005% to 0.075%, most preferably from 0.01% to 0.05% of 1 or more malodor reduction materials, preferably 1 to 20 malodor reduction materials, more preferably 1 to 15 malodor reduction materials, most preferably 1 to 10 malodor reduction materials, each of said malodor reduction materials having a MORV of at least 0.5, preferably from 0.5 to 10, more preferably from 1 to 10, most preferably from 1 to 5, and preferably each of said malodor reduction materials having a Universal MORV, said sum total of malodor reduction materials having a Blocker Index of less than 3, more preferable less than 2.5 even more preferably less than 2 and still more preferably less than 1 and most preferably 0 and/or a Blocker Index average of 3 to 0.001.

2. An article according to Claim 1, wherein said malodor reduction materials have a Fragrance Fidelity Index of from less than 3, more preferable less than 2.5 even more preferably less than 2 and still more preferably less than 1 and most preferably 0 or a Fragrance Fidelity Index average of 3 to 0.001.

3. An article according to any preceding claim, said article comprising a perfume and having a weight ratio of parts of malodor reduction composition to parts of perfume of from 1:20,000 to 3000:1, preferably from 1:10,000 to 1,000:1, more preferably 5,000:1 to 500:1 and most preferably from 1:15 to 1:1.

4. An article according to any preceding claim, comprising one or more malodor reduction materials having a log P greater than 3, preferably greater than 3 but less than 8, preferably said one or more malodor reduction materials are selected from the group consisting of 2-ethylhexyl (Z)-3-(4-methoxyphenyl)acrylate; 2,4-dimethyl-2-(5,5,8,8-tetramethyl-5,6,7,8-tetrahydronaphthalen-2-yl)-1,3-dioxolane; 1,1-dimethoxynon-2-yne; 3-methoxy-7,7-dimethyl-

10-methylenebicyclo[4.3.1]decane; methoxycyclododecane; 1,1-dimethoxycyclododecane; (Z)-tridec-2-enenitrile; (2-hydroxy-4-methoxyphenyl)(phenyl)methanone; 2,4a,5,8a-tetramethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-yl formate; 1,8-dioxacycloheptadecan-9-one; 4-(tert-pentyl)cyclohexan-1-one; 2-methoxy-1,1'-biphenyl; 3a,5,6,7,8,8b-hexahydro-2,2,6,6,7,8,8-heptamethyl-4H-indeno(4,5-d)-1,3-dioxole; 7-isopropyl-8,8-dimethyl-6,10-dioxaspiro[4.5]decane; octyl furan-2-carboxylate; octyl acetate; 2-heptyl-4-methyl-1,3-dioxolane; octanal; 1,1-dimethoxyoctane; 7-methyl-3-methyleneocta-1,6-diene; 2-methyl-6-methyleneoct-7-en-2-yl acetate; tetradecanal; tetradecanenitrile; 2,2,6,8-tetramethyl-1,2,3,4,4a,5,8,8a-octahydronaphthalen-1-ol; 2-((1S,5R)-6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)ethyl acetate; (4R,4aS,6R)-4,4a-dimethyl-6-(prop-1-en-2-yl)-4,4a,5,6,7,8-hexahydronaphthalen-2(3H)-one; nonan-1-ol; nonanal; 12-methyl-14-tetradec-9-enolide; N-ethyl-2-isopropyl-5-methylcyclohexane-1-carboxamide; 2-methoxynaphthalene; (E)-3,7,11-trimethyldodeca-1,6,10-trien-3-ol; (Z)-3,7-dimethylocta-2,6-dien-1-ol; methyl (E)-non-2-enoate; 10-isopropyl-2,7-dimethyl-1-oxaspiro[4.5]deca-3,6-diene; 2-(2-(4-methylcyclohex-3-en-1-yl)propyl)cyclopentan-1-one; (E)-4-(2,2,3,6-tetramethylcyclohexyl)but-3-en-2-one; (4-(4-methylpent-3-en-1-yl)cyclohex-3-en-1-yl)methyl acetate; 2-(tert-butyl)-4,5,6-trimethyl-1,3-phenylene dinitrite; 1,7-dioxacycloheptadecan-8-one; 1-(4-(tert-butyl)-2,6-dimethyl-3,5-dinitrophenyl)ethan-1-one; 1-(tert-butyl)-2-methoxy-4-methyl-3,5-dinitrobenzene; 3-methylcyclopentadecan-1-one; (E)-3-methylcyclopentadec-4-en-1-one; 1-(4-isopropylcyclohexyl)ethan-1-ol; (E)-dec-5-enoic acid; methyl non-2-ynoate; 2-methyldecanal; 6,6-dimethoxy-2,5,5-trimethylhex-2-ene; methyl stearate; 1,1-dimethoxy-2-methylundecane; undecan-2-one; 2-methylundecanal; methyl tetradecanoate; methyl (9Z,12Z)-octadeca-9,12-dienoate; methyl palmitate; 1-methyl-2-phenoxybenzene; 1-allyl-4-methoxybenzene; 1-(naphthalen-2-yl)ethan-1-one; methyl oct-2-ynoate; methyl 2,6,6-trimethylcyclohex-2-ene-1-carboxylate; 7-isopropyl-10-methyl-1,5-dioxaspiro[5.5]undecan-3-ol; 3-(3-(tert-butyl)phenyl)-2-methylpropanal; (E)-4-(4,8-dimethylnona-3,7-dien-1-yl)pyridine; (E)-trideca-3,12-dienenitrile; 2,2-dimethyl-3-(m-tolyl)propan-1-ol; 8-isopropyl-6-methylbicyclo[2.2.2]oct-5-ene-2-carbaldehyde; (S)-1-methyl-4-(prop-1-en-2-yl)cyclohex-1-ene; 3,7-dimethylocta-1,6-dien-3-yl octanoate; 3,7-dimethylocta-1,6-dien-3-yl isobutyrate; 3,7-dimethylocta-1,6-dien-3-yl benzoate; 3,7-dimethylocta-1,6-dien-3-yl 2-aminobenzoate; (2Z,6E)-3,7-dimethylnona-2,6-dienenitrile; 3-(4-methylcyclohex-3-en-1-yl)butanal; (2,5-dimethyl-1,3-dihydroinden-2-yl)methanol; 3-(4-(tert-butyl)phenyl)-2-methylpropanal; dodecan-1-ol; dodecyl acetate; dodecanoic acid; 5-hexyl-5-methyldihydrofuran-2(3H)-one; dodecanal; 4-(1-ethoxyvinyl)-3,3,5,5-tetramethylcyclohexan-1-

one; ((3S,3aR,6R,8aS)-7,7-dimethyl-8-methyleneoctahydro-1H-3a,6-methanoazulen-3-yl)methanol; 5-(sec-butyl)-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane; (1-methyl-2-((1,2,2-trimethylbicyclo[3.1.0]hexan-3-yl)methyl)cyclopropyl)methanol; 2-propylheptanenitrile; 2-hexylcyclopentan-1-one; 2,6,9,10-tetramethyl-1-oxaspiro(4.5)deca-3,6-diene; isopropyl palmitate; isopropyl tetradecanoate; isopropyl dodecanoate; (E)-cyclohexadec-8-en-1-one; (2S,5S)-2-isopropyl-5-methylcyclohexan-1-one; 2-hexylcyclopent-2-en-1-one; (2S,5S)-2-isopropyl-5-methylcyclohexan-1-one; 4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbaldehyde; (Z)-1-(benzyloxy)-2-methoxy-4-(prop-1-en-1-yl)benzene; 1-((2S,3S)-2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethan-1-one; 6-(sec-butyl)quinoline; 2-(cyclohexyloxy)-1,7,7-trimethylbicyclo[2.2.1]heptane; (1R,2R,4S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl propionate; (1S,2S,4S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl isobutyrate; 4-((2R)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl)cyclohexan-1-ol; (1R,4S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl acetate; 2-(4-isopropylcyclohexa-1,4-dien-1-yl)ethyl formate; isopentyl (E)-undec-6-enoate; isopentyl dodecanoate; (E)-oxacycloheptadec-10-en-2-one; (E)-non-2-enenitrile; (E)-8-(1H-indol-1-yl)-2,6-dimethyloct-7-en-2-ol; 8,8-di(1H-indol-1-yl)-2,6-dimethyloctan-2-ol; 2-cyclododecylpropan-1-ol; 3-methyl-5-phenylpentanenitrile; 2,3-dihydro-3,3-dimethyl-1H-indene-5-propanal; 3-(3,3-dimethyl-2,3-dihydro-1H-inden-5-yl)propanal; hexyl octanoate; hexyl hexanoate; (Z)-2-benzylideneoctanal; hexyl benzoate; (Z)-hex-1-en-1-yl (Z)-2-methylbut-2-enoate; (E)-3,7-dimethylocta-2,6-dien-1-yl palmitate; oxacycloheptadecan-2-one; ethyl (1R,2R,3R,4R)-3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate; 2-(1-(3,3-dimethylcyclohexyl)ethoxy)-2-methylpropyl propionate; (E)-oxacyclohexadec-13-en-2-one; 6-butyl-2,4-dimethyl-3,6-dihydro-2H-pyran; 2-((3S,5R,8S)-3,8-dimethyl-1,2,3,4,5,6,7,8-octahydroazulen-5-yl)propan-2-ol; 1-(2,6,6-trimethylcyclohex-2-en-1-yl)pentan-3-one; ethyl 2-ethyl-6,6-dimethylcyclohex-2-ene-1-carboxylate; (1Z,5Z)-1,5-dimethyl-8-(propan-2-ylidene)cyclodeca-1,5-diene; (1E,6E)-8-isopropyl-1-methyl-5-methylenecyclodeca-1,6-diene; (E)-3,7-dimethylocta-2,6-dien-1-yl 2-phenylacetate; (E)-3,7-dimethylocta-2,6-dien-1-yl 2-phenylacetate; (6E,10E)-3,7,11,15-tetramethylhexadeca-1,6,10,14-tetraen-3-ol; (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)cyclopentan-1-one; 5-heptyldihydrofuran-2(3H)-one; 1-methyl-4-(propan-2-ylidene)cyclohexyl acetate; 1-methyl-4-(propan-2-ylidene)cyclohexan-1-ol; (1R,4aR,8aS)-1-isopropyl-7-methyl-4-methylene-1,2,3,4,4a,5,6,8a-octahydronaphthalene; (Z)-4-(2,2-dimethyl-6-methylenecyclohexyl)but-3-en-2-one; (4aS,9aR)-3,5,5,9-tetramethyl-2,4a,5,6,7,9a-hexahydro-1H-benzo[7]annulene; (1R,3aR,4R,7R)-1,4-dimethyl-7-(prop-1-en-2-yl)-1,2,3,3a,4,5,6,7-octahydroazulene; 2-((2R,4aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,7-

octahydronaphthalen-2-yl)propan-2-ol; 5-octyldihydrofuran-2(3H)-one; (Z)-1-(2,2-dimethyl-6-methylenecyclohexyl)but-2-en-1-one; (1R,4aS,8aS)-1-isopropyl-7-methyl-4-methylene-1,2,3,4,4a,5,6,8a-octahydronaphthalene; 1-(3,3-dimethylcyclohexyl)pent-4-en-1-one; 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopenta[g]isochromene; furan-2-ylmethyl octanoate; furan-2-ylmethyl hexanoate; furan-2-ylmethyl heptanoate; 2-methyldecanenitrile; 8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate; ethyl (3aR,4S,7R,7aR)-octahydro-3aH-4,7-methanoindene-3a-carboxylate; (6-isopropyl-9-methyl-1,4-dioxaspiro[4.5]decan-2-yl)methanol; undec-10-enenitrile; 3-(2-ethylphenyl)-2,2-dimethylpropanal; (E)-4,8-dimethyldeca-4,9-dienal; (E)-4-((3aR,4R,7R,7aR)-1,3a,4,6,7,7a-hexahydro-5H-4,7-methanoinden-5-ylidene)-3-methylbutan-2-ol; 8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl acetate; 3-(4-ethylphenyl)-2,2-dimethylpropanenitrile; 2-heptylcyclopentan-1-one; 1-ethoxyethoxy Cyclododecane; 3-cyclohexene-1-carboxylic acid, 2,6,6-trimethyl-, methyl ester; (2E,6E)-3,7,11-trimethyldodeca-2,6,10-trien-1-yl acetate; (2E,6E)-3,7,11-trimethyldodeca-2,6,10-trien-1-ol; oxacyclohexadecan-2-one; (E)-cyclopentadec-4-en-1-one; 1-cyclopentadec-4-en-1-one; 1,4-dioxacycloheptadecane-5,17-dione; ethyl undec-10-enoate; ethyl palmitate; ethyl nonanoate; ethyl tetradecanoate; (E)-3,7-dimethylnona-1,6-dien-3-ol; ethyl dodecanoate; ethyl decanoate; ethyl 6,6-dimethyl-2-methylenecyclohex-3-ene-1-carboxylate; 6-ethyl-2,10,10-trimethyl-1-oxaspiro[4.5]deca-3,6-diene; 2-((1R,3S,4S)-4-methyl-3-(prop-1-en-2-yl)-4-vinylcyclohexyl)propan-2-ol; (E)-3-methyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pent-4-en-2-ol; (E)-4-((3aS,7aS)-octahydro-5H-4,7-methanoinden-5-ylidene)butanal; 1,1-dimethoxydodecane; (R)-1-methyl-4-(prop-1-en-2-yl)cyclohex-1-ene; 7,9-dimethylspiro[5.5]undecan-3-one; oxydibenzene; diphenylmethane; 2-methyl-1-phenylpropan-2-yl butyrate; octahydro-1H-4,7-methanoinden-5-yl acetate; 2-methyl-5-(prop-1-en-2-yl)cyclohexyl acetate; 3,7-dimethyloct-6-en-3-ol; dibutylsulfane; 1,2-diphenylethane; 6-hexyltetrahydro-2H-pyran-2-one; (3R,4R)-1-isopropyl-4-methyl-3-(prop-1-en-2-yl)-4-vinylcyclohex-1-ene; (3S,3aS,5R)-3,8-dimethyl-5-(prop-1-en-2-yl)-1,2,3,3a,4,5,6,7-octahydroazulene; 6-heptyltetrahydro-2H-pyran-2-one; (1S,8aR)-4,7-dimethyl-1-(propan-2-yl)-1,2,3,5,6,8a-hexahydronaphthalene; (Z)-1-((1R,2S)-2,6,6-trimethylcyclohex-3-en-1-yl)but-2-en-1-one; (1S,8aS)-1-isopropyl-4,7-dimethyl-1,2,3,5,6,8a-hexahydronaphthalene; 3,7,7-trimethylbicyclo[4.1.0]hept-3-ene; dec-9-en-1-ol; decyl propionate; 1,1-diethoxydecane; 1-cyclohexylethyl (E)-but-2-enoate; 3-(4-isopropylphenyl)-2-methylpropanal; cyclotetradecane; cyclopentadecanone; cyclohexyl 2-hydroxybenzoate; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl butyrate; 8,8-dimethyl-1,2,3,4,5,6,7,8-octahydronaphthalene-2-carbaldehyde;

3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-5-yl isobutyrate; (5R,6R)-3,6-dimethyl-5-(prop-1-en-2-yl)-6-vinyl-4,5,6,7-tetrahydrobenzofuran; 2-(3-phenylpropyl)pyridine; dodecanenitrile; (E)-cycloheptadec-9-en-1-one; 3-(4-methylcyclohex-3-en-1-yl)but-3-en-1-yl acetate; 3-(4-methylcyclohex-3-en-1-yl)butan-1-ol; (E)-3-methyl-5-phenylpent-2-enenitrile; (E)-2-(2,6-dimethylhepta-1,5-dien-1-yl)-4-methyl-1,3-dioxolane; (E)-1,1-dimethoxy-3,7-dimethylocta-2,6-diene; (E)-1,1-diethoxy-3,7-dimethylocta-2,6-diene; (E)-3,7-dimethylocta-1,3,6-triene; (E)-oxacycloheptadec-11-en-2-one; (Z)-dec-4-enal; (E)-hex-3-en-1-yl (E)-hex-3-enoate; (Z)-hex-3-en-1-yl 2-hydroxybenzoate; (Z)-hex-3-en-1-yl benzoate; (Z)-hex-3-en-1-yl 2-methylbutanoate; cinnamyl propionate; cinnamyl isobutyrate; cinnamyl cinnamate; hexadecan-1-ol; (E)-1-(2,6,6-trimethylcyclohex-2-en-1-yl)hepta-1,6-dien-3-one; 2-methyl-4-(2,6,6-trimethylcyclohex-1-en-1-yl)butanal; (3aR,5aR,9aR,9bR)-3a,6,6,9a-tetramethyldodecahydronaphtho[2,1-b]furan; 1,6-dioxacycloheptadecan-7-one; 1-(6-(tert-butyl)-1,1-dimethyl-2,3-dihydro-1H-inden-4-yl)ethan-1-one; (3R,3aR,6S,7S,8aS)-6-methoxy-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulene; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-3-yl formate; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-6-yl acetate; (4Z,8Z)-1,5,9-trimethyl-13-oxabicyclo[10.1.0]trideca-4,8-diene; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-6-ol; 5-methyl-1-(2,2,3-trimethylcyclopent-3-en-1-yl)-6-oxabicyclo[3.2.1]octane; 5-methyl-1-(2,2,3-trimethylcyclopent-3-en-1-yl)-6-oxabicyclo[3.2.1]octane; 1,1,2,3,3-pentamethyl-1,2,3,5,6,7-hexahydro-4H-inden-4-one; (Z)-4,11,11-trimethyl-8-methylenebicyclo[7.2.0]undec-3-en-5-yl acetate; (1S,2S,5R,8S)-4,4,8-trimethyltricyclo[6.3.1.02,5]dodecan-1-ol; 2-methyl-5-(prop-1-en-2-yl)cyclohex-2-en-1-yl acetate; octanenitrile; decanoic acid; decanal; 2,2-dimethyl-3-methylenebicyclo[2.2.1]heptane; ethyl 2-methyl-4-oxo-6-pentylcyclohex-2-ene-1-carboxylate; 2,6-di-tert-butyl-4-methylphenol; butyl stearate; butyl undec-10-enoate; 2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)butan-1-ol; 3-(4-(tert-butyl)phenyl)propanal; (1S,2S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl isobutyrate; 1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl acetate; 2-ethoxy-2,6,6-trimethyl-9-methylenebicyclo[3.3.1]nonane; (ethoxymethoxy)cyclododecane; (E)-1-methyl-4-(6-methylhept-5-en-2-ylidene)cyclohex-1-ene; 3,3,6,7-tetramethyloctahydro-2H-chromene; (5R,10R)-6,10-dimethyl-2-(propan-2-ylidene)spiro[4.5]dec-6-en-8-one; 1-methyl-4-(prop-1-en-2-yl)cyclohexyl acetate; (2Z,6E)-2,6-dimethyl-10-methylenedodeca-2,6,11-trienal; (R)-3-methylene-6-((S)-6-methylhept-5-en-2-yl)cyclohex-1-ene; (4aR,7R,8aS)-4a-methyl-1-methylene-7-(prop-1-en-2-yl)decahydronaphthalene; (Z)-2-methyl-5-((1S,2R,4R)-2-methyl-3-methylenebicyclo[2.2.1]heptan-2-yl)pent-2-en-1-ol; 6,6-dimethyl-2-

methylenebicyclo[3.1.1]heptane; 2-ethoxynaphthalene; (1S,4R,7R)-1,4,9,9-tetramethyl-1,2,3,4,5,6,7,8-octahydro-4,7-methanoazulene; (1aS,5aR,9aR)-1a,5,5,7-tetramethyl-1a,2,3,4,5,5a,8,9-octahydrobenzo[1,7]cyclohepta[1,2-b]oxirene; (R)-3,5,5,9-tetramethyl-2,4a,5,6,7,8-hexahydro-1H-benzo[7]annulene; (1S,4S)-1,4-dimethyl-7-(propan-2-ylidene)-1,2,3,4,5,6,7,8-octahydroazulene; (E)-7,11-dimethyl-3-methylenedodeca-1,6,10-triene; (1R,2S,6S,7S,8S)-8-isopropyl-1-methyl-3-methylenetricyclo[4.4.0.02,7]decane; (3R,3aS,7S,8aS)-3,8,8-trimethyl-6-methyleneoctahydro-1H-3a,7-methanoazulene; (1R,9S,Z)-4,11,11-trimethyl-8-methylenebicyclo[7.2.0]undec-4-ene; (S)-4-methyl-1-((S)-6-methylhept-5-en-2-yl)cyclohex-3-en-1-ol; benzyl dodecanoate; benzyl cinnamate; benzyl benzoate; 2'-isopropyl-1,7,7-trimethylspiro[bicyclo[2.2.1]heptane-2,4'-[1,3]dioxane]; 4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbonitrile; methyl (E)-2-((7-hydroxy-3,7-dimethyloctylidene)amino)benzoate; 4-methoxybenzyl 2-phenylacetate; pentyl (Z)-3-phenylacrylate; (3aR,5aS,9aS,9bR)-3a,6,6,9a-tetramethyldodecahydronaphtho[2,1-b]furan; (4aR,5R,7aS,9R)-2,2,5,8,8,9a-hexamethyloctahydro-4H-4a,9-methanoazuleno[5,6-d][1,3]dioxole; 2,5,5-trimethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-ol; 2,5,5-trimethyl-1,2,3,4,4a,5,6,7-octahydronaphthalen-2-ol; 1-((2-(tert-butyl)cyclohexyl)oxy)butan-2-ol; (3S,5aR,7aS,11aS,11bR)-3,8,8,11a-tetramethyldodecahydro-5H-3,5a-epoxynaphtho[2,1-c]oxepine; 2,2,6,6,7,8,8-heptamethyldecahydro-2H-indeno[4,5-b]furan; 2,2,7,7,8,9,9-heptamethyldecahydroindeno[4,3a-b]furan; 2-(sec-butyl)-1-vinylcyclohexyl acetate; (4R,4aS)-4,4a-dimethyl-6-(propan-2-ylidene)-4,4a,5,6,7,8-hexahydronaphthalen-2(3H)-one; 2-(4-methylcyclohex-3-en-1-yl)propan-2-yl propionate; (2Z,6E,9E)-2,6,10-trimethyldodeca-2,6,9,11-tetraenal; (2R,4aR,8aR)-4a,8-dimethyl-2-(prop-1-en-2-yl)-1,2,3,4,4a,5,6,8a-octahydronaphthalene; 1,7-dimethyl-7-(4-methylpent-3-en-1-yl)tricyclo[2.2.1.02,6]heptane; (E)-5-(2,3-dimethyltricyclo[2.2.1.02,6]heptan-3-yl)-2-methylpent-2-en-1-ol; (1R,3aS,7S,8aR)-1,4,9,9-tetramethyl-2,3,6,7,8,8a-hexahydro-1H-3a,7-methanoazulene; 1-(5,5-dimethylcyclohex-1-en-1-yl)pent-4-en-1-one; (1S,4aS,8aR)-1-isopropyl-4,7-dimethyl-1,2,4a,5,6,8a-hexahydronaphthalene; (R,Z)-1-(2,6,6-trimethylcyclohex-2-en-1-yl)pent-1-en-3-one; 1-methyl-4-(prop-1-en-2-yl)cyclohex-1-ene; (Z)-4-(2,5,6,6-tetramethylcyclohex-2-en-1-yl)but-3-en-2-one; (1Z,4E,8Z)-2,6,6,9-tetramethylcycloundeca-1,4,8-triene; (4aR,8S,9aS)-3,5,5,8-tetramethyl-9-methylene-2,4a,5,6,7,8,9,9a-octahydro-1H-benzo[7]annulene; (1aR,4R,4aR,7bS)-1,1,4,7-tetramethyl-1a,2,3,4,4a,5,6,7b-octahydro-1H-cyclopropa[e]azulene; 1,4-dimethyl-7-(prop-1-en-2-yl)-1,2,3,4,5,6,7,8-octahydroazulene; (3E,6E)-3,7,11-trimethyldodeca-1,3,6,10-tetraene; 7,7-dimethyl-2-methylenebicyclo[2.2.1]heptane; 2-((2R,4aR,8aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,8a-

octahydronaphthalen-2-yl)propan-2-ol; (R)-1-methyl-4-(6-methylhept-5-en-2-yl)benzene; (3aR,3bR,4S,7R,7aS)-4-isopropyl-7-methyl-3a,3b,4,5,6,7-hexahydro-1H-cyclopenta[1,3]cyclopropa[1,2]benzene; (1aS,2aR,3R,5aS,7R,7aR)-3,6,6,7a-tetramethyloctahydro-2H-2a,7-methanoazuleno[5,6-b]oxirene; (1R,4S,4aR,8aR)-4-isopropyl-1,6-dimethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-ol; (1S,4aR,8aR)-1-isopropyl-4,7-dimethyl-1,2,4a,5,6,8a-hexahydronaphthalene; (R)-2-((R)-4-methylcyclohex-3-en-1-yl)hex-5-en-2-ol; (Z)-1-methyl-4-(6-methylhepta-2,5-dien-2-yl)cyclohex-1-ene; 2,6-dimethyl-6-(4-methylpent-3-en-1-yl)bicyclo[3.1.1]hept-2-ene; (E)-2-benzylideneheptan-1-ol; (E)-2-benzylideneheptyl acetate; (Z)-(2-(diethoxymethyl)hept-1-en-1-yl)benzene; (E)-2-benzylideneheptanal; (1S,4aR,8aS)-1-isopropyl-4,7-dimethyl-1,2,4a,5,6,8a-hexahydronaphthalene; (3R,5aS,9aR)-2,2,5a,9-tetramethyl-3,4,5,5a,6,7-hexahydro-2H-3,9a-methanobenzo[b]oxepine; 1-methyl-4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbaldehyde; 3-methyl-1-phenylpentan-3-ol; 2,6,10-trimethylundecanal; allyl 3-cyclohexylpropanoate; (1aR,4aS,7R,7aR,7bS)-1,1,7-trimethyl-4-methylenedecahydro-1H-cyclopropa[e]azulene; (E)-undec-9-enal; methyl (E)-2-(((3,5-dimethylcyclohex-3-en-1-yl)methylene)amino)benzoate; 2,6,10-trimethylundec-9-enal; (7,7,8,8-tetramethyloctahydro-2,3b-methanocyclopenta[1,3]cyclopropa[1,2]benzen-4-yl)methyl acetate; nonyl acetate; (2-(1-propoxyethoxy)ethyl)benzene; (Z)-2-(4-methylbenzylidene)heptanal; dec-9-enal; (Z)-oxacycloheptadec-8-en-2-one; (2S,4aR,8aR)-4a,8-dimethyl-2-(prop-1-en-2-yl)-1,2,3,4,4a,5,6,8a-octahydronaphthalene; 2-((2S,4aR,8aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,8a-octahydronaphthalen-2-yl)propan-2-ol; 1-(3,5,5,6,8,8-hexamethyl-5,6,7,8-tetrahydronaphthalen-2-yl)ethan-1-one; 6-isopropylquinoline; 3-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)propanal; 6,10,14-trimethylpentadecan-2-one; (E)-cyclohexadec-5-en-1-one; 1-isopropyl-4-methylcyclohex-3-en-1-ol; 1-isopropyl-4-methylcyclohex-3-en-1-ol; 3,6-dimethyl-4,5,6,7-tetrahydrobenzofuran; (1aR,2S,4aS)-2,4a,8,8-tetramethyloctahydrocyclopropa[d]naphthalen-3(1H)-one; (Z)-dodec-2-enal; (E)-hex-3-en-1-yl 3-methylbutanoate; 3,6-dimethyloctan-3-yl acetate; 3-(4-isopropylphenyl)propanal; (Z)-undec-2-enenitrile; (E)-undec-2-enal; phenethyl butyrate; (Z)-non-2-enal; nonan-2-ol; nonan-2-one; 2-isobutylquinoline; (E)-2-hexylidenecyclopentan-1-one; 2-heptyltetrahydrofuran; (E)-dec-2-enal; 2,6-dimethyloctanal; decan-1-ol; (E)-hept-1-en-1-yl acetate; undec-10-en-1-ol; undec-10-enal; 2-((2R,4aS)-4a,8-dimethyl-1,2,3,4,4a,5,6,7-octahydronaphthalen-2-yl)propan-2-ol; 1-isopropyl-4-methyl-7-thiabicyclo[2.2.1]heptane; (3E,5Z)-undeca-1,3,5-triene; 3,7-dimethyloct-6-en-3-ol; 1,3,3-trimethylbicyclo[2.2.1]heptan-2-yl acetate; 1,1,2,3,3-pentamethyl-2,3-dihydro-1H-indene; (Z)-6,10-dimethylundeca-5,9-dien-2-yl acetate; (Z)-dodec-3-enal; (S)-5-heptyldihydrofuran-2(3H)-one; (R)-5-heptyldihydrofuran-2(3H)-

one; (E)-6,10-dimethylundeca-5,9-dien-2-yl acetate; (Z)-3-methyl-5-phenylpent-2-enenitrile; (2S,5S,6S)-2,6,10,10-tetramethyl-1-oxaspiro[4.5]decan-6-ol; (2E)-3-methyl-5-phenyl-2-pentenenitrile; (2S,5R)-2-isopropyl-5-methylcyclohexan-1-one; (R,E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol; 2-(8-isopropyl-6-methylbicyclo[2.2.2]oct-5-en-2-yl)-1,3-dioxolane; (E)-4-(2,2-dimethyl-6-methylenecyclohexyl)-3-methylbut-3-en-2-one; 3-(3-isopropylphenyl)butanal; 3-(1-ethoxyethoxy)-3,7-dimethylocta-1,6-diene; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate; 2-((3S,3aS,5R)-3,8-dimethyl-1,2,3,3a,4,5,6,7-octahydroazulen-5-yl)propan-2-ol; benzyl 2-phenylacetate; 3-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)-2,2-dimethylpropanal; 2-methyl-5-(6-methylhept-5-en-2-yl)bicyclo[3.1.0]hex-2-ene; 1-(1,1,2,3,3,6-hexamethyl-2,3-dihydro-1H-inden-5-yl)ethan-1-one; (E)-tridec-2-enal; (1R,4S,4aS,6R,8aS)-4,8a,9,9-tetramethyloctahydro-1,6-methanonaphthalen-1(2H)-ol; p-tolyl hexanoate; 5-hexyl-4-methyldihydrofuran-2(3H)-one; ethyl (2Z,4E)-deca-2,4-dienoate; 2,4-dimethyl-6-phenyl-3,6-dihydro-2H-pyran; 2-cyclohexylidene-2-phenylacetonitrile; (4-(prop-1-en-2-yl)cyclohex-1-en-1-yl)methyl acetate; (4-(prop-1-en-2-yl)cyclohex-1-en-1-yl)methanol; (2-isopropoxyethyl)benzene; 2-cyclohexylhepta-1,6-dien-3-one; (2-(cyclohexyloxy)ethyl)benzene; phenethyl 2-methylbutanoate; phenethyl 2-phenylacetate; phenyl benzoate; phenethyl benzoate; 2-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)acetaldehyde; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl pivalate; (E)-3,3-dimethyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pent-4-en-2-ol; 1-methyl-4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbaldehyde; p-tolyl 2-phenylacetate; Ethyl 2,4,7-decatrienoate; 2-benzyl-4,4,6-trimethyl-1,3-dioxane; 2,4-dimethyl-4-phenyltetrahydrofuran; (2R,4a'R,8a'R)-3,7'-dimethyl-3',4',4a',5',8',8a'-hexahydro-1'H-spiro[oxirane-2,2'-[1,4]methanonaphthalene]; (Z)-6-ethylideneoctahydro-2H-5,8-methanochromene; 2-((S)-1-((S)-3,3-dimethylcyclohexyl)ethoxy)-2-oxoethyl propionate; methyl 2,2-dimethyl-6-methylenecyclohexane-1-carboxylate; 4-methyl-2-phenyl-3,6-dihydro-2H-pyran; 2,2,7,9-tetramethylspiro(5.5)undec-8-en-1-one; 3-methyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pentan-2-ol; (Z)-2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol; (E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol; 1-(3-hydroxy-3-methylpent-4-en-1-yl)-2,5,5,8a-tetramethyldecahydronaphthalen-2-ol; (4aR,6aS,10aS,10bR)-3,4a,7,7,10a-pentamethyl-4a,5,6,6a,7,8,9,10,10a,10b-decahydro-1H-benzo[f]chromene; (4aR,8aR)-4a,8-dimethyl-2-(propan-2-ylidene)-1,2,3,4,4a,5,6,8a-octahydronaphthalene; 2-(1-(3,3-dimethylcyclohexyl)ethoxy)-2-methylpropyl cyclopropanecarboxylate; 3-(4-isobutylphenyl)-2-methylpropanal; (1aR,4aR,7S,7aR,7bR)-1,1,7-trimethyl-4-methylenedecahydro-1H-cyclopropa[e]azulen-7-ol; 1-(spiro[4.5]dec-7-en-7-yl)pent-4-en-1-one; (Z)-dodec-4-enal;

(1S,4S,4aR,8aR)-4-isopropyl-1,6-dimethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-ol; (1S,4S,4aR,8aS)-4-isopropyl-1,6-dimethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-ol; 3-methyl-2-pentylcyclopentan-1-one; 2,6,10,10-tetramethyl-1-oxaspiro[4.5]dec-6-ene; (1aR,4aS)-2,4a,8,8-tetramethyl-1,1a,4,4a,5,6,7,8-octahydrocyclopropa[d]naphthalene; 1-isopropyl-2-methoxy-4-methylbenzene; 1-(2,2,6-trimethylcyclohexyl)hexan-3-ol; (2E,6E)-3,7,11-trimethyldodeca-2,6,10-trien-1-ol; (Z)-dec-2-enal; (E)-non-2-enal; (E)-dec-4-enal; (Z)-oxacycloheptadec-8-en-2-one; (Z)-3,7-dimethylocta-1,3,6-triene; (Z)-3,7-dimethylocta-1,3,6-triene; (E)-3,7-dimethylocta-2,6-dien-1-ol; (1R-(1alpha,3alpha,4aalpha))-2,3,4,4a,5,6-hexahydro-2,2-dimethyl-1,3-methanonaphthalen-7(1H)-one; tridecan-1-ol; methyl 2-((1-hydroxy-3-phenylbutyl)amino)benzoate; 1-((2E,5Z,9Z)-2,6,10-trimethylcyclododeca-2,5,9-trien-1-yl)ethan-1-one; decahydro-2,6,6,7,8,8-hexamethyl-2h-indeno(4,5-b)furan; pentamethyl octahydroindenodioxane; undecanal; (E)-4-methyldec-3-en-5-ol; (3R,4aS,5R)-4a,5-dimethyl-3-(prop-1-en-2-yl)-1,2,3,4,4a,5,6,7-octahydronaphthalene; 2-((2R,8R,8aS)-8,8a-dimethyl-1,2,3,4,6,7,8,8a-octahydronaphthalen-2-yl)propan-2-ol; (Z)-2-methyl-4-(2,6,6-trimethylcyclohex-2-en-1-yl)but-2-enal; 1-methoxy-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoindene; methyl (Z)-2-((3-(4-(tert-butyl)phenyl)-2-methylpropylidene)amino)benzoate; 2,4,6-trimethyl-4-phenyl-1,3-dioxane; 1-((3R,3aR,7R,8aS)-3,6,8,8-tetramethyl-2,3,4,7,8,8a-hexahydro-1H-3a,7-methanoazulen-5-yl)ethan-1-one; methyl (Z)-2-(((2,4-dimethylcyclohex-3-en-1-yl)methylene)amino)benzoate; 4,8-dimethyl-2-(propan-2-ylidene)-1,2,3,3a,4,5,6,8a-octahydroazulen-6-ol; 4,8-dimethyl-2-(propan-2-ylidene)-1,2,3,3a,4,5,6,8a-octahydroazulen-6-yl acetate; decahydro-3H-spiro[furan-2,5'-[4,7]methanoindene]; (2Z,6E)-nona-2,6-dienenitrile; (1aR,4S,4aS,7R,7aS,7bS)-1,1,4,7-tetramethyldecahydro-1H-cyclopropa[e]azulen-4-ol; 3,5,5,6,7,8,8-heptamethyl-5,6,7,8-tetrahydronaphthalene-2-carbonitrile; (1S,2S,3S,5R)-2,6,6-trimethylspiro[bicyclo[3.1.1]heptane-3,1'-cyclohexan]-2'-en-4'-one; 1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene]; (2'S,4a'S,8a'S)-1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene]; (1R,8aR)-4-isopropyl-1,6-dimethyl-1,2,3,7,8,8a-hexahydronaphthalene; (7,7,8,8-tetramethyloctahydro-2,3b-methanocyclopenta[1,3]cyclopropa[1,2]benzen-4-yl)methanol; 1-ethoxy-4-(tert-pentyl)cyclohexane; (3Z)-1-(2-buten-1-yloxy)-3-hexene; 4-(2-methoxypropan-2-yl)-1-methylcyclohex-1-ene; 3-methoxy-3,7-dimethylocta-1,6-diene; 3,7-dimethyloctanal; hexyl 2-hydroxybenzoate; hexyl (Z)-but-2-enoate; (Z)-3,7-dimethylocta-2,6-dien-1-yl formate; (Z)-1-(2,6,6-trimethylcyclohex-1-en-1-yl)pent-1-en-3-one; (E)-3,7-dimethylocta-4,6-dien-3-ol; methyl

(Z)-3,7-dimethylocta-2,6-dienoate; ((1s,4s)-4-isopropylcyclohexyl)methanol; 3,7-dimethylocta-1,6-dien-3-yl propionate; 3,7-dimethylocta-1,6-dien-3-yl formate; 3,7-dimethylocta-1,6-dien-3-yl butyrate; 3,7-dimethylocta-1,6-dien-3-yl acetate; 3,7-dimethylocta-1,6-dien-3-ol; 2,2-dimethyl-5-phenylhexanenitrile; (Z)-4-(6,6-dimethylcyclohex-2-en-1-yl)-3-methylbut-3-en-2-one; 7-methyloctyl acetate; isopentyl octanoate; hexyl propionate; hexyl butyrate; hexyl 2-methylbutanoate; hexyl furan-2-carboxylate; heptyl acetate; (Z)-3,7-dimethylocta-2,6-dienenitrile; (E)-3,7-dimethylocta-2,6-dien-1-yl formate; (E)-3,7-dimethylocta-2,6-dien-1-yl octanoate; (E)-3,7-dimethylocta-2,6-dien-1-yl benzoate; (E)-3,7-dimethylocta-2,6-dienal; 1-isopropyl-4-methylcyclohexa-1,4-diene; 2-(sec-butyl)cyclohexan-1-one; 3-(2-ethylphenyl)-2,2-dimethylpropanal; 2-(tert-butyl)cyclohexyl ethyl carbonate; ethyl octanoate; ethyl 2-cyclohexylpropanoate; 4-methyl-2-phenyltetrahydro-2H-pyran; 2,6-dimethyloct-7-en-2-ol; 3-methyl-2-pentylcyclopent-2-en-1-one; 2-(4-methylcyclohexyl)propan-2-yl acetate; 4-(2,6,6-trimethylcyclohex-2-en-1-yl)butan-2-one; (oxybis(methylene))dibenzene; dibutyl phthalate; decyl 2-aminobenzoate; methyl (1s,4s)-1,4-dimethylcyclohexane-1-carboxylate; 2-cyclohexylethyl acetate; (3Z,5Z)-2,6-dimethylocta-1,3,5,7-tetraene; 4-cyclohexyl-2-methylbutan-2-ol; 2-benzyl-2-methylbut-3-enenitrile; 3,7-dimethyloct-6-enenitrile; 3,7-dimethyloct-6-en-1-yl 2-phenylacetate; 3,7-dimethyloct-6-en-1-yl formate; 3,7-dimethyloct-6-en-1-yl benzoate; 3,7-dimethyloct-6-en-1-ol; 3,7-dimethyloct-6-enal; (E)-3,7-dimethylocta-2,6-dienal; (1R,2S,5R)-2,6,6-trimethylbicyclo[3.1.1]heptane; (Z)-hex-3-en-1-yl pentanoate; (E)-hex-3-en-1-yl (E)-2-methylbut-2-enoate; (Z)-hex-3-en-1-yl butyrate; 4-chloro-3,5-dimethylphenol; 5-isopropyl-2-methylphenol; (E)-2-methyl-4-(2,6,6-trimethylcyclohex-1-en-1-yl)but-2-enal; 3-isopropyl-6-methylenecyclohex-1-ene; benzyl 2-hydroxybenzoate; benzyl 3-methylbutanoate; 1-(3,3-dimethylcyclohexyl)ethyl formate; (Z)-1-methoxy-4-(prop-1-en-1-yl)benzene; pentyl benzoate; 2-(4-methylcyclohex-3-en-1-yl)propan-2-yl acetate; (Z)-3-methyl-4-(2,6,6-trimethylcyclohex-2-en-1-yl)but-3-en-2-one; (2-(allyloxy)ethyl)benzene; allyl heptanoate; 6,8-dimethylnonan-2-ol; 5-methyl-5-phenylhexan-3-one; 3,7-dimethyl-2-methyleneoct-6-enal; 3,7-dimethyloctan-1-ol; 2-pentylcyclopentan-1-ol; (2S,4S)-2-heptyl-2,4-dimethyl-1,3-dioxolane; (E)-2-isopropyl-5-methylhex-2-enal; 1-isopropyl-4-methyl-7-oxabicyclo[2.2.1]heptane; (Z)-1-(2,6,6-trimethylcyclohex-2-en-1-yl)but-2-en-1-one; (R)-3,7-dimethylocta-1,6-dien-3-ol; 3,7-dimethyloct-6-enal; (R)-3,7-dimethyloct-6-enal; 3,7-dimethyloct-6-en-1-ol; 3,7-dimethyloct-6-en-1-ol; (1R,5R)-2,6,6-trimethylbicyclo[3.1.1]hept-2-ene; (1S,5S)-2,6,6-trimethylbicyclo[3.1.1]hept-2-ene; hexyl (Z)-2-methylbut-2-enoate; p-cymene; phenethyl isobutyrate; phenethyl (Z)-2-methylbut-2-enoate; phenethyl methacrylate; (2Z,5Z)-5,6,7-

trimethylocta-2,5-dien-4-one; 1-methoxy-4-propylbenzene; 2-(4-(tert-butyl)phenyl)acetaldehyde; 4-(tert-pentyl)cyclohexan-1-ol; 2,6,6-trimethylbicyclo[3.1.1]hept-2-ene; ethyl (2,3,6-trimethylcyclohexyl) carbonate; 1-(3,3-dimethylcyclohexyl)ethyl acetate; (S)-3,7-dimethylocta-1,6-dien-3-ol; 1-isopropyl-4-methylenebicyclo[3.1.0]hexane; 3,7-dimethyloctanal; 4-(2,2,6-trimethylcyclohexyl)butan-2-ol; 3,7-dimethyloctan-3-ol; 3,7-dimethyloctan-3-yl acetate; ethyl (1R,6S)-2,2,6-trimethylcyclohexane-1-carboxylate; 2-isopropyl-5-methylphenol; (Z)-1-(2,6,6-trimethylcyclohex-2-en-1-yl)but-2-en-1-one; (Z)-1-methoxy-4-(prop-1-en-1-yl)benzene; 2,2,2-trichloro-1-phenylethyl acetate; 2,2,5-trimethyl-5-pentylcyclopentan-1-one; (4-tert-butylcyclohexyl) acetate; 4-(tert-butyl)cyclohexyl acetate; 4-methyl-4-phenylpentan-2-yl acetate; (Z)-1-((2-methylallyl)oxy)hex-3-ene; 4,5-epoxy-4,11,11-trimethyl-8-methylenebicyclo(7.2.0)undecane; 1,3,4,6,7,8alpha-hexahydro-1,1,5,5-tetramethyl-2H-2,4alpha-methanophtalen-8(5H)-one, more preferably said one or more malodor reduction materials are selected from the group consisting of 2-ethylhexyl (Z)-3-(4-methoxyphenyl)acrylate; 2,4-dimethyl-2-(5,5,8,8-tetramethyl-5,6,7,8-tetrahydronaphthalen-2-yl)-1,3-dioxolane; 1,1-dimethoxynon-2-yne; 3-methoxy-7,7-dimethyl-10-methylenebicyclo[4.3.1]decane; methoxycyclododecane; 1,1-dimethoxycyclododecane; (Z)-tridec-2-enenitrile; (2-hydroxy-4-methoxyphenyl)(phenyl)methanone; 2,4a,5,8a-tetramethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-yl formate; 1,8-dioxacycloheptadecan-9-one; 4-(tert-pentyl)cyclohexan-1-one; 2-methoxy-1,1'-biphenyl; 3a,5,6,7,8,8b-hexahydro-2,2,6,6,7,8,8-heptamethyl-4H-indeno(4,5-d)-1,3-dioxole; 7-isopropyl-8,8-dimethyl-6,10-dioxaspiro[4.5]decane; octyl furan-2-carboxylate; octyl acetate; 2-heptyl-4-methyl-1,3-dioxolane; octanal; 1,1-dimethoxyoctane; 7-methyl-3-methyleneocta-1,6-diene; 2-methyl-6-methyleneoct-7-en-2-yl acetate; tetradecanal; tetradecanenitrile; 2,2,6,8-tetramethyl-1,2,3,4,4a,5,8,8a-octahydronaphthalen-1-ol; 2-((1S,5R)-6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)ethyl acetate; (4R,4aS,6R)-4,4a-dimethyl-6-(prop-1-en-2-yl)-4,4a,5,6,7,8-hexahydronaphthalen-2(3H)-one; nonan-1-ol; nonanal; 12-methyl-14-tetradec-9-enolide; N-ethyl-2-isopropyl-5-methylcyclohexane-1-carboxamide; 2-methoxynaphthalene; (E)-3,7,11-trimethyldodeca-1,6,10-trien-3-ol; (Z)-3,7-dimethylocta-2,6-dien-1-ol; methyl (E)-non-2-enoate; 10-isopropyl-2,7-dimethyl-1-oxaspiro[4.5]deca-3,6-diene; 2-(2-(4-methylcyclohex-3-en-1-yl)propyl)cyclopentan-1-one; (E)-4-(2,2,3,6-tetramethylcyclohexyl)but-3-en-2-one; (4-(4-methylpent-3-en-1-yl)cyclohex-3-en-1-yl)methyl acetate; 2-(tert-butyl)-4,5,6-trimethyl-1,3-phenylene dinitrite; 1,7-dioxacycloheptadecan-8-one; 1-(4-(tert-butyl)-2,6-dimethyl-3,5-dinitrophenyl)ethan-1-one; 1-(tert-butyl)-2-methoxy-4-methyl-3,5-dinitrobenzene; 3-methylcyclopentadecan-1-one; (E)-3-methylcyclopentadec-4-en-1-one; 1-(4-

isopropylcyclohexyl)ethan-1-ol; (E)-dec-5-enoic acid; methyl non-2-ynoate; 2-methyldecanal; 6,6-dimethoxy-2,5,5-trimethylhex-2-ene; methyl stearate; 1,1-dimethoxy-2-methylundecane; undecan-2-one; 2-methylundecanal; methyl tetradecanoate; methyl (9Z,12Z)-octadeca-9,12-dienoate; methyl palmitate; 1-methyl-2-phenoxybenzene; 1-allyl-4-methoxybenzene; 1-(naphthalen-2-yl)ethan-1-one; methyl oct-2-ynoate; methyl 2,6,6-trimethylcyclohex-2-ene-1-carboxylate; 7-isopropyl-10-methyl-1,5-dioxaspiro[5.5]undecan-3-ol; 3-(3-(tert-butyl)phenyl)-2-methylpropanal; (E)-4-(4,8-dimethylnona-3,7-dien-1-yl)pyridine; (E)-trideca-3,12-dienenitrile; 2,2-dimethyl-3-(m-tolyl)propan-1-ol; 8-isopropyl-6-methylbicyclo[2.2.2]oct-5-ene-2-carbaldehyde; (S)-1-methyl-4-(prop-1-en-2-yl)cyclohex-1-ene; 3,7-dimethylocta-1,6-dien-3-yl octanoate; 3,7-dimethylocta-1,6-dien-3-yl isobutyrate; 3,7-dimethylocta-1,6-dien-3-yl benzoate; 3,7-dimethylocta-1,6-dien-3-yl 2-aminobenzoate; (2Z,6E)-3,7-dimethylnona-2,6-dienenitrile; 3-(4-methylcyclohex-3-en-1-yl)butanal; (2,5-dimethyl-1,3-dihydroinden-2-yl)methanol; 3-(4-(tert-butyl)phenyl)-2-methylpropanal; dodecan-1-ol; dodecyl acetate; dodecanoic acid; 5-hexyl-5-methyldihydrofuran-2(3H)-one; dodecanal; 4-(1-ethoxyvinyl)-3,3,5,5-tetramethylcyclohexan-1-one; ((3S,3aR,6R,8aS)-7,7-dimethyl-8-methyleneoctahydro-1H-3a,6-methanoazulen-3-yl)methanol; 5-(sec-butyl)-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane; (1-methyl-2-((1,2,2-trimethylbicyclo[3.1.0]hexan-3-yl)methyl)cyclopropyl)methanol; 2-propylheptanenitrile; 2-hexylcyclopentan-1-one; 2,6,9,10-tetramethyl-1-oxaspiro(4.5)deca-3,6-diene; isopropyl palmitate; isopropyl tetradecanoate; isopropyl dodecanoate; (E)-cyclohexadec-8-en-1-one; (2S,5S)-2-isopropyl-5-methylcyclohexan-1-one; 2-hexylcyclopent-2-en-1-one; (2S,5S)-2-isopropyl-5-methylcyclohexan-1-one; 4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbaldehyde; (Z)-1-(benzyloxy)-2-methoxy-4-(prop-1-en-1-yl)benzene; 1-((2S,3S)-2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethan-1-one; 6-(sec-butyl)quinoline; 2-(cyclohexyloxy)-1,7,7-trimethylbicyclo[2.2.1]heptane; (1R,2R,4S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl propionate; (1S,2S,4S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl isobutyrate; 4-((2R)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl)cyclohexan-1-ol; (1R,4S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl acetate; 2-(4-isopropylcyclohexa-1,4-dien-1-yl)ethyl formate; isopentyl (E)-undec-6-enoate; isopentyl dodecanoate; (E)-oxacycloheptadec-10-en-2-one; (E)-non-2-enenitrile; (E)-8-(1H-indol-1-yl)-2,6-dimethyloct-7-en-2-ol; 8,8-di(1H-indol-1-yl)-2,6-dimethyloctan-2-ol; 2-cyclododecylpropan-1-ol; 3-methyl-5-phenylpentanenitrile; 2,3-dihydro-3,3-dimethyl-1H-indene-5-propanal; 3-(3,3-dimethyl-2,3-dihydro-1H-inden-5-yl)propanal; hexyl octanoate; hexyl hexanoate; (Z)-2-benzylideneoctanal; hexyl benzoate; (Z)-hex-1-en-1-yl (Z)-2-methylbut-2-enoate; (E)-3,7-dimethylocta-2,6-dien-1-yl palmitate; oxacycloheptadecan-2-one;

ethyl (1R,2R,3R,4R)-3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate; 2-(1-(3,3-dimethylcyclohexyl)ethoxy)-2-methylpropyl propionate; (E)-oxacyclohexadec-13-en-2-one; 6-butyl-2,4-dimethyl-3,6-dihydro-2H-pyran; 2-((3S,5R,8S)-3,8-dimethyl-1,2,3,4,5,6,7,8-octahydroazulen-5-yl)propan-2-ol; 1-(2,6,6-trimethylcyclohex-2-en-1-yl)pentan-3-one; ethyl 2-ethyl-6,6-dimethylcyclohex-2-ene-1-carboxylate; (1Z,5Z)-1,5-dimethyl-8-(propan-2-ylidene)cyclodeca-1,5-diene; (1E,6E)-8-isopropyl-1-methyl-5-methylenecyclodeca-1,6-diene; (E)-3,7-dimethylocta-2,6-dien-1-yl 2-phenylacetate; (E)-3,7-dimethylocta-2,6-dien-1-yl 2-phenylacetate; (6E,10E)-3,7,11,15-tetramethylhexadeca-1,6,10,14-tetraen-3-ol; (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)cyclopentan-1-one; 5-heptyldihydrofuran-2(3H)-one; 1-methyl-4-(propan-2-ylidene)cyclohexyl acetate; 1-methyl-4-(propan-2-ylidene)cyclohexan-1-ol; (1R,4aR,8aS)-1-isopropyl-7-methyl-4-methylene-1,2,3,4,4a,5,6,8a-octahydronaphthalene; (Z)-4-(2,2-dimethyl-6-methylenecyclohexyl)but-3-en-2-one; (4aS,9aR)-3,5,5,9-tetramethyl-2,4a,5,6,7,9a-hexahydro-1H-benzo[7]annulene; (1R,3aR,4R,7R)-1,4-dimethyl-7-(prop-1-en-2-yl)-1,2,3,3a,4,5,6,7-octahydroazulene; 2-((2R,4aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,7-octahydronaphthalen-2-yl)propan-2-ol; 5-octyldihydrofuran-2(3H)-one; (Z)-1-(2,2-dimethyl-6-methylenecyclohexyl)but-2-en-1-one; (1R,4aS,8aS)-1-isopropyl-7-methyl-4-methylene-1,2,3,4,4a,5,6,8a-octahydronaphthalene; 1-(3,3-dimethylcyclohexyl)pent-4-en-1-one; 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopenta[g]isochromene; furan-2-ylmethyl octanoate; furan-2-ylmethyl hexanoate; furan-2-ylmethyl heptanoate; 2-methyldecanenitrile; 8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate; ethyl (3aR,4S,7R,7aR)-octahydro-3aH-4,7-methanoindene-3a-carboxylate; (6-isopropyl-9-methyl-1,4-dioxaspiro[4.5]decan-2-yl)methanol; undec-10-enenitrile; 3-(2-ethylphenyl)-2,2-dimethylpropanal; (E)-4,8-dimethyldeca-4,9-dienal; (E)-4-((3aR,4R,7R,7aR)-1,3a,4,6,7,7a-hexahydro-5H-4,7-methanoinden-5-ylidene)-3-methylbutan-2-ol; 8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl acetate; 3-(4-ethylphenyl)-2,2-dimethylpropanenitrile; 2-heptylcyclopentan-1-one; 1-ethoxyethoxy Cyclododecane; 3-cyclohexene-1-carboxylic acid, 2,6,6-trimethyl-, methyl ester; (2E,6E)-3,7,11-trimethyldodeca-2,6,10-trien-1-yl acetate; (2E,6E)-3,7,11-trimethyldodeca-2,6,10-trien-1-ol; oxacyclohexadecan-2-one; (E)-cyclopentadec-4-en-1-one; 1-cyclopentadec-4-en-1-one ; 1,4-dioxacycloheptadecane-5,17-dione; ethyl undec-10-enoate; ethyl palmitate; ethyl nonanoate; ethyl tetradecanoate; (E)-3,7-dimethylnona-1,6-dien-3-ol; ethyl dodecanoate; ethyl decanoate; ethyl 6,6-dimethyl-2-methylenecyclohex-3-ene-1-carboxylate; 6-ethyl-2,10,10-trimethyl-1-oxaspiro[4.5]deca-3,6-diene; 2-((1R,3S,4S)-4-methyl-3-(prop-1-en-2-yl)-4-vinylcyclohexyl)propan-2-ol; (E)-3-methyl-5-(2,2,3-trimethylcyclopent-3-en-

1-yl)pent-4-en-2-ol; (E)-4-((3aS,7aS)-octahydro-5H-4,7-methanoinden-5-ylidene)butanal; 1,1-dimethoxydodecane; (R)-1-methyl-4-(prop-1-en-2-yl)cyclohex-1-ene; 7,9-dimethylspiro[5.5]undecan-3-one; oxydibenzene; diphenylmethane; 2-methyl-1-phenylpropan-2-yl butyrate; octahydro-1H-4,7-methanoinden-5-yl acetate; 2-methyl-5-(prop-1-en-2-yl)cyclohexyl acetate; 3,7-dimethyloct-6-en-3-ol; dibutylsulfane; 1,2-diphenylethane; 6-hexyltetrahydro-2H-pyran-2-one; (3R,4R)-1-isopropyl-4-methyl-3-(prop-1-en-2-yl)-4-vinylcyclohex-1-ene; (3S,3aS,5R)-3,8-dimethyl-5-(prop-1-en-2-yl)-1,2,3,3a,4,5,6,7-octahydroazulene; 6-heptyltetrahydro-2H-pyran-2-one; (1S,8aR)-4,7-dimethyl-1-(propan-2-yl)-1,2,3,5,6,8a-hexahydronaphthalene; (Z)-1-((1R,2S)-2,6,6-trimethylcyclohex-3-en-1-yl)but-2-en-1-one; (1S,8aS)-1-isopropyl-4,7-dimethyl-1,2,3,5,6,8a-hexahydronaphthalene; 3,7,7-trimethylbicyclo[4.1.0]hept-3-ene; dec-9-en-1-ol; decyl propionate; 1,1-diethoxydecane; 1-cyclohexylethyl (E)-but-2-enoate; 3-(4-isopropylphenyl)-2-methylpropanal; cyclotetradecane; cyclopentadecanone; cyclohexyl 2-hydroxybenzoate; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl butyrate; 8,8-dimethyl-1,2,3,4,5,6,7,8-octahydronaphthalene-2-carbaldehyde; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-5-yl isobutyrate; (5R,6R)-3,6-dimethyl-5-(prop-1-en-2-yl)-6-vinyl-4,5,6,7-tetrahydrobenzofuran; 2-(3-phenylpropyl)pyridine; dodecanenitrile; (E)-cycloheptadec-9-en-1-one; 3-(4-methylcyclohex-3-en-1-yl)but-3-en-1-yl acetate; 3-(4-methylcyclohex-3-en-1-yl)butan-1-ol; (E)-3-methyl-5-phenylpent-2-enenitrile; (E)-2-(2,6-dimethylhepta-1,5-dien-1-yl)-4-methyl-1,3-dioxolane; (E)-1,1-dimethoxy-3,7-dimethylocta-2,6-diene; (E)-1,1-diethoxy-3,7-dimethylocta-2,6-diene; (E)-3,7-dimethylocta-1,3,6-triene; (E)-oxacycloheptadec-11-en-2-one; (Z)-dec-4-enal; (E)-hex-3-en-1-yl (E)-hex-3-enoate; (Z)-hex-3-en-1-yl 2-hydroxybenzoate; (Z)-hex-3-en-1-yl benzoate; (Z)-hex-3-en-1-yl 2-methylbutanoate; cinnamyl propionate; cinnamyl isobutyrate; cinnamyl cinnamate; hexadecan-1-ol; (E)-1-(2,6,6-trimethylcyclohex-2-en-1-yl)hepta-1,6-dien-3-one; 2-methyl-4-(2,6,6-trimethylcyclohex-1-en-1-yl)butanal; (3aR,5aR,9aR,9bR)-3a,6,6,9a-tetramethyldodecahydronaphtho[2,1-b]furan; 1,6-dioxacycloheptadecan-7-one; 1-(6-(tert-butyl)-1,1-dimethyl-2,3-dihydro-1H-inden-4-yl)ethan-1-one; (3R,3aR,6S,7S,8aS)-6-methoxy-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulene; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-3-yl formate; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-6-yl acetate; (4Z,8Z)-1,5,9-trimethyl-13-oxabicyclo[10.1.0]trideca-4,8-diene; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-6-ol; 5-methyl-1-(2,2,3-trimethylcyclopent-3-en-1-yl)-6-oxabicyclo[3.2.1]octane; 5-methyl-1-(2,2,3-trimethylcyclopent-3-en-1-yl)-6-oxabicyclo[3.2.1]octane; 1,1,2,3,3-pentamethyl-1,2,3,5,6,7-hexahydro-4H-inden-4-one; (Z)-

4,11,11-trimethyl-8-methylenebicyclo[7.2.0]undec-3-en-5-yl acetate; (1S,2S,5R,8S)-4,4,8-trimethyltricyclo[6.3.1.02,5]dodecan-1-ol; 2-methyl-5-(prop-1-en-2-yl)cyclohex-2-en-1-yl acetate; octanenitrile; decanoic acid; decanal; 2,2-dimethyl-3-methylenebicyclo[2.2.1]heptane; ethyl 2-methyl-4-oxo-6-pentylcyclohex-2-ene-1-carboxylate; 2,6-di-tert-butyl-4-methylphenol; butyl stearate; butyl undec-10-enoate; 2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)butan-1-ol; 3-(4-(tert-butyl)phenyl)propanal; (1S,2S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl isobutyrate; 1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl acetate; 2-ethoxy-2,6,6-trimethyl-9-methylenebicyclo[3.3.1]nonane; (ethoxymethoxy)cyclododecane; (E)-1-methyl-4-(6-methylhept-5-en-2-ylidene)cyclohex-1-ene; 3,3,6,7-tetramethyloctahydro-2H-chromene; (5R,10R)-6,10-dimethyl-2-(propan-2-ylidene)spiro[4.5]dec-6-en-8-one; 1-methyl-4-(prop-1-en-2-yl)cyclohexyl acetate; (2Z,6E)-2,6-dimethyl-10-methylenedodeca-2,6,11-trienal; (R)-3-methylene-6-((S)-6-methylhept-5-en-2-yl)cyclohex-1-ene; (4aR,7R,8aS)-4a-methyl-1-methylene-7-(prop-1-en-2-yl)decahydronaphthalene; (Z)-2-methyl-5-((1S,2R,4R)-2-methyl-3-methylenebicyclo[2.2.1]heptan-2-yl)pent-2-en-1-ol; 6,6-dimethyl-2-methylenebicyclo[3.1.1]heptane; 2-ethoxynaphthalene; (1S,4R,7R)-1,4,9,9-tetramethyl-1,2,3,4,5,6,7,8-octahydro-4,7-methanoazulene; (1aS,5aR,9aR)-1a,5,5,7-tetramethyl-1a,2,3,4,5,5a,8,9-octahydrobenzo[1,7]cyclohepta[1,2-b]oxirene; (R)-3,5,5,9-tetramethyl-2,4a,5,6,7,8-hexahydro-1H-benzo[7]annulene; (1S,4S)-1,4-dimethyl-7-(propan-2-ylidene)-1,2,3,4,5,6,7,8-octahydroazulene; (E)-7,11-dimethyl-3-methylenedodeca-1,6,10-triene; (1R,2S,6S,7S,8S)-8-isopropyl-1-methyl-3-methylenetricyclo[4.4.0.02,7]decane; (3R,3aS,7S,8aS)-3,8,8-trimethyl-6-methyleneoctahydro-1H-3a,7-methanoazulene; (1R,9S,Z)-4,11,11-trimethyl-8-methylenebicyclo[7.2.0]undec-4-ene; (S)-4-methyl-1-((S)-6-methylhept-5-en-2-yl)cyclohex-3-en-1-ol; benzyl dodecanoate; benzyl cinnamate; benzyl benzoate; 2'-isopropyl-1,7,7-trimethylspiro[bicyclo[2.2.1]heptane-2,4'-[1,3]dioxane]; 4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbonitrile; methyl (E)-2-((7-hydroxy-3,7-dimethyloctylidene)amino)benzoate; 4-methoxybenzyl 2-phenylacetate; pentyl (Z)-3-phenylacrylate; (3aR,5aS,9aS,9bR)-3a,6,6,9a-tetramethyldodecahydronaphtho[2,1-b]furan; (4aR,5R,7aS,9R)-2,2,5,8,8,9a-hexamethyloctahydro-4H-4a,9-methanoazuleno[5,6-d][1,3]dioxole; 2,5,5-trimethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-ol; 2,5,5-trimethyl-1,2,3,4,4a,5,6,7-octahydronaphthalen-2-ol; 1-((2-(tert-butyl)cyclohexyl)oxy)butan-2-ol; (3S,5aR,7aS,11aS,11bR)-3,8,8,11a-tetramethyldodecahydro-5H-3,5a-epoxynaphtho[2,1-c]oxepine; 2,2,6,6,7,8,8-heptamethyldecahydro-2H-indeno[4,5-b]furan; 2,2,7,7,8,9,9-heptamethyldecahydroindeno[4,3a-b]furan; 2-(sec-butyl)-1-vinylcyclohexyl acetate; (4R,4aS)-

4,4a-dimethyl-6-(propan-2-ylidene)-4,4a,5,6,7,8-hexahydronaphthalen-2(3H)-one; 2-(4-methylcyclohex-3-en-1-yl)propan-2-yl propionate; (2Z,6E,9E)-2,6,10-trimethyldodeca-2,6,9,11-tetraenal; (2R,4aR,8aR)-4a,8-dimethyl-2-(prop-1-en-2-yl)-1,2,3,4,4a,5,6,8a-octahydronaphthalene; 1,7-dimethyl-7-(4-methylpent-3-en-1-yl)tricyclo[2.2.1.02,6]heptane; (E)-5-(2,3-dimethyltricyclo[2.2.1.02,6]heptan-3-yl)-2-methylpent-2-en-1-ol; (1R,3aS,7S,8aR)-1,4,9,9-tetramethyl-2,3,6,7,8,8a-hexahydro-1H-3a,7-methanoazulene; 1-(5,5-dimethylcyclohex-1-en-1-yl)pent-4-en-1-one; (1S,4aS,8aR)-1-isopropyl-4,7-dimethyl-1,2,4a,5,6,8a-hexahydronaphthalene; (R,Z)-1-(2,6,6-trimethylcyclohex-2-en-1-yl)pent-1-en-3-one; 1-methyl-4-(prop-1-en-2-yl)cyclohex-1-ene; (Z)-4-(2,5,6,6-tetramethylcyclohex-2-en-1-yl)but-3-en-2-one; (1Z,4E,8Z)-2,6,6,9-tetramethylcycloundeca-1,4,8-triene; (4aR,8S,9aS)-3,5,5,8-tetramethyl-9-methylene-2,4a,5,6,7,8,9,9a-octahydro-1H-benzo[7]annulene; (1aR,4R,4aR,7bS)-1,1,4,7-tetramethyl-1a,2,3,4,4a,5,6,7b-octahydro-1H-cyclopropa[e]azulene; 1,4-dimethyl-7-(prop-1-en-2-yl)-1,2,3,4,5,6,7,8-octahydroazulene; (3E,6E)-3,7,11-trimethyldodeca-1,3,6,10-tetraene; 7,7-dimethyl-2-methylenebicyclo[2.2.1]heptane; 2-((2R,4aR,8aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,8a-octahydronaphthalen-2-yl)propan-2-ol; (R)-1-methyl-4-(6-methylhept-5-en-2-yl)benzene; (3aR,3bR,4S,7R,7aS)-4-isopropyl-7-methyl-3a,3b,4,5,6,7-hexahydro-1H-cyclopenta[1,3]cyclopropa[1,2]benzene; (1aS,2aR,3R,5aS,7R,7aR)-3,6,6,7a-tetramethyloctahydro-2H-2a,7-methanoazuleno[5,6-b]oxirene; (1R,4S,4aR,8aR)-4-isopropyl-1,6-dimethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-ol; (1S,4aR,8aR)-1-isopropyl-4,7-dimethyl-1,2,4a,5,6,8a-hexahydronaphthalene; (R)-2-((R)-4-methylcyclohex-3-en-1-yl)hex-5-en-2-ol; (Z)-1-methyl-4-(6-methylhepta-2,5-dien-2-yl)cyclohex-1-ene; 2,6-dimethyl-6-(4-methylpent-3-en-1-yl)bicyclo[3.1.1]hept-2-ene; (E)-2-benzylideneheptan-1-ol; (E)-2-benzylideneheptyl acetate; (Z)-(2-(diethoxymethyl)hept-1-en-1-yl)benzene; (E)-2-benzylideneheptanal; (1S,4aR,8aS)-1-isopropyl-4,7-dimethyl-1,2,4a,5,6,8a-hexahydronaphthalene; (3R,5aS,9aR)-2,2,5a,9-tetramethyl-3,4,5,5a,6,7-hexahydro-2H-3,9a-methanobenzo[b]oxepine; 1-methyl-4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbaldehyde; 3-methyl-1-phenylpentan-3-ol; 2,6,10-trimethylundecanal; allyl 3-cyclohexylpropanoate; (1aR,4aS,7R,7aR,7bS)-1,1,7-trimethyl-4-methylenedecahydro-1H-cyclopropa[e]azulene; (E)-undec-9-enal; methyl (E)-2-(((3,5-dimethylcyclohex-3-en-1-yl)methylene)amino)benzoate; 2,6,10-trimethylundec-9-enal; (7,7,8,8-tetramethyloctahydro-2,3b-methanocyclopenta[1,3]cyclopropa[1,2]benzen-4-yl)methyl acetate; nonyl acetate; (2-(1-propoxyethoxy)ethyl)benzene; (Z)-2-(4-methylbenzylidene)heptanal; dec-9-enal; (Z)-oxacycloheptadec-8-en-2-one; (2S,4aR,8aR)-4a,8-dimethyl-2-(prop-1-en-2-yl)-1,2,3,4,4a,5,6,8a-octahydronaphthalene; 2-((2S,4aR,8aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,8a-octahydronaphthalen-2-

yl)propan-2-ol; 1-(3,5,5,6,8,8-hexamethyl-5,6,7,8-tetrahydronaphthalen-2-yl)ethan-1-one; 6-isopropylquinoline; 3-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)propanal; 6,10,14-trimethylpentadecan-2-one; (E)-cyclohexadec-5-en-1-one; 1-isopropyl-4-methylcyclohex-3-en-1-ol; 1-isopropyl-4-methylcyclohex-3-en-1-ol; 3,6-dimethyl-4,5,6,7-tetrahydrobenzofuran; (1aR,2S,4aS)-2,4a,8,8-tetramethyloctahydrocyclopropa[d]naphthalen-3(1H)-one; (Z)-dodec-2-enal; (E)-hex-3-en-1-yl 3-methylbutanoate; 3,6-dimethyloctan-3-yl acetate; 3-(4-isopropylphenyl)propanal; (Z)-undec-2-enenitrile; (E)-undec-2-enal; phenethyl butyrate; (Z)-non-2-enal; nonan-2-ol; nonan-2-one; 2-isobutylquinoline; (E)-2-hexylidenecyclopentan-1-one; 2-heptyltetrahydrofuran; (E)-dec-2-enal; 2,6-dimethyloctanal; decan-1-ol; (E)-hept-1-en-1-yl acetate; undec-10-en-1-ol; undec-10-enal; 2-((2R,4aS)-4a,8-dimethyl-1,2,3,4,4a,5,6,7-octahydronaphthalen-2-yl)propan-2-ol; 1-isopropyl-4-methyl-7-thiabicyclo[2.2.1]heptane; (3E,5Z)-undeca-1,3,5-triene; 3,7-dimethyloct-6-en-3-ol; 1,3,3-trimethylbicyclo[2.2.1]heptan-2-yl acetate; 1,1,2,3,3-pentamethyl-2,3-dihydro-1H-indene; (Z)-6,10-dimethylundeca-5,9-dien-2-yl acetate; (Z)-dodec-3-enal; (S)-5-heptyldihydrofuran-2(3H)-one; (R)-5-heptyldihydrofuran-2(3H)-one; (E)-6,10-dimethylundeca-5,9-dien-2-yl acetate; (Z)-3-methyl-5-phenylpent-2-enenitrile; (2S,5S,6S)-2,6,10,10-tetramethyl-1-oxaspiro[4.5]decan-6-ol; (2E)-3-methyl-5-phenyl-2-pentenenitrile; (2S,5R)-2-isopropyl-5-methylcyclohexan-1-one; (R,E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol; 2-(8-isopropyl-6-methylbicyclo[2.2.2]oct-5-en-2-yl)-1,3-dioxolane; (E)-4-(2,2-dimethyl-6-methylenecyclohexyl)-3-methylbut-3-en-2-one; 3-(3-isopropylphenyl)butanal; 3-(1-ethoxyethoxy)-3,7-dimethylocta-1,6-diene; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate; 2-((3S,3aS,5R)-3,8-dimethyl-1,2,3,3a,4,5,6,7-octahydroazulen-5-yl)propan-2-ol; benzyl 2-phenylacetate; 3-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)-2,2-dimethylpropanal; 2-methyl-5-(6-methylhept-5-en-2-yl)bicyclo[3.1.0]hex-2-ene; 1-(1,1,2,3,3,6-hexamethyl-2,3-dihydro-1H-inden-5-yl)ethan-1-one; (E)-tridec-2-enal; (1R,4S,4aS,6R,8aS)-4,8a,9,9-tetramethyloctahydro-1,6-methanonaphthalen-1(2H)-ol; p-tolyl hexanoate; 5-hexyl-4-methyldihydrofuran-2(3H)-one; ethyl (2Z,4E)-deca-2,4-dienoate; 2,4-dimethyl-6-phenyl-3,6-dihydro-2H-pyran; 2-cyclohexylidene-2-phenylacetonitrile; (4-(prop-1-en-2-yl)cyclohex-1-en-1-yl)methyl acetate; (4-(prop-1-en-2-yl)cyclohex-1-en-1-yl)methanol; (2-isopropoxyethyl)benzene; 2-cyclohexylhepta-1,6-dien-3-one; (2-(cyclohexyloxy)ethyl)benzene; phenethyl 2-methylbutanoate; phenethyl 2-phenylacetate; phenyl benzoate; phenethyl benzoate; 2-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)acetaldehyde; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl pivalate; (E)-3,3-dimethyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pent-4-en-2-ol; 1-methyl-4-(4-methylpent-3-en-1-yl)cyclohex-3-ene-1-carbaldehyde; p-tolyl 2-phenylacetate;

Ethyl 2,4,7-decatrienoate; 2-benzyl-4,4,6-trimethyl-1,3-dioxane; 2,4-dimethyl-4-phenyltetrahydrofuran; (2R,4a'R,8a'R)-3,7'-dimethyl-3',4',4a',5',8',8a'-hexahydro-1'H-spiro[oxirane-2,2'-[1,4]methanonaphthalene]; (Z)-6-ethylideneoctahydro-2H-5,8-methanochromene; 2-((S)-1-((S)-3,3-dimethylcyclohexyl)ethoxy)-2-oxoethyl propionate; methyl 2,2-dimethyl-6-methylenecyclohexane-1-carboxylate; 4-methyl-2-phenyl-3,6-dihydro-2H-pyran; 2,2,7,9-tetramethylspiro(5.5)undec-8-en-1-one; 3-methyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pentan-2-ol; (Z)-2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol; (E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol; 1-(3-hydroxy-3-methylpent-4-en-1-yl)-2,5,5,8a-tetramethyldecahydronaphthalen-2-ol; (4aR,6aS,10aS,10bR)-3,4a,7,7,10a-pentamethyl-4a,5,6,6a,7,8,9,10,10a,10b-decahydro-1H-benzo[f]chromene; (4aR,8aR)-4a,8-dimethyl-2-(propan-2-ylidene)-1,2,3,4,4a,5,6,8a-octahydronaphthalene; 2-(1-(3,3-dimethylcyclohexyl)ethoxy)-2-methylpropyl cyclopropanecarboxylate; 3-(4-isobutylphenyl)-2-methylpropanal; (1aR,4aR,7S,7aR,7bR)-1,1,7-trimethyl-4-methylenedecahydro-1H-cyclopropa[e]azulen-7-ol; 1-(spiro[4.5]dec-7-en-7-yl)pent-4-en-1-one; (Z)-dodec-4-enal; (1S,4S,4aR,8aR)-4-isopropyl-1,6-dimethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-ol; (1S,4S,4aR,8aS)-4-isopropyl-1,6-dimethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-ol; 3-methyl-2-pentylcyclopentan-1-one; 2,6,10,10-tetramethyl-1-oxaspiro[4.5]dec-6-ene; (1aR,4aS)-2,4a,8,8-tetramethyl-1,1a,4,4a,5,6,7,8-octahydrocyclopropa[d]naphthalene; 1-isopropyl-2-methoxy-4-methylbenzene; 1-(2,2,6-trimethylcyclohexyl)hexan-3-ol; (2E,6E)-3,7,11-trimethyldodeca-2,6,10-trien-1-ol; (Z)-dec-2-enal; (E)-non-2-enal; (E)-dec-4-enal; (Z)-oxacycloheptadec-8-en-2-one; (Z)-3,7-dimethylocta-1,3,6-triene; (Z)-3,7-dimethylocta-1,3,6-triene; (E)-3,7-dimethylocta-2,6-dien-1-ol; (1R-(1alpha,3alpha,4aalpha))-2,3,4,4a,5,6-hexahydro-2,2-dimethyl-1,3-methanonaphthalen-7(1H)-one; tridecan-1-ol; methyl 2-((1-hydroxy-3-phenylbutyl)amino)benzoate; 1-((2E,5Z,9Z)-2,6,10-trimethylcyclododeca-2,5,9-trien-1-yl)ethan-1-one; decahydro-2,6,6,7,8,8-hexamethyl-2h-indeno(4,5-b)furan; pentamethyl octahydroindenodioxane; undecanal; (E)-4-methyldec-3-en-5-ol; (3R,4aS,5R)-4a,5-dimethyl-3-(prop-1-en-2-yl)-1,2,3,4,4a,5,6,7-octahydronaphthalene; 2-((2R,8R,8aS)-8,8a-dimethyl-1,2,3,4,6,7,8,8a-octahydronaphthalen-2-yl)propan-2-ol; (Z)-2-methyl-4-(2,6,6-trimethylcyclohex-2-en-1-yl)but-2-enal; 1-methoxy-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoindene; methyl (Z)-2-((3-(4-(tert-butyl)phenyl)-2-methylpropylidene)amino)benzoate; 2,4,6-trimethyl-4-phenyl-1,3-dioxane; 1-((3R,3aR,7R,8aS)-3,6,8,8-tetramethyl-2,3,4,7,8,8a-hexahydro-1H-3a,7-methanoazulen-5-yl)ethan-1-one; methyl (Z)-2-(((2,4-dimethylcyclohex-3-en-1-yl)methylene)amino)benzoate; 4,8-dimethyl-2-(propan-2-ylidene)-1,2,3,3a,4,5,6,8a-

octahydroazulen-6-ol; 4,8-dimethyl-2-(propan-2-ylidene)-1,2,3,3a,4,5,6,8a-octahydroazulen-6-yl acetate; decahydro-3H-spiro[furan-2,5'-[4,7]methanoindene]; (2Z,6E)-nona-2,6-dienenitrile; (1aR,4S,4aS,7R,7aS,7bS)-1,1,4,7-tetramethyldecahydro-1H-cyclopropa[e]azulen-4-ol; 3,5,5,6,7,8,8-heptamethyl-5,6,7,8-tetrahydronaphthalene-2-carbonitrile; (1S,2S,3S,5R)-2,6,6-trimethylspiro[bicyclo[3.1.1]heptane-3,1'-cyclohexan]-2'-en-4'-one; 1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene]; (2'S,4a'S,8a'S)-1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene]; (1R,8aR)-4-isopropyl-1,6-dimethyl-1,2,3,7,8,8a-hexahydronaphthalene; (7,7,8,8-tetramethyloctahydro-2,3b-methanocyclopenta[1,3]cyclopropa[1,2]benzen-4-yl)methanol; 4,5-epoxy-4,11,11-trimethyl-8-methylenebicyclo(7.2.0)undecane; 1,3,4,6,7,8alpha-hexahydro-1,1,5,5-tetramethyl-2H-2,4alpha-methanophtalen-8(5H)-one, more preferably said one or more malodor reduction materials are selected from the group consisting of 3-methoxy-7,7-dimethyl-10-methylenebicyclo[4.3.1]decane; 2,4a,5,8a-tetramethyl-1,2,3,4,4a,7,8,8a-octahydronaphthalen-1-yl formate; 2,2,6,8-tetramethyl-1,2,3,4,4a,5,8,8a-octahydronaphthalen-1-ol; (4R,4aS,6R)-4,4a-dimethyl-6-(prop-1-en-2-yl)-4,4a,5,6,7,8-hexahydronaphthalen-2(3H)-one; ((3S,3aR,6R,8aS)-7,7-dimethyl-8-methyleneoctahydro-1H-3a,6-methanoazulen-3-yl)methanol; (E)-cyclohexadec-8-en-1-one; (Z)-1-(benzyloxy)-2-methoxy-4-(prop-1-en-1-yl)benzene; 1-((2S,3S)-2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethan-1-one; (1S,2S,4S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl isobutyrate; 2,3-dihydro-3,3-dimethyl-1H-indene-5-propanal; 3-(3,3-dimethyl-2,3-dihydro-1H-inden-5-yl)propanal; 2-((2R,4aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,7-octahydronaphthalen-2-yl)propan-2-ol; 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopenta[g]isochromene; 8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl acetate; octahydro-1H-4,7-methanoinden-5-yl acetate; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl butyrate; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-5-yl isobutyrate; (5R,6R)-3,6-dimethyl-5-(prop-1-en-2-yl)-6-vinyl-4,5,6,7-tetrahydrobenzofuran; (E)-cycloheptadec-9-en-1-one; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-3-yl formate; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-6-yl acetate; (3R,3aS,6R,7R,8aS)-3,6,8,8-tetramethyloctahydro-1H-3a,7-methanoazulen-6-ol; 5-methyl-1-(2,2,3-trimethylcyclopent-3-en-1-yl)-6-oxabicyclo[3.2.1]octane; (Z)-4,11,11-trimethyl-8-methylenebicyclo[7.2.0]undec-3-en-5-yl acetate; (1S,2S,5R,8S)-4,4,8-trimethyltricyclo[6.3.1.02,5]dodecan-1-ol; (1S,2S)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl isobutyrate; (Z)-2-methyl-5-((1S,2R,4R)-2-methyl-3-methylenebicyclo[2.2.1]heptan-2-yl)pent-2-

en-1-ol; (1S,4R,7R)-1,4,9,9-tetramethyl-1,2,3,4,5,6,7,8-octahydro-4,7-methanoazulene; (1aS,5aR,9aR)-1a,5,5,7-tetramethyl-1a,2,3,4,5,5a,8,9-octahydrobenzo[1,7]cyclohepta[1,2-b]oxirene; (3R,3aS,7S,8aS)-3,8,8-trimethyl-6-methyleneoctahydro-1H-3a,7-methanoazulene; 4-methoxybenzyl 2-phenylacetate; 2,2,7,7,8,9,9-heptamethyldecahydroindeno[4,3a-b]furan; (4R,4aS)-4,4a-dimethyl-6-(propan-2-ylidene)-4,4a,5,6,7,8-hexahydronaphthalen-2(3H)-one; (E)-5-(2,3-dimethyltricyclo[2.2.1.02,6]heptan-3-yl)-2-methylpent-2-en-1-ol; (1R,3aS,7S,8aR)-1,4,9,9-tetramethyl-2,3,6,7,8,8a-hexahydro-1H-3a,7-methanoazulene; (1aR,4R,4aR,7bS)-1,1,4,7-tetramethyl-1a,2,3,4,4a,5,6,7b-octahydro-1H-cyclopropa[e]azulene; 2-((2R,4aR,8aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,8a-octahydronaphthalen-2-yl)propan-2-ol; (3aR,3bR,4S,7R,7aS)-4-isopropyl-7-methyl-3a,3b,4,5,6,7-hexahydro-1H-cyclopenta[1,3]cyclopropa[1,2]benzene; (3R,5aS,9aR)-2,2,5a,9-tetramethyl-3,4,5,5a,6,7-hexahydro-2H-3,9a-methanobenzo[b]oxepine; (1aR,4aS,7R,7aR,7bS)-1,1,7-trimethyl-4-methylenedecahydro-1H-cyclopropa[e]azulene; 2-((2S,4aR,8aR)-4a,8-dimethyl-1,2,3,4,4a,5,6,8a-octahydronaphthalen-2-yl)propan-2-ol; 1-(3,5,5,6,8,8-hexamethyl-5,6,7,8-tetrahydronaphthalen-2-yl)ethan-1-one; (E)-cyclohexadec-5-en-1-one; (1aR,2S,4aS)-2,4a,8,8-tetramethyloctahydrocyclopropa[d]naphthalen-3(1H)-one; 2-((2R,4aS)-4a,8-dimethyl-1,2,3,4,4a,5,6,7-octahydronaphthalen-2-yl)propan-2-ol; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate; 1-(1,1,2,3,3,6-hexamethyl-2,3-dihydro-1H-inden-5-yl)ethan-1-one; (1R,4S,4aS,6R,8aS)-4,8a,9,9-tetramethyloctahydro-1,6-methanonaphthalen-1(2H)-ol; 3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl pivalate; (2R,4a'R,8a'R)-3,7'-dimethyl-3',4',4a',5',8',8a'-hexahydro-1'H-spiro[oxirane-2,2'-[1,4]methanonaphthalene]; 2,2,7,9-tetramethylspiro(5.5)undec-8-en-1-one; (Z)-2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol; (4aR,6aS,10aS,10bR)-3,4a,7,7,10a-pentamethyl-4a,5,6,6a,7,8,9,10,10a,10b-decahydro-1H-benzo[f]chromene; (1aR,4aR,7S,7aR,7bR)-1,1,7-trimethyl-4-methylenedecahydro-1H-cyclopropa[e]azulen-7-ol; 1-(spiro[4.5]dec-7-en-7-yl)pent-4-en-1-one; (1aR,4aS)-2,4a,8,8-tetramethyl-1,1a,4,4a,5,6,7,8-octahydrocyclopropa[d]naphthalene; (1R-(1alpha,3alpha,4aalpha))-2,3,4,4a,5,6-hexahydro-2,2-dimethyl-1,3-methanonaphthalen-7(1H)-one; 2-((2R,8R,8aS)-8,8a-dimethyl-1,2,3,4,6,7,8,8a-octahydronaphthalen-2-yl)propan-2-ol; 1-((3R,3aR,7R,8aS)-3,6,8,8-tetramethyl-2,3,4,7,8,8a-hexahydro-1H-3a,7-methanoazulen-5-yl)ethan-1-one; methyl (Z)-2-(((2,4-dimethylcyclohex-3-en-1-yl)methylene)amino)benzoate; 4,8-dimethyl-2-(propan-2-ylidene)-1,2,3,3a,4,5,6,8a-octahydroazulen-6-yl acetate; decahydro-3H-spiro[furan-2,5'-[4,7]methanoindene]; (1aR,4S,4aS,7R,7aS,7bS)-1,1,4,7-tetramethyldecahydro-1H-cyclopropa[e]azulen-4-ol; 3,5,5,6,7,8,8-heptamethyl-5,6,7,8-tetrahydronaphthalene-2-carbonitrile; (1S,2S,3S,5R)-2,6,6-

trimethylspiro[bicyclo[3.1.1]heptane-3,1'-cyclohexan]-2'-en-4'-one; 1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene]; (2'S,4a'S,8a'S)-1',1',5',5'-tetramethylhexahydro-2'H,5'H-spiro[[1,3]dioxolane-2,8'-[2,4a]methanonaphthalene]; tetrahydronaphthalen-2-yl)-1,3-dioxolane; 2-(cyclohexyloxy)-1,7,7-trimethylbicyclo[2.2.1]heptane; 4-((2R)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl)cyclohexan-1-ol; 8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl propionate; (1aS,2aR,3R,5aS,7R,7aR)-3,6,6,7a-tetramethyloctahydro-2H-2a,7-methanoazuleno[5,6-b]oxirene; 4,5-epoxy-4,11,11-trimethyl-8-methylenebicyclo(7.2.0)undecane; 1,3,4,6,7,8alpha-hexahydro-1,1,5,5-tetramethyl-2H-2,4alpha-methanophtalen-8(5H)-one, and most preferably said one or more malodor reduction materials are selected from the group consisting of 3-(3,3-dimethyl-2,3-dihydro-1H-inden-5-yl)propanal; 8,8-dimethyl-3a,4,5,6,7,7a-hexahydro-1H-4,7-methanoinden-6-yl acetate; 2,2,7,7,8,9,9-heptamethyldecahydroindeno[4,3a-b]furan; (E)-cyclohexadec-5-en-1-one; 4,5-epoxy-4,11,11-trimethyl-8-methylenebicyclo(7.2.0)undecane; 1,3,4,6,7,8alpha-hexahydro-1,1,5,5-tetramethyl-2H-2,4alpha-methanophtalen-8(5H)-one and mixtures thereof.

5. An article according to any preceding claim, wherein said malodor reduction materials are not selected from the group consisting of geranyl nitrile; helional; nonanal; linalool; (S)-(+)-linalool; (R)-(-)-linalool; nerol; tetrahydrolinalool; 2-phenylethyl acetate; eugenol; ethyl linalool; allyl heptoate; agrumen nitrile; citronitrile; 2,2-dimethyl-3-(m-tolyl)propan-1-ol; 2-methyl-5-phenylpentan-1-ol; dodecanenitrile; 2-heptylcyclopentan-1-one; methyl nonyl acetaldehyde; 3-(2-ethylphenyl)-2,2-dimethylpropanal; (Z)-1-(2,6,6-trimethylcyclohex-2-en-1-yl)but-2-en-1-one; (R,E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)but-2-en-1-ol; 4-(tert-butyl)cyclohexyl acetate; 1-cyclohexylethyl (E)-but-2-enoate; allyl 2-(cyclohexyloxy)acetate; alpha terpinyl acetate; beta terpinyl acetate; gamma terpinyl acetate; methyl dodecyl ether ; 2,4-dimethyl-4,4a,5,9b-tetrahydroindeno[1,2-d][1,3]dioxine; cinnamyl isobutyrate; (E)-2-methyl-4-(2,6,6-trimethylcyclohex-1-en-1-yl)but-2-enal; gamma methyl ionone; ethyl 2,3,6-trimethyl cyclohexyl carbonate ethyl 2,3,6-trimethyl cyclohexyl carbonate; Citral diethyl acetal; Dimethoxycyclododecane; 1-((2S,3S)-2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydronaphthalen-2-yl)ethan-1-one; oxacyclohexadecan-2-one; 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopenta[g]isochromene; Ethylene brassylate; Methyl (Z)-2-((3-(4-(tert-butyl)phenyl)-2-methylpropylidene)amino)benzoate; 4,7-Methano-1H-inden-5-ol, 3a,4,5,6,7,7a-hexahydro-, 5-acetate; cedryl methyl ether; vetivert acetate; 1-((3R,3aR,7R,8aS)-3,6,8,8-

tetramethyl-2,3,4,7,8,8a-hexahydro-1H-3a,7-methanoazulen-5-yl)ethan-1-one; Benzophenone; Farnesol; trans,trans-farnesol; 3-(3-isopropylphenyl)butanal; 2,6,10-trimethylundec-9-enal; 3-(4-(tert-butyl)phenyl)propanal; 3-(4-isopropylphenyl)-2-methylpropanal; Citronellal (l); Citronellal (d); (E)-4,8-dimethyldeca-4,9-dienal; Pino Acetaldehyde; 3-(4-(tert-butyl)phenyl)-2-methylpropanal; Cinnamic aldehyde; Citral; Geranial; MethoxyMelonal; o-methoxycinnamaldehyde; (E)-4-((3aS,7aS)-octahydro-5H-4,7-methanoinden-5-ylidene)butanal; Methyl Octyl Acetaldehyde; 3-(4-methoxyphenyl)-2-methylpropanal; 5-methoxyoctahydro-1H-4,7-methanoindene-2-carbaldehyde; Iso Cyclocitral; Octanal; 2-Undecenal; 10-Undecenal; Trans-trans-2,6-Nonadienal; Trans-2,cis-6-nondienal; Heliotropin; Hexyl Cinnamic aldehyde; p-methyl-alpha- pentylcinnamaldehyde; Alpha-methyl cinnamaldehyde; 3,4-dimethoxybenzaldehyde; Myrtenal; Perillaldehyde; Maceal; Methyl palmitate; Methyl iso eugenol and mixtures thereof.

6. An article according to any preceding claim having a weight ratio of fabric softener active to dry substrate ranging from 10:1 to 0.5:1, preferably from 5:1 to 1:1, preferably said a fabric softener active is selected from the group consisting of a quaternary ammonium compound, a silicone polymer, a polysaccharide, a clay, an amine, a fatty ester, a dispersible polyolefin, a polymer latex and mixtures thereof.

7. An article according to any preceding claim comprising a quaternary ammonium compound selected from the group consisting of bis-(2-hydroxypropyl)-dimethylammonium methylsulphate fatty acid ester, 1,2-di(acyloxy)-3-trimethylammoniopropane chloride., N, N-bis(stearoyl-oxy-ethyl) N,N-dimethyl ammonium chloride, N,N-bis(tallowoyl-oxy-ethyl) N,N-dimethyl ammonium chloride, N,N-bis(stearoyl-oxy-ethyl) N-(2 hydroxyethyl) N-methyl ammonium methylsulfate., 1, 2 di (stearoyl-oxy) 3 trimethyl ammoniumpropane chloride, dicanoladimethylammonium chloride, di(hard)tallowdimethylammonium chloride dicanoladimethylammonium methylsulfate, 1-methyl-1-stearoylamidoethyl-2-stearoylimidazolinium methylsulfate, 1-tallowylamidoethyl-2-tallowylimidazoline, Dipalmethyl Hydroxyethylammoinum Methosulfate and mixtures thereof.

8. An article according to any preceding claim comprising a fabric softening active having an Iodine Value of between 0-140, preferably 5-100, more preferably 10-80, even more preferably, 15-70, most preferably 18-25.

9. A article according to any preceding claim, said article comprising an adjunct ingredient selected from the group consisting of surfactants, builders, chelating agents, dye transfer inhibiting agents, dispersants, enzymes, and enzyme stabilizers, catalytic materials, bleach activators, hydrogen peroxide, sources of hydrogen peroxide, preformed peracids, polymeric dispersing agents, clay soil removal/anti-redeposition agents, brighteners, suds suppressors, dyes, hueing dyes, perfumes, perfume delivery systems, structure elasticizing agents, carriers, structurants, hydrotropes, processing aids, solvents, pigments and mixtures thereof.

10. A method of controlling malodors comprising: contacting a situs comprising a malodor or that will develop a malodor with an article selected from the group consisting of the articles of Claims 1 to 9.

11. The method of Claim 10 wherein, said situs comprises a fabric and said contacting step comprises contacting said fabric with a sufficient amount of Applicants' article containing Malodor reducing composition to provide said fabric with a level of malodor reduction material at least 0.0025 mg of malodor reduction material/kg of fabric, preferably from 0.00025 mg of malodor reduction material /kg of fabric to 25mg of malodor reduction material /kg of fabric, more preferably from 0.025mg of malodor reduction material/kg of fabric to 20mg of malodor reduction material/kg of fabric, most preferably from 0.25 of malodor reduction material/kg of fabric to 10mg of malodor reduction material/kg of fabric of said sum of malodor reduction materials.