Table S1: Distribution of the profiled ingredients in the original and copied sunscreen samples.

Ingredients \ Products	Frequency *2	OP1	OP2	OP3	OP4	OP5	CP1	CP2	CP3	CP4	CP5
2-Palmitoylglycerol *1	8			●	●	●	●	●	●	●	●
Glycerine	8	●	●	●		●	●	●	●	●	
Glyceryl Monostearate	7	●		●	●	●	●	●			●
Stearic Acid	6			●			●	●	●	●	●
Nonadecyl Alcohol *1	6	●		●	●	●			●		●
Pentadecyl Alcohol	5		●	●					●	●	●
Triethanolamine Hydrochloride	5		●				●	●	●	●	
Butyl Methoxydibenzoylmethane	4	●		●	●	●					
1-Methoxysilatrane *1	4		●				●		●		●
Octocrylene	4		●	●	●	●					
Cyclopentasiloxane, Decamethyl-	3			●	●	●					
Cyclohexasiloxane, Dodecamethyl-	3			●	●	●					
Chlorphenesin	3		●	●	●						
Caprylyl Glucoside	3	●		●	●						
Linalool L	3						●	●	●		
Methyl Dihydrojasmonate	3	●					●	●			
Octinoxate	3		●	●		●					
Palmitic Acid	3			●			●			●	
Lauryl Alcohol	3								●	●	●
Butylphenyl Methylpropional	3						●	●	●		
Pentadecanoic Acid *1	3							●	●		●
Propylparaben	3						●	●		●	
9-Octadecenamide *1	3						●			●	●
2-Phenoxyethanol	2			●	●						

Table S1: Continue

Ingredients \ Products	Frequency *2	OP1	OP2	OP3	OP4	OP5	CP1	CP2	CP3	CP4	CP5
Dicaprylyl Ether	2	●			●						
Caprylyl Glycol	2	●	●								
Butylated Hydroxytoluene	2		●							●	
Myristyl Alcohol	2			●						●	
Methyl 4-hydroxybenzoate	2					●				●	
Diethyl Phthalate	2								●		●
L-Limonene	2						●	●			
Lauryl Stearate	2								●		●
Myristic Acid	2						●	●			
Isopropyl Myristate	2						●	●			
Tetradecyl Bromide *1	2								●		●
Eicosane	2					●					●
Cetyl Alcohol	1								●		
Ethyl Linalool	1						●				
Behenic Alcohol	1									●	
Methylionone	1						●				
1-(4-tert-Butylphenyl) propan-2-one *1	1						●				
α Isomethyl Ionone	1						●				
1,2-Dipropylene Glycol *2	1									●	
Tricyclo[3.1.0.0(2,4)]hexane,3,3,6,6-tetraethyl *1	1						●				
MDM Hydantoin	1									●	
Hexamethylindanopyran	1							●			

Table S1: Continue

Ingredients \ Products	Frequency *2	OP1	OP2	OP3	OP4	OP5	CP1	CP2	CP3	CP4	CP5
Triethanolamine	1										●
Myristyl Palmitate *1	1										●
Bis(2-Ethylhexyl) Ether *1	1		●								
Octisalate	1		●								
Diisooctyl Maleate *1	1		●								
Isohexadecane *1	1			●							
Etocrylene	1		●								
Benzenepropanoic Acid, a-(1-hydroxyethyl)-b-phenyl- *1	1		●								
Tocopherol Acetate	1		●								
3,3-Diphenylacrylonitrile *1	1			●							
3-(4-Methoxy-phenyl)-propionic acid ethyl ester *1	1			●							
Ethylhexanol	1					●					
4-tert-Butylacetophenone	1					●					
4-Methoxybutyrophenone *1	1					●					
4-t-Butylbenzoic acid	1					●					
Benzophenone	1					●					
p-Methoxybenzoic acid, tetradecyl ester *1	1					●					
Dipropylene Glycol	1						●				
Benzene,1-tert-butyl-4-cyclopropylmethyl- *1	1					●					
Pentylene Glycol	1				●						

Table S1: Continue

Ingredients \ Products	Frequency *2	OP1	OP2	OP3	OP4	OP5	CP1	CP2	CP3	CP4	CP5
Cyclotetrasiloxane, Octamethyl-	1				●						
1-Octanol	1				●						
Didecyl Ether	1				●						
1-Heptacosanol *1	1				●						
Bis (4-methoxybenzoyl) Methane *1	1				●						
1-Methylsilatrane *1	1		●								
Phenethyl Alcohol	1	●									
Benzoic acid	1	●									
α-Terpineol	1	●									
Triacetin	1	●									
Diisopropyl Adipate	1	●									
α-Ionone	1	●									
Cyclamen Aldehyde	1	●									
Isoamyl Salicylate	1	●									
Tricaprylin	1	●									
δ-Tocopherol	1	●									
Caprylic Anhydride *1	1	●									
2-Methylhexacosane *1	1								●		
1-Tridecene *1	1										●
Diethylhexyl Fumarate	1		●								

*1 *not their INCI name.*

*2 *The number of sunscreen products out of 10 contains such ingredient.*

Table S2: Ingredients that weren't written on the ingredient label of the sunscreen products.

Product	Ingredients	
OP1	Nonadecyl Alcohol	Triacetin
	Caprylyl Glucoside	α-Ionone
	Methyl Dihydrojasmonate	Cyclamen Aldehyde
	Dicaprylyl Ether	Isoamyl Salicylate
	Phenethyl Alcohol	Caprylic Anhydride
	α-Terpineol	
	Ingredients	
OP2	Phenethyl Alcohol	Diisooctyl Maleate
	Triethanolamine Hydrochloride	Etocrylene
	1-Methoxysilatrane	1-Methylsilatrane
	Bis(2-Ethylhexyl) Ether	Diethylhexyl Fumarate
	Benzenepropanoic Acid, a-(1-hydroxyethyl)-b-phenyl-	
Ingredients		
OP3	Nonadecyl Alcohol	Palmitic Acid
	Caprylyl Glucoside	Myristyl Alcohol
	2-Palmitoylglycerol	Isohexadecane
	Stearic Acid	Pentadecyl Alcohol
	3,3-Diphenylacrylonitrile	
	Ingredients	
OP4	Nonadecyl Alcohol	Cyclohexasiloxane, Dodecamethyl-
	Caprylyl Glucoside	Dicaprylyl Ether
	Cyclopentasiloxane, Decamethyl-	Cyclotetrasiloxane, Octamethyl-
	2-Palmitoylglycerol	Bis (4-methoxybenzoyl) Methane

Table S2: Continue

	Ingredients	
OP5	**Nonadecyl Alcohol**	**Eicosane**
	2-Palmitoylglycerol	**Ethylhexanol**
	Methyl 4-hydroxybenzoate	**4-tert-Butylacetophenone**
	4-Methoxybutyrophenone	**4-t-Butylbenzoic acid**
	Benzophenone	**p-Methoxybenzoic acid, tetradecyl ester**
	Benzene,1-tert-butyl-4-cyclopropylmethyl-	
	Ingredients	
CP1	**2-Palmitoylglycerol**	**Stearic Acid**
	1-Methoxysilatrane	**Linalool L**
	Methyl Dihydrojasmonate	**Palmitic Acid**
	Butylphenyl Methylpropional	**9-Octadecenamide**
	L-Limonene	**Myristic Acid**
	Isopropyl Myristate	**Ethyl Linalool**
	Methylionone	**1-(4-tert-Butylphenyl)propan-2-one**
	α Isomethyl Ionone	**Tricyclo[3.1.0.0(2,4)]hexane,3,3,6,6-tetraethyl**
	Ingredients	
CP2	**Copy Product 2 has no ingredient label**	

Table S2: Continue

Ingredients		
CP3	**2-Palmitoylglycerol**	**Lauryl Alcohol**
	Glycerine	**Butylphenyl Methylpropional**
	Stearic Acid	**Pentadecanoic Acid**
	Nonadecyl Alcohol	**Diethyl Phthalate**
	Phenethyl Alcohol	**Lauryl Stearate**
	Triethanolamine Hydrochloride	**Tetradecyl Bromide**
	1-Methoxysilatrane	**Cetyl Alcohol**
	Linalool L	**2-Methylhexacosane**
	Ingredients	
CP4	**Copy Product 4 has no ingredient label**	
	Ingredients	
CP5	**Myristyl Palmitate**	**1-Tridecene**
	Triethanolamine	**Tetradecyl Bromide**
	Eicosane	**Lauryl Stearate**
	Lauryl Alcohol	**9-Octadecenamide**
	Pentadecanoic Acid	**Diethyl Phthalate**
	1-Methoxysilatrane	**Nonadecyl Alcohol**
	2-Palmitoylglycerol	**Phentadecyl Alcohol**
	Glyceryl Monostearate	

Table S3: Qualitative analysis of the original and copied sunscreen products by Gas chromatography/Mass spectrometry.

INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
2-Palmitoylglycerol *[1]	45	15.450	23470-00-0	$C_{19}H_{38}O_4$	330	Palmitin, 2-mono-; Palmitic acid β-monoglyceride; 2-Hexadecanoyl glycerol; 2-Monopalmitin; 2-Monopalmitoyl-sn-glycerol; Glycerol β-palmitate; 2-Hydroxy-1-(hydroxymethyl) ethyl palmitate; Glycerol 2-hexadecanoate; Glycerol, 2-palmitate; 2-Monopalmitoylglycerol; Hexadecanoic acid, 2-hydroxy-1-(hydroxymethyl) ethyl ester; β-Monopalmitin	 *[3]
Nonadecyl Alcohol *[1]	**13**	**11.485**	**1454-84-8**	**$C_{19}H_{40}O$**	**284**	**1-Nonadecanol; Nonadecanol; Nonadecan-1-ol; n-Nonadecanol-1**	 *[3]
Glycerine	1	3.335	56-81-5	$C_3H_8O_3$	92	Glycerol;1,2,3-Propanetriol; Glyceritol; Glycyl alcohol; Glyrol; Glysanin; Osmoglyn; Propanetriol; Trihydroxypropane; Dagralax; Glycerin; 1,2,3-Trihydroxypropane	 *[3]
1-Tridecene *[1]	85	5.520	2437-56-1	$C_{13}H_{26}$	182	n-Tridec-1-ene; 1-C13H26; Tridecene-1; α-Tridecene; Tridec-1-ene	 *[3]

Table S3: Continue

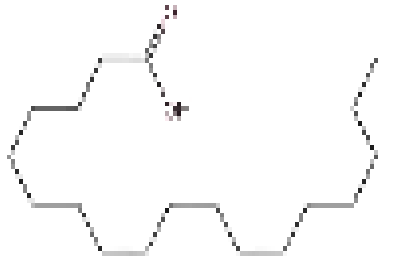
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Glyceryl Monostearate *[1]	16	16.715	123-94-4	$C_{21}H_{42}O_4$	385	Octadecanoic acid, 2,3-dihydroxypropyl ester; Stearin, 1-mono-; α-Monostearin; Aldo MSD; Aldo MSLG; Aldo 33; Aldo 75; Emerest 2407; Glycerin 1-monostearate; Glycerin 1-stearate; Glycerol α-monostearate; Glycerol 1-monostearate; Glycerol 1-stearate; Glyceryl 1-monostearate	 *3
Stearic Acid	44	13.455	57-11-4	$C_{18}H_{36}O_2$	284	Octadecanoic acid; n-Octadecanoic acid; Humko Industrene R; Hydrofol Acid 150; Hystrene S-97; Hystrene T-70; Hystrene 80; Industrene R; Kam 1000; Kam 2000; Kam 3000; Neo-Fat 18; Neo-Fat 18-53; Neo-Fat 18-54; Neo-Fat 18-55; Neo-Fat 18-59; NAA 173; Stearex Beads; Stearophanic acid	 *3
Pentadecyl Alcohol	28	11.457	629-76-5	$C_{15}H_{32}O$	228	n-1-Pentadecanol; Pentadecanol; Neodol 5; 1-Pentadecanol; Pentadecan-1-ol; n-Pentadecanol	*3 

Table S3: Continue

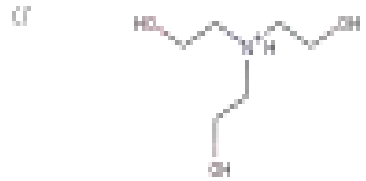
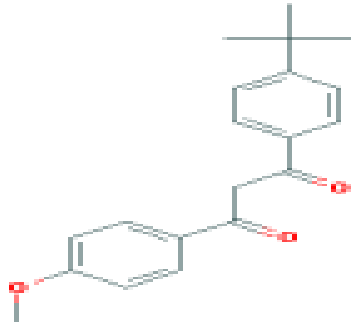
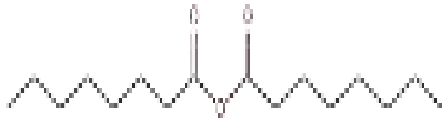
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Triethanolamine Hydrochloride	23	7.625	637-39-8	$C_6H_{16}ClNO_3$	185	Tris(2-Hydroxyethyl)ammonium chloride; 2-[bis(2-hydroxyethyl)amino]ethanol	 *3
Butyl Methoxy Dibenzoyl Methane	17	17.465	70356-09-1	$C_{20}H_{22}O_3$	310	Parsol 1789; 1-[4-(1,1-Dimethylethyl) phenyl]-3-(4-methoxyphenyl) propane-1,3-dione	 *4
1-Methoxysilatrane *[1]	21	7.295	4025-80-3	$C_7H_{15}NO_4Si$	205	2,8,9-Trioxa-5-aza-1-silabicyclo(3.3.3)undecane, 1-methoxy-; 1-Methoxy-2,8,9-trioxa-5-aza-1-silabicyclo(3.3.3)undecane; Silatrane, methoxy-	 *3
Caprylic Anhydride *[1]	20	22.990	623-66-5	$C_{16}H_{30}O_3$	270	Octanoic acid, anhydride; Octanoic anhydride	 *3

Table S3: Continue

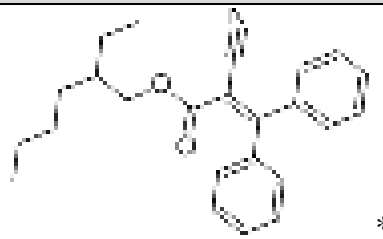
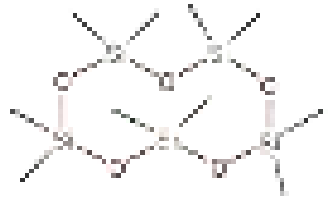
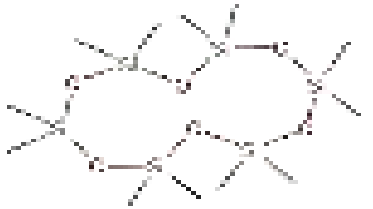
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Octocrylene	34	16.620	6197-30-4	$C_{24}H_{27}NO_2$	361	2-Propenoicacid,2-cyano-3,3-diphenyl-,2-ethylhexylester; octocrilene; 2-Ethyl-2-cyano-3,3-Diphenylacrylate; Uvinul N-539; Neo Heliopan	 *4
Cyclopentasiloxane, Decamethyl-	36	5.080	541-02-6	$C_{10}H_{30}O_5Si_5$	370	Decamethylcyclopentasiloxane; Dimethylsiloxane pentamer; Dekamethylcyklopentasiloxan; CD3770; D3770; Decamethylcylopentasiloxane	 *3
Cyclohexasiloxane, Dodecamethyl-	38	6.830	540-97-6	$C_{12}H_{36}O_6Si_6$	444	2,2,4,4,6,6,8,8,10,10,12,12-Dodecamethylcyclohexasiloxane; Dodecamethylcyclohexasiloxane; dodecamethyl-cyclohexasiloxan; EINECS 208-762-8	 *3
Caprylyl Glycol	5	6.000	1117-86-8	$C_8H_{18}O_2$	146	1,2-Octanediol ; 1,2-Dihydroxyoctane; 1,2-Octylene glycol; octane-1,2-diol; NSC 71546; EINECS 214-254-7	 *3

Table S3: Continue

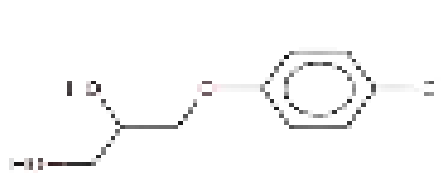
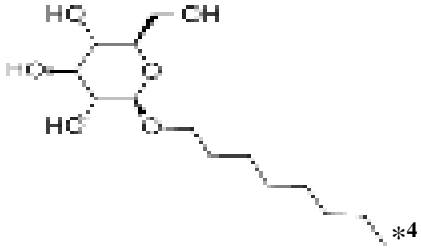
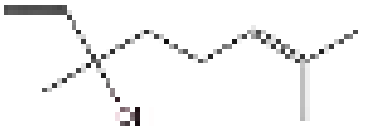
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Chlorphenesin	26	10.285	104-29-0	$C_9H_{11}ClO_3$	202	1,2-Propanediol, 3-(4-chlorophenoxy)-; 1,2-Propanediol, 3-(p-chlorophenoxy)-; p-Chlorophenyl glyceryl ether; p-Chlorophenyl-α-glyceryl ether; Adermykon; Demykon; Gecophen; Mycil	 *3
Caprylyl Glucoside	15	13.780	29836-26-8	$C_{14}H_{28}O_6$	292	b-octylglucoside; octyl beta-d-glucopyranoside; n-octyl-beta-d-glucopyranoside; octyl beta-d-glucoside; n-octyl glucoside; octyl hexoppyranoside; 1-O-n-octyl-beta-D-glucopyranoside	 *4
Linalool L	63	4.570	78-70-6	$C_{10}H_{18}O$	154	1,6-Octadien-3-ol, 3,7-dimethyl-; 3,7-Dimethylocta-1,6-dien-3-ol; (.+/-.)-Linalool; β-Linalool; Linaloyl oxide	 *3

Table S3: Continue

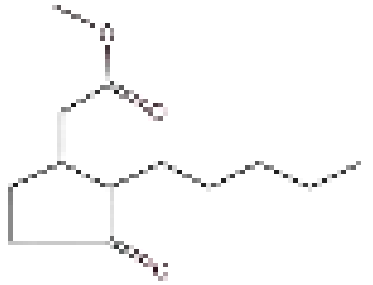
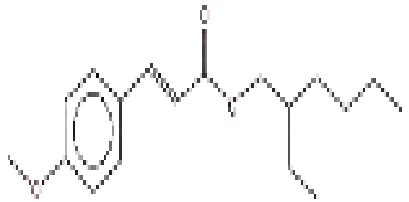
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Methyl Dihydrojasmonate	12	9.755	24851-98-7	$C_{13}H_{22}O_3$	226	Cyclopentaneacetic acid, 3-oxo-2-pentyl-, methyl ester; Methyl (3-oxo-2-pentylcyclopentyl)acetate; Hedione; Kharismal; Methyl (2-pentyl-3-oxocyclopentyl)acetate; Methyl hydrojasmonate; methyl 3-oxo-2-pentylcyclopentaneacetate	 *3
Octinoxate	30	13.465	5466-77-3	$C_{18}H_{26}O_3$	290	2-Propenoic acid, 3-(4-methoxyphenyl)-, 2-ethylhexyl ester; Parsol MOX; 2-Ethylhexyl p-methoxycinnamate; 2-Ethylhexyl-4-methoxycinnamate; 2-Ethylhexyl methoxycinnamate; 2-Ethylhexyl 3-(4-methoxyphenyl)-2-propenoate; Beclovent inhaler	 *3
Lauryl Alcohol	76	8.205	112-53-8	$C_{12}H_{26}O$	186	1-Dodecanol; Lorol; Lauric Alcohol; Karukoru 20; n-Dodecanol; Alcohol C-12; Alfol 12; Lauryl 24; Pisol; S 1298; Sipol L12; Siponol L2; Siponol L5; Siponol 25; Dodecanol	 *3

Table S3: Continue

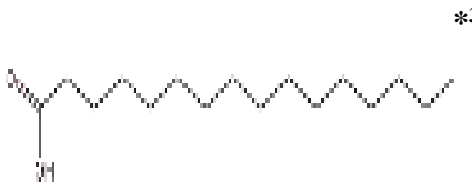
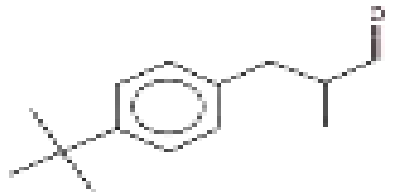
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Palmitic Acid	42	12.080	57-10-3	$C_{16}H_{32}O_2$	256	n-Hexadecanoic acid; Hexadecanoic acid; n-Hexadecoic acid; Palmitic acid; Pentadecanecarboxylic acid; Cetylic acid; Emersol 140; Emersol 143; Hexadecylic acid; Hydrofol; Hystrene 8016; Hystrene 9016; Industrene 4516; Glycon P-45; Prifac 2960; NSC 5030; Kortacid 1695	 *3
Butylphenyl Methylpropional	67	8.740	80-54-6	$C_{14}H_{20}O$	204	Lilial; Propanal, α-methyl-β-(p-tert.-butylphenyl)-; p-tert-Butyl-α-methylhydrocinnamaldehyde; Benzenepropanal, 4-(1,1-dimethylethyl)-α-methyl-; α-Methyl-p-(tert-butyl)hydrocinnamaldehyde; α-Methyl, β-(p-tert-butylphenyl)propionaldehyde; Hydrocinnamaldehyde	 *3
Eicosane	59	11.230	112-95-8	$C_{20}H_4O_2$	282	n-Eicosane; n-Icosane; icosane	 *3

Table S3: Continue

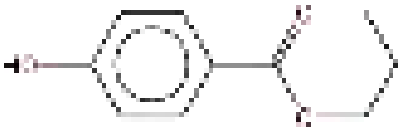
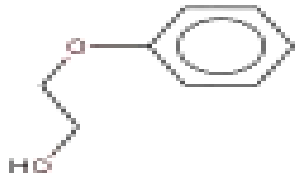
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Pentadecanoic Acid *[1]	75	12.180	1002-84-2	$C_{15}H_{30}O_2$	242	Pentadecylic acid; n-Pentadecanoic acid; n-Pentadecylic acid; Pentadecanoic (Palmitic) acid; NSC 28486; 14 FA	 *[3]
Propylparaben	68	9.580	94-13-3	$C_{10}H_{12}O_3$	180	Benzoic acid,4-hydroxy-, propyl ester**;** n-Propyl p-hydroxybenzoate ; Aseptoform P; Chemocide PK; Propyl Butex; Preserval P; Bonomold OP; Tegosept P; Solblor P; Nipasol M; Propagin; Nipazol; Nipasol; Nicor;	 *[3]
9-Octadecenamide *[1]	73	14.625	3322-62-1	$C_{18}H_{35}NO$	281	9-Oleoamide; Cis-9-Octadecenamide; Sleepamide; Octadec-9-enamide; Armid ow; Armoslip cp	 *[3]
2-Phenoxyethanol	37	5.805	122-99-6	$C_8H_{10}O_2$	138	Ethanol, 2-phenoxy-; Arosol; Phenoxetol; Phenoxethol; Phenoxyethanol; Phenoxyethyl alcohol; Phenyl cellosolve; Glycol monophenyl ether; H4644	 *[3]

Table S3: Continue

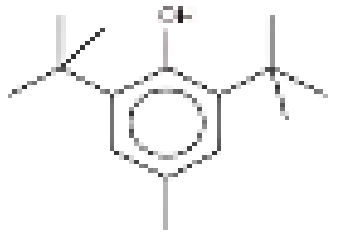
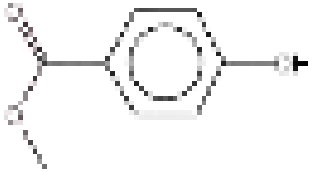
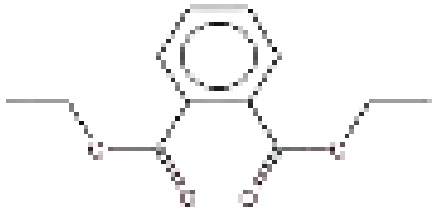
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Butylated Hydroxytoluene	25	8.605	128-37-0	$C_{15}H_{24}O$	220	Phenol, 2,6-bis(1,1-dimethylethyl)-4-methyl-; 4-Methyl-2,6-di-tert-butylphenol; BHT; AO 29; AO 4K; CAO 1; CAO 3; DBMP; BAT; Stavox; Dalpac; Deenax; Lonal; Lonole; Buks; 2,6-Di-tert-butyl-p-methylphenol	 *3
Methyl 4-hydroxybenzoate	55	8.145	99-76-3	$C_8H_8O_3$	152	Benzoic acid, 4-hydroxy-, methyl ester; Methyl p-hydroxybenzoate; Methylparaben; 4-Hydroxybenzoic acid-methyl ester; Paridol; Nipagin; Moldex; Septos; Abidol	 *3
Diethyl Phthalate	78	9.265	84-66-2	$C_{12}H_{14}O_4$	222	1,2-Benzenedicarboxylic acid, diethyl ester; Phthalic acid, diethyl ester; o-Benzenedicarboxylic acid, diethyl ester; Anozol; Ethyl phthalate; Neantine; Palatinol A; Phthalol; Placidol E; Solvanol; Unimoll DA; Diethyl-1,2-benzenedicarboxylate; Diethyl-o-phthalate	*3 

Table S3: Continue

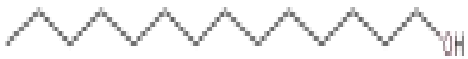
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Myristyl Alcohol	40	9.925	112-72-1	$C_{14}H_{30}O$	214	1-Tetradecanol ; n-Tetradecan-1-ol; n-Tetradecanol; n-Tetradecyl alcohol; Alfol 14; Lanette K; Lanette Wax KS; Loxanol V; Myristic alcohol; Tetradecyl alcohol; n-Tetradecanol-1; 1-Hydroxytetradecane; Dytol R-52; Tetradecanol; Dehydag wax 14; Epal 14; Lanette 14; Lorol C14; Philcohol 1400; Tetradecanol-1; Tetradecan-1-ol; NSC 8549; Fatty alcohol (C14)	*[3] 
Dicaprylyl Ether	14	12.035	629-82-3	$C_{16}H_{34}O$	242	Octane, 1,1'-oxybis-; Octyl ether; n-Octyl ether; Antar; Caprylic ether; Di-n-octyl ether; Dioctyl ether; Ether, di-n-octyl-; 1-(Octyloxy)octane; 1,1'-Oxybisoctane; NSC 28948	*[3] 
Lauryl Stearate	81	20.870	5303-25-3	$C_{30}H_{60}O_2$	452	Octadecanoic acid, dodecyl ester ; Stearic acid, dodecyl ester; Dodecyl octadecanoate; Dodecyl stearate;	*[3] 

Table S3: Continue

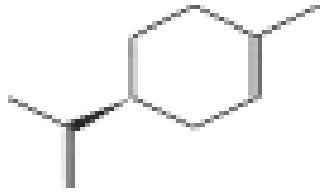
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
L-Limonene	62	3.935	5989-54-8	$C_{10}H_{16}$	136	Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (S)-; Cyclohexene, 1-methyl-4-(1-methylethenyl)-,(S); 4-Isopropenyl-1-methyl-1-cyclohexene ; p-Mentha-1,8-diene, (S)-(-)-; (-)-Limonene; Limonene; (S)-p-mentha-1,8-diene	 *[3]
Myristic Acid	71	10.575	544-63-8	$C_{14}H_{28}O_2$	228	Tetradecanoic acid; n-Tetradecanoic acid; n-Tetradecoic acid; Neo-Fat 14; Univol U 316S; 1-Tridecanecarboxylic acid; Crodacid; Emery 655; Hydrofol acid 1495; Hystrene 9014; n-Tetradecan-1-oic acid; Hystrene 9514; Philacid 1400; Prifac 2942; Prifrac 2942; NSC 5028; Tetradecanoic acid; Acide Myristique	 *[3]

Table S3: Continue

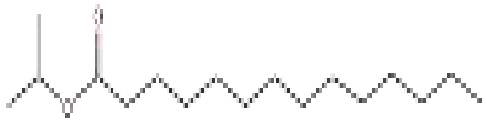
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Isopropyl Myristate	72	11.040	110-27-0	$C_{17}H_{34}O_2$	270	Tetradecanoic acid, 1-methylethyl ester; Myristic acid, isopropyl ester; Bisomel; D 50; Crodamol I.P.M.; Crodamol IPM; Deltyl Extra; Emcol-IM; Isomyst; Kessco IPM; Kesscomir; Promyr	*[3] 
Tetradecyl Bromide *[1]	77	8.980	112-71-0	$C_{14}H_{29}Br$	276	n-Tetradecyl-1-bromide; Myristyl bromide; Tetradecane, 1-bromo-; 1-Bromotetradecane; 1-Tetradecyl bromide; n-Tetradecyl bromide	*[3] 
Cetyl Alcohol	79	9.295	36653-82-4	$C_{16}H_{34}O$	242	1-Hexadecanol; Cetal; Ethal; Ethol; Cetylol; Cetanol; Adol 54; Adol 52; Aldol 54; Adol 52 NF; Alfol 16; Lorol 24; Atalco C; Cetaffine; Loxanol K; Crodacol C; Cetalol CA; Hyfatol 16; Elfacos	*[3] 
Ethyl Linalool	64	5.550	10339-55-6	$C_{11}H_{20}O$	168	3,7-dimethylnona-1,6-dien-3-ol; 1,6-Nonadien-3-OL, 3,7-dimethyl-	*[4] 

Table S3: Continue

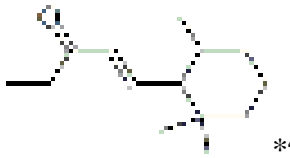
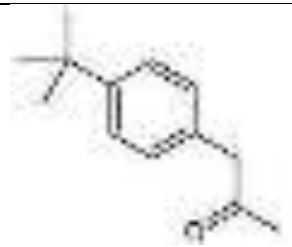
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Behenic Alcohol	84	12.900	661-19-8	$C_{22}H_{46}O$	326	1-Docosanol; Docosyl alcohol; Docosanol-(1); Cachalot BE-22; Loxiol VPG 1451; Docosan-1-ol; Behenyl alcohol; n-Docosanol; Abreva; Docosanol; IK 2; Lanette 22; NAA 422; Nacol 22-97; NSC 8407; Stenol 1822; Stenol 1822A; Tadenan	 *3
Methylionone	66	8.690	93302-56-8	$C_{14}H_{22}O$	206	Ionone, methyl-;1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexene-1-yl)-; 6-Methylionone; Cetone, alpha-; Methylionone, alpha-; A-methylionone	 *4
1-(4-tert-Butylphenyl) propan-2-one *[1]	65	8.030	81561-77-5	$C_{13}H_{18}O$	190	AC1O4YVX; SCHEMBL4689867; 4-Tert-butyl propiophone; CTK3E4295	 *4
Bis(2-ethylhexyl) ether *[1]	24	8.410	10143-60-9	$C_{16}H_{34}O$	242	Ether, bis(2-ethylhexyl); 2-Ethylhexyl Ether; Di-2-ethylhexyl ether; Di(2-ethylhexyl) ether;	 *4

Table S3: Continue

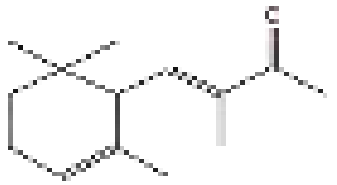
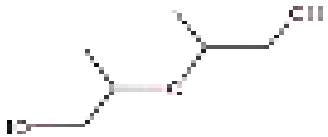
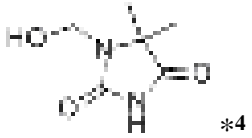
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
α Isomethyl Ionone	70	10.275	127-51-5	$C_{14}H_{22}O$	206	α-isomethyl ionone; 4-(2,6,6-Trimethyl 2-cyclohexen-1-yl)-3-methyl-3-buten-2-one; 3-Buten-2-one, 3-methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-; α-Cetone; α-Ionone, isomethyl-	 *3
1,2-Dipropylene Glycol *[1]	82	3.940	108-61-2	$C_6H_{14}O_3$	134	2,2'-oxydipropanol; 2,2'-oxy-bis-1-propanol; 2,3-dimethyl-3-oxa-pentane-1,5-diol; bis (1-methyl-2-hydroxy-ethyl) ether; 1-Propanol, 2,2'-oxybis-	 *3
Tricyclo[3.1.0.0(2,4)]hexane,3,3,6,6-tetraethyl *[1]	69	9.830	78578-92-4	$C_{14}H_{24}$	192	3,3,6,6-tetraethyl-trans-tricyclo[3.1.0.0(2,4)]hexane	 *5
MDM Hydantoin	83	6.595	116-25-6	$C_6H_{10}N_2O_3$	158	2,4-imdazolidindione,1-(Hydroxymethyl)-5,5-dimethylhydantoin; MDMH; 1-monomethylol-5,5-dimethylhydantoin; 1-Hydroxymethyl-5,5-dimethylhydantoin; mono-methyloldimethylhydantoin	 *4

Table S3: Continue

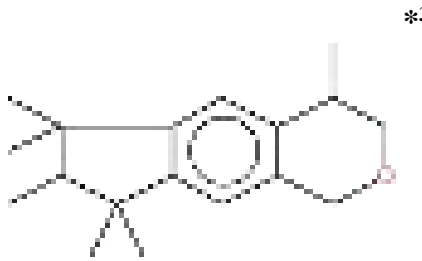
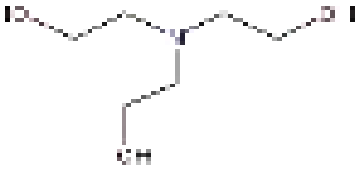
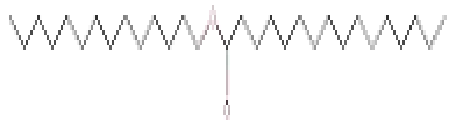
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Hexamethylindanopyran	74	11.435	1222-05-5	$C_{18}H_{26}O$	285	1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethyl-cyclopenta-γ-2-benzopyran; Galaxolide; Galoxolide; Cyclopenta[g]-2-benzopyran, 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethyl-; Pearlide; 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethypyrannoidane	 *3
Triethanolamine	85	7.620	102-71-6	$C_6H_{15}NO_3$	149	Trolamine; Ethanol, 2,2',2''-nitrilotris-; Daltogen; Nitrilotriethanol; Sterolamide; Sting-Kill; TEA; Thiofaco T-35; Triethanolamin; Tri(hydroxyethyl)amine; Triaethanolamin-NG; Trihydroxytriethylamine	 *3
Myristyl Palmitate *[1]	87	18.635	4536-26-9	$C_{30}H_{60}O_2$	452	Palmitic acid, tetradecyl ester; Myristyl palmitate; Tetradecyl hexadecanoate; Hexadecanoic acid, tetradecyl ester; Tetradecyl palmitate	 *3
Isohexadecane *[1]	39	6.915	4390-04-9	$C_{16}H_{34}$	226	Nonane, 2,2,4,4,6,8,8-heptamethyl-; 2,2,4,4,6,8,8-Heptamethylnonane; HMN; Permethyl 101A;	 *3

Table S3: Continue

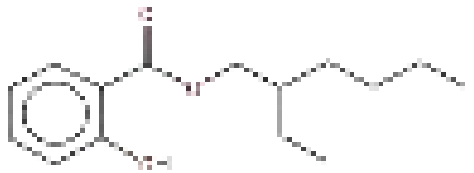
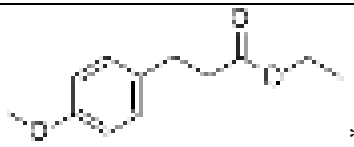
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Octisalate	27	11.075	118-60-5	$C_{15}H_{22}O_3$	250	2-Ethylhexyl salicylate; Benzoic acid, 2-hydroxy-, 2-ethylhexyl ester; Salicylic acid, 2-ethylhexyl ester; Sunarome O; Sunarome WMO; USAF DO-11; WMO; Dermoblock OS; Escalol 587; Ethylhexyl salicylate; Neo Heliopan OS; Octyl salicylate; Uvinul O-18; 2-Ethylhexyl 2-hydroxybenzoate; NSC 46151	 *3
Diisooctyl Maleate *[1]	29	13.325	1330-76-3	$C_{20}H_{36}O_4$	340	DIOM; Maleic acid, diisooctyl ester; Bisomer D10M; Octomer DIOM; Bis(6-methylheptyl) 2-butenedioate	 *4
3,3-Diphenylacrylonitrile *[1]	41	11.605	3531-24-6	$C_{15}H_{11}N$	205	2-Propenenitrile 3,3-diphenyl-; 3,3-diphenylprop-2-enenitrile; 3-Phenylcinnamonitrile; 3,3-diphenyl acrylonitrile; Beta,Beta-Diphenylcinnamonitrile	 *4
3-(4-Methoxy-phenyl)-propionic acid ethyl ester *[1]	43	13.180	22767-72-2	$C_{12}H_{16}O_3$	208	Ethyl 3-(4-methoxyphenyl) propanoate; B3-(4-Methoxyphenyl) propionic acid ethyl ester; AC1L8A9O	 *4

Table S3: Continue

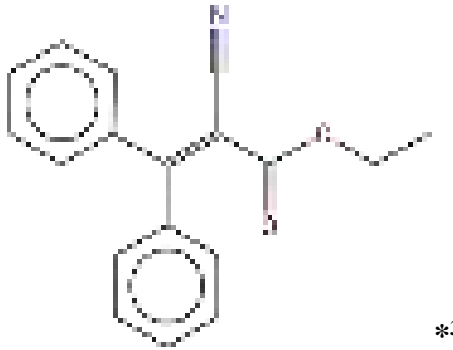
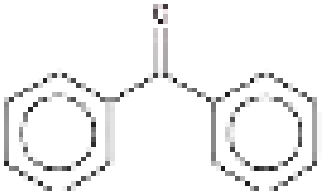
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Etocrylene	31	13.585	5232-99-5	$C_{18}H_{15}NO_2$	277	2-Cyano-3,3-diphenylacrylic acid ethyl ester; 2-Propenoic acid, 2-cyano-3,3-diphenyl-, ethyl ester; α-Cyano-β-phenylcinnamic acid, ethyl ester; Acrylic acid, 2-cyano-3,3-diphenyl-, ethyl ester; Acrylonitrile, 3,3-dicyclopropyl-2-(ethoxycarbonyl)-; CE 2; Ethyl α-cyan-β,β-diphenylacrylate; Ethyl α-cyano-β,β-diphenylacrylate; Ethyl (diphenylmethylene)cyanoacetate; Ethyl 2-cyano-3,3-diphenylacrylate; USAF A-15972; Uvinul N 35; UV Absorber-2; Etocrilene; Ethyl 2-cyano-3,3-diphenyl-2-propenoate; NSC 52678	 *3
Benzophenone	58	9.620	119-61-9	$C_{13}H_{10}O$	182	Methanone, diphenyl-; Diphenylmethanone; Diphenyl ketone; Phenyl ketone; Benzene, benzoyl-; Benzoylbenzene; α-Oxodiphenylmethane; α-Oxoditane; Ketone, diphenyl; alpha-Oxodiphenylmethane	 *3

Table S3: Continue

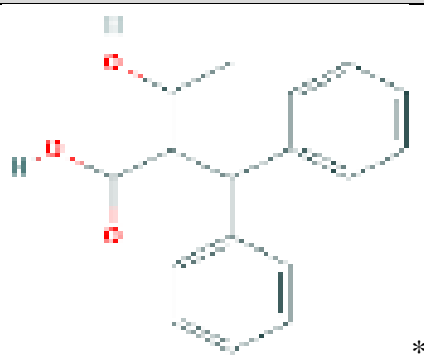
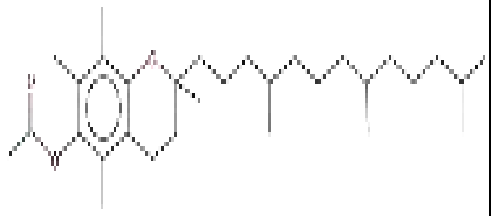
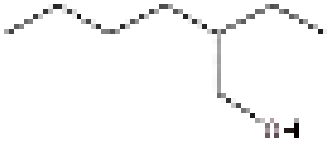
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Benzenepropanoic Acid, a-(1-hydroxyethyl)-b-phenyl- *[1]	33	16.085	118217-43-9	$C_{17}H_{18}O_3$	270	2-Benzhydryl-3-hydroxybutanoic acid	 *4
Tocopherol Acetate	35	21.515	7695-91-2	$C_{31}H_{52}O_3$	472	(.+/-.)-α-Tocopherol acetate; 2H-1-Benzopyran-6-ol, 3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-, acetate; Vitamin E acetate; dl-α-Tocopheryl acetate; 2,5,7,8-Tetramethyl-2-(4,8,12-trimethyltridecyl)-3,4-dihydro-2H-chromen-6-yl acetate;	*3 
Ethylhexanol	52	3.845	104-76-7	$C_8H_{18}O$	130	2-Ethyl-1-hexanol; 2-Ethylhexan-1-ol; 2-Ethylhexanol; 2-Ethyl-hexanol-1; Hexanol, 2-ethyl-	 *3

Table S3: Continue

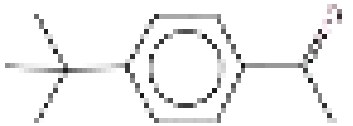
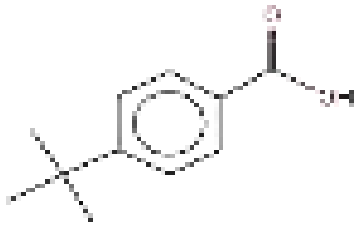
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
4-tert-Butylacetophenone	53	7.740	943-27-1	$C_{12}H_{16}O$	176	Ethanone, 1-[4-(1,1-dimethylethyl) phenyl]-; Acetophenone, 4'-tert-butyl-; p-tert-Butylacetophenone ; 4'-tert-Butylacetophenone; 1-(4-Tert-butylphenyl) ethanone	 *[3]
4-Methoxybutyrophenone *[1]	54	8.040	4160-51-4	$C_{11}H_{14}O_2$	178	p-Methoxybutyrophenone; 1-Butanone, 1-(4-methoxyphenyl)-; Butyrophenone, 4'-methoxy-; 1-(4-Methoxyphenyl)-1-butanone	 *[3]
4-t-Butylbenzoic acid	56	8.445	98-73-7	$C_{11}H_{14}O_2$	178	Benzoic acid, p-tert-butyl-; Benzoic acid, 4-(1,1-dimethylethyl)-; p-tert-Butylbenzoic acid; 4-tert-Butylbenzoic acid; p-t-Butylbenzoic acid; TBBA; Kyselina p-terc.butylbenzoova; NSC 4802; 4-(1,1-Dimethylethyl) benzoic acid	 *[3]
p-Methoxybenzoic acid, tetradecyl ester *[1]	60	18.175	111722-07-7	$C_{22}H_{36}H_3$	348	Tetradecyl 4-methoxybenzoate	 *[3]

Table S3: Continue

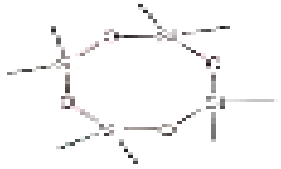
INCI*1	Peak No.*2	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*3*4*5
Dipropylene Glycol	61	3.765	110-98-5	$C_6H_{14}O_3$	134	2-Propanol, 1,1'-oxydi-; Bis(2-hydroxypropyl) ether; 1,1'-Oxydi-2-propanol; 2,2'-Dihydroxydipropyl ether; 1,1'-Dimethyldiethylene glycol; DPG	 *3
Benzene,1-tert-butyl-4-cyclopropylmethyl- *1	57	8.565	58249-45-9	$C_{14}H_2O$	188	1-tert-butyl-4-(cyclopropylmethyl) benzene	 *4
Pentylene Glycol	46	2.995	5343-92-0	$C_5H_{12}O_2$	104	1,2-Pentanediol; pentane-1,2-diol	 *3
Cyclotetrasiloxane, Octamethyl-	47	3.485	556-67-2	$C_8H_{24}O_4Si_4$	296	NUC Silicone VS 7207; CO9810; O9810; Octamethyltetrasiloxane; 1,1,3,3,5,5,7,7-Octamethyl-cyclotetrasiloxane	 *3
1-Octanol	48	4.250	111-87-5	$C_8H_{18}O$	130	Octyl alcohol; n-Octan-1-ol; n-Octanol; n-Octyl alcohol; Alfol 8; Caprylic alcohol; Heptyl carbinol; Octanol; 1-Hydroxyoctane; Octilin; Sipol L8; Alcohol C-8; Lorol 20	 *3

Table S3: Continue

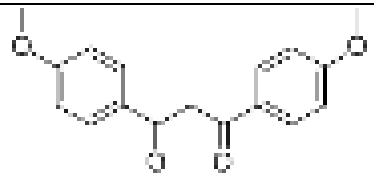
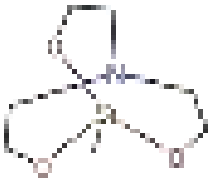
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Didecyl Ether	49	13.340	2456-28-2	$C_{20}H_{42}O$	298	Decane, 1,1'-oxybis-; Decyl ether; Capric ether; di-n-Decyl ether; 1,1'-oxybisdecane	 *3
1-Heptacosanol *[1]	50	14.155	2004-39-9	$C_{27}H_{56}O$	396	Heptacosan-1-ol; Heptacosanol	 *3
Bis (4-Methoxybenzoyl) Methane *[1]	51	16.915	18362-51-1	$C_{17}H_{16}O_4$	284	1,3-Bis(4-methoxyphenyl)-1,3-propanedione; 1,3-Bis(4-methoxyphenyl) propane-1,3-dione; 1,3-Propanedione, 1,3-bis(4-methoxyphenyl)-	 *4
1-Methylsilatrane *[1]	22	7.550	2288-13-3	$C_7H_{15}NO_3Si$	189	2,8,9-Trioxa-5-aza-1-silabicyclo[3.3.3]undecane, 1-methyl-; Methylsilatrane; Methylsilatran; 1-Methyl-2,8,9-trioxa-5-aza-1-silabicyclo(3.3.3)undecane	 *3
Phenethyl Alcohol	2	4.740	60-12-8	$C_8H_{10}O$	122	Benzeneethanol; β-PEA; Benzyl Carbinol; β-Phenethyl alcohol; β-Phenylethanol; 2-PEA; Ethanol, 2-phenyl-; Phenethanol; PEA; 2-PhenyIethanol; Benzyl carbinol	 *3

Table S3: Continue

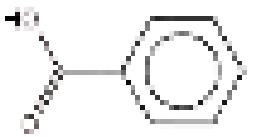
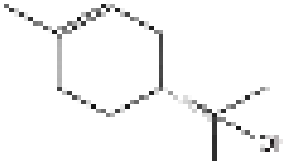
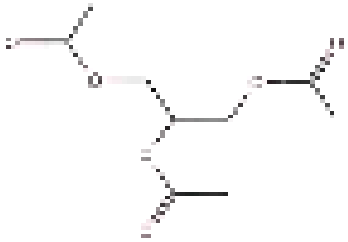
INCI*1	Peak No.*2	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*3*4*5
Benzoic Acid	3	5.385	65-85-0	$C_7H_6O_2$	122	Benzenecarboxylic acid; Benzeneformic acid; Acide benzoique; Benzoate; Soudium benzoate; A1	 *3
α-Terpineol	4	5.565	98-55-5	$C_{10}H_{18}O$	154	3-Cyclohexene-1-methanol, α,α4-trimethyl-; 2-(4-methylcyclohex-3-enyl) propan-2-ol; (1)-α,α,4-trimethylcyclohex-3-ene-1-methanol	 *3
Triacetin	6	6.920	102-76-1	$C_9H_{14}O_6$	218	1,2,3-Propanetriol, triacetate; Enzactin; Fungacetin; Glycerin triacetate; Glycerol triacetate; Glyceryl triacetate; Glyped; Kesscoflex TRA; Triacetine; Acetin, tri-; Vanay; Kodaflex	 *3
Diisopropyl Adipate	7	7.500	6938-94-9	$C_{12}H_{22}O_4$	230	Hexanedioic acid, bis(1-methylethyl) ester; Adipic acid, diisopropyl ester; Ceraphyl 230; Isopropyl adipate; Standamul DIPA; Wickenol 116; β dia; Crodamol DA; Prodipate;	 *3

Table S3: Continue

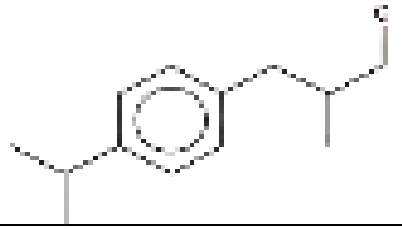
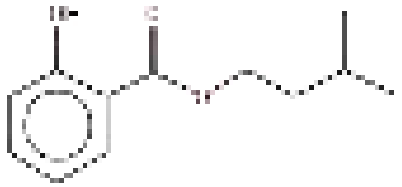
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
α-Ionone	8	7.856	127-41-3	$C_{13}H_{20}O$	192	3-Buten-2-one, 4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, (E)-; α-Cyclocitrylideneacetone; Ionone; trans-α-Ionone	 *3
Cyclamen Aldehyde	10	8.170	103-95-7	$C_{13}H_{18}O$	190	2-methyl-3-(4-(1' methylethyl) phenyl) propanal; 2-Methyl-3-(p-isopropylphenyl) propionaldehyde; α-Methyl-p-isopropylhydrocinnamaldehyde; phenylpropionaldehyde	*3 
Isoamyl Salicylate	11	8.835	87-20-7	$C_{12}H_{16}O_3$	208	Benzoic acid, 2-hydroxy-, 3-methylbutyl ester; Salicylic acid, isopentyl ester; Isoamyl o-hydroxybenzoate; Isopentyl salicylate; Isoamylester kyseliny salicylove; Isopentyl-2-hydroxyphenyl methanoate; 3-Methylbutyl 2-hydroxybenzoate; Orchidee; Sanfoin; Benzoic acid, o-hydroxy, 3-methylbutyl ester; 3-methylbutyl salicylate; NSC 7952; Salicylic acid, 3-methylbutyl ester	 *3

Table S3: Continue

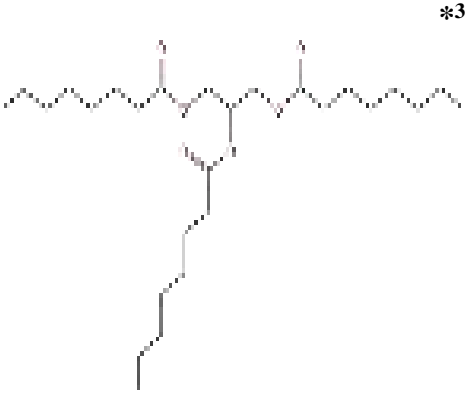
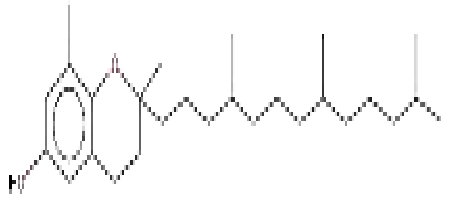
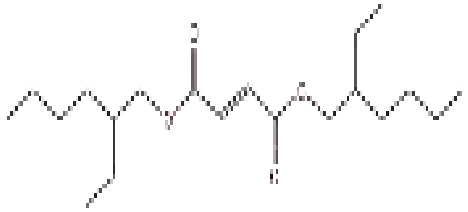
INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
Tricaprylin	18	18.385	538-23-8	$C_{27}H_{50}O_6$	470	Glycerol tricaprylate; Octanoin, tri-; Caprylic acid triglyceride; Caprylin; Glycerol trioctanoate; Glyceryl trioctanoate; Octanoic acid triglyceride; RATO; Tricaprylic Glyceride; Trioctanoin; Trioctanoylglycerol; Octanoic acid, 1,2,3-propanetriyl ester; Maceight; Glycerin tricaprylate; Tricaprylyl glycerin; Tricapryloylglycerol; Panacete 800; Glyceryl tricaprylate; Caprylic triglyceride; Captex 8000; Emalex KTG; Miglyol 808; NSC 4059; Octanoic acid, 1,1',1''-(1,2,3-propanetriyl) ester; Sefsol 810; Tricaprilin	 *3
δ-Tocopherol	19	18.670	119-13-1	$C_{27}H_{46}O_2$	402	2H-1-Benzopyran-6-ol, 3,4-dihydro-2,8-dimethyl-2-(4,8,12-trimethyltridecyl)-, [2R-[2R*(4R*,8R*)]]-; 3,4-Dihydro-2,8-dimethyl-2-(4,8,12-trimethyltridecyl)-2H-1-benzopyran-6-ol; 8-Methyltocol; 2,8-Dimethyl-2-(4,8,12-trimethyltridecyl)-6-chromanol	 *3

Table S3: Continue

INCI*[1]	Peak No.*[2]	RT	CAS No.	Empirical Formula	MW	Synonymous	Chemical Structure*[3]*[4]*[5]
2-Methylhexacosane *[2]	80	10.110	1561-02-0	$C_{27}H_{56}$	380	Hexacosane, 2-methyl-	 *[3]
Diethylhexyl Fumarate	32	13.770	141-02-6	$C_{20}H_{36}O_4$	340	Fumaric acid, bis(2-ethylhexyl) ester; Bis(2-ethylhexyl) fumarate; DOF; RC Comonomer DOF; 2-Ethylhexyl fumarate; Bis-(2-ethylhexyl) ester kyseliny fumarove; 2-Butenedioic acid, bis(2-ethylhexyl) ester; Di(2-ethylhexyl) fumarate; Fumaric acid, di(2-ethylhexyl) ester; 2-Butenedioic acid (E)-,di(2-ethylhexyl) ester; 2-Butenedioic acid (2E)-, 1,4-bis(2-ethylhexyl) ester; 2-Butenedioic acid (2E)-, bis(2-ethylhexyl) ester; Dioctyl fumarate; Bis(2-ethylhexyl) (2e)-2-butenedioate	 *[3]

*[1] Not their INCI name.
*[2] Peaks number was identified in figure 4.1 and 4.2
*[3] Figures adopted from the National Institute of Standards and Technology (NIST) with some modifications, (Webbook.nist.gov, 2016).
*[4] Figures adopted from the National Center for Biotechnology Information (NCBI) with some modifications, (Ncbi.nlm.nih.gov, 2016).
*[5] drawn based on the GC data.

Table S4: Uses, effects and hazard score of the profiled ingredients.

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
2-Palmitoylglycerol *[1]	No Data Available		
Glycerine	Denaturant Humectant Masking Perfuming Skin protecting Viscosity controlling	2	- Classified as nontoxic or harmful with a restricted usage in Canadian cosmetics. *[2] - The U.S FDA approved it as an active ingredient. *[3] -No reported allergic skin reactions in human clinical studies according to the Cosmetic Ingredient Review (CIR). *[3]
Glyceryl Monostearate	Emulsifying	1	-FDA generally recognized it as safe. *[7] - CIR Safety Review: reviewed chronic studies that showed no adverse effects on reproduction and no carcinogenic effects. *[7] -Human exposure studies of products containing this ingredient and clinical experience have shown these compounds to be nonsensitizing, nonphototoxic and nonphotosensitizing. *[3]
Stearic Acid	Cleansing Emulsifying Emulsion stabilising Masking Refatting Surfactant	1	- Not expected to be potentially toxic or harmful. *[2] - FDA generally recognized it as safe. *[3] - CIR Expert Panel evaluated the scientific data and concluded that this ingredient were safe for use in cosmetic products. *[3]
Nonadecyl Alcohol *[1]	No Data Available		
Pentadecyl Alcohol	Emollient Emulsion stabilising	No Data Available	
Triethanolamine Hydrochloride	Viscosity controlling	No Data Available	

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Octocrylene	UV Absorber UV Filter	3	-Absorbs into the skin and may cause allergic skin reactions. *[2] -FDA approved its use as an active ingredient in Over-the-Counter (OTC) sunscreen drug products at concentrations up to 10%. *[3] -Health Canada permits the use of Octocrylene in sunscreen products at a maximum concentration of 12%. *[3]
Cyclopentasiloxane, Decamethyl-	Emollient Skin conditioning Solvent	3	-Expected to be toxic or harmful. *[2] -One or more animal studies show tumor formation at moderate doses. *[2] -One or more animal studies show endocrine disruption at moderate doses. *[2] -One or more animal studies show neurotoxicity effects at moderate doses. *[2]
Cyclohexasiloxane, Dodecamethyl-	Emollient Skin conditioning Solvent	2	-Expected to be toxic or harmful. *[2]
Butyl Methoxy Dibenzoyl Methane	UV Absorber UV Filter	2	-Not expected to be potentially toxic or harmful. *[2] - *In vitro* studies on mammalian cells show positive mutation results. *[2] -Associated with immunotoxicity or allergies. *[2] -FDA reviewed its safety and approved its use as an active ingredient at concentrations up to 3%. *[3] -Scientific Committee for Cosmetic Products and Non-Food Products (SCCNFP) concluded that, this UV filters used in sunscreen products in the European markets have no estrogenic effects that could potentially affect human health. ***[3]** -Health Canada permits its use in sunscreen products at concentrations of 5% or less. *[3] **-**European Union (EU) permits its use in cosmetics and personal care products at a maximum concentration of 5%. *[3]

Table S4: Continue.

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
1-Methoxysilatrane *[1]	No Data Available		
Chlorphenesin	Antimicrobial Preservative	2	-Not expected to be potentially toxic or harmful. *[2] -Japan prohibited its use in some types of cosmetics. *[2] -EU permits its use in cosmetics and personal care products at a maximum concentration of 0.3%. *[3] - CIR Expert Panel reviewed data indicate that Chlorphenesin is absorbed through the skin, with rate of absorption less than the rate of metabolism and excretion of the compound. *[3] - CIR reviewed the scientific data and concluded safety to be used in cosmetics and personal care products. *[3]
Caprylyl Glucoside	Cleansing Surfactant	1	-At high concentrations, Caprylyl/Capryl Glucoside was irritating and long-term skin irritation resulted in other adverse effects including body weight loss*[3] - CIR Expert Panel concluded that this ingredient were safe for use in cosmetics when formulated to be non-irritating. *[3]
Linalool L	Deodorant Perfuming	5	- FDA generally recognized it as safe. ***[3]*** -Possible human immune system toxicant or allergen. ***[2]*** -Not expected to be potentially toxic or harmful. ***[2]*** - International Fragrance Association (IFRA) restricts the use of Linalool as fragrances because of potential sensitization. ***[3]***
Methyl Dihydrojasmonate	Masking	1	-Not expected to be potentially toxic or harmful. ***[2]***
Lauryl Alcohol	Emollient Emulsifying Emulsion stabilising Viscosity controlling	1	-Expected to be toxic or harmful. ***[2]*** -Have medium human health priority. ***[2]***

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Octinoxate	UV Absorber UV Filter	6	-Strong evidence of its being as a human endocrine disruptor. *[2] -One or more studies show moderate endocrine disruption. *[2] -Other studies show weak endocrine disruption. *[2] -Production of excess reactive oxygen species that can interfere with cellular signalling, cause mutations, apoptosis and may be implicated in cardiovascular disease. *[2] -One or more human case studies show possible allergenic effects. *[2] -One or more animal studies show reproductive effects at high doses. *[2] -One or more animal studies show reproductive effects at moderate doses. *[2] -One or more animal studies show liver effects at high doses. *[2] -Shown to have hormone-mimicking effects on laboratory animals. *[2] -Found in humans, including mothers' milk samples. *[2] - SCCNFP concluded that, this UV filter used in sunscreen products in the European markets have no estrogenic effects that could potentially affect human health. *[3] -FDA approved its use as an active ingredient in sunscreen products at concentrations up to 7.5%. *[3]
Palmitic Acid	Emollient Emulsifying	1	-Not expected to be potentially toxic or harmful. *[2] -CIR Expert Panel evaluated the scientific data and concluded that this ingredient were safe. *[3] - FDA generally recognized it as safe. *[3]
Dicaprylyl Ether	Emollient Skin conditioning Solvent	1	No Data Available
Pentadecanoic Acid *[1]	No Data Available		

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Butylphenyl Methylpropional	Perfuming	7	-Possible human immune system toxicant or allergen. *[2] - Have medium human health priority. *[2] -Associated with endocrine disruption. *[2] -The safety of Butylphenyl Methylpropional has been evaluated by the Research Institute for Fragrance Materials Expert Panel (REXPAN). *[2] -IFRA standard restricts the use of Butylphenyl Methylpropional in fragrances because of its potential sensitization. *[3] -In Europe, Butylphenyl Methylpropional is included on the list of "allergenic" substances. *[3] -Its presence must be indicated in the list of ingredients when its concentration exceeds 0.001% in leave-on the skin products, 0.01% in rinsed off products. *[3]
Propylparaben	Preservative	7	- Strong evidence of human endocrine disruption. *[2] -Other studies show weak endocrine disruption. *[2] - Strong evidence of human immuntoxicity or allergy. *[2] -One or more human case studies show possible immune or allergenic effects. *[2] -U.S. FDA stated that there is no reason for being concerned about the use of cosmetics containing parabens. *[3]
9-Octadecenamide *[1]	No Data Available		
2-Phenoxyethanol	Preservative	4	-Limited evidence of skin and immune system toxicity or allergies. *[2] -Classified as toxic, harmful and irritant. *[2] -Limited evidence of nervous toxicity. *[2] -FDA generally recognized it as safe**.** *[3] -EU permits its use with a maximum concentration up to 1.0%. *[3] -CIR evaluated its safety as a cosmetic ingredient under restricted conditions of use with a concentrations up to 1.0% in cosmetic and personal care products. *[3]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Butylated Hydroxytoluene	Antioxidant Masking	6	- CIR Expert Panel recognized that dermal application of BHT results in some skin absorption and appears to remain primarily in skin or passes through skin slowly. *[3] -Known human immune toxicant or allergen. *[2] -One or more human case studies show significant allergenic effects. *[2] -Limited evidence of carcinogenicity. *[2] -One or more *In vitro* tests on mammalian cells show positive mutation results*[6] -One or more animal studies show tumor formation at high doses. *[2] -Classified as expected to be toxic or harmful. *[2] -One or more animal studies show developmental effects at high doses. *[2]
Myristyl Alcohol	Emollient Emulsion stabilising Foam boosting Skin conditioning Viscosity controlling	1	-Classified as expected to be toxic or harmful. *[2] -Medium human health priority. *[2] -Other studies classify it as not expected to be potentially toxic or harmful. *[2] - CIR Expert Panel concluded that these fatty alcohols were safe for use as cosmetic ingredients. *[3] -If they are derived from plants they can be used in cosmetics and personal care products marketed in Europe according to the provisions of Cosmetics Regulation of the EU. *[3]
Methyl 4-hydroxybenzoate	Denaturant Film forming Masking Plasticiser Solvent	4	- Strong evidence classify it as a human endocrine disruptor. *[2] -Other studies show limited evidence of endocrine disruption. *[2] -One or more studies show weak endocrine disruption. *[2] - Moderate evidence on being a human immune toxicant or allergen. *[2] -One or more human case studies show possible immune or allergenic effects. *[2] -Interferes with gene expression. *[2]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
L-Limonene	Emollient Skin conditioning	6	-Considered as irritant. *[2] -Possible human immune system toxicant or allergen. *[2] -Some studies show limited evidence of immune system toxicity or allergies. *[2] -One or more animal studies show developmental effects at high doses. *[2] -Classified as a low human health priority. *[2] -Other studies classify as not expected to be potentially toxic or harmful. *[2] - IFRA Standard restricts the use of Limonene in fragrances because of potential sensitization. *[3] -In Europe, Limonene is included on the list of "allergenic" substances. *[3] -It must be indicated in the list of ingredients when its concentration exceeds 0.001% in leave-on the skin products and 0.01% in rinsed off products. *[3]
Caprylyl Glycol	Emollient Humectant Skin conditioning	1	-Not expected to be potentially toxic or harmful. *[2] -CIR Experts also indicate that Caprylyl Glycol and the smaller compounds were easily absorbed into the skin. *[3] -Additional studies suggested that these compounds are metabolized in the skin before they reach the circulation. *[3] -Studies on repeated doses with these compounds have not resulted in significant adverse effects or effects on reproduction or development.*[7] -CIR Expert Panel concluded that this ingredient was safe as used in cosmetics and personal care products. *[3]
Eicosane	Emollient Masking Perfuming Solvent	No Data Available	

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Diethyl Phthalate	Plasticiser	3	-Limited evidence of reproductive toxicity. *[2] -Limited evidence of immune system toxicity or allergies. *[2] -Associated with endocrine disruption. *[2] -One or more animal studies show effects at moderate doses. *[2] -Other studies classify it as not expected to be potentially toxic or harmful. *[2] -It has been reviewed by the CIR Expert Panel and the European Commission's independent scientific expert committee, the Scientific Committee on Consumer Safety (SCCS). Both scientific groups have positively affirmed the safe use of DEP in cosmetic products without restriction. *[3] -The CIR Expert Panel estimated historical exposure to DBP from cosmetic and personal care products and found it to be far below levels that did not cause reproductive and developmental effects in animals. *[3] - FDA has stated that at the present time, it does not have evidence that its use in cosmetics pose a safety risk. *[3] - National Toxicology Program (NTP), headquartered at the National Institute of Environmental Health Sciences (NIEHS) concluded that reproductive risks from exposure to phthalates from all sources were minimal to negligible in most cases. *[3] -DBP is not permitted for use in cosmetics and personal care products in the EU regardless of use concentration. *[3]
Lauryl Stearate	Preservative	1	-Classified as not expected to be potentially toxic or harmful with low human health priority. *[2] -Not likely to be carcinogenic in humans. *[2] -CIR Expert Panel and FDA evaluated its safety in cosmetic products. *[3] -There were no adverse effects observed at high doses in a chronic study. *[3]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Myristic Acid	Cleansing Emulsifying Perfuming	1	-CIR Expert Panel and FDA evaluated its safety in cosmetic products. *[3] -There were no adverse effects observed at high doses in a chronic study. *[3] -Classified as not expected to be potentially toxic or harmful. *[2]
Isopropyl Myristate	Binding Emollient Masking Perfuming	1	- Strong evidence of being a human irritant in products use around the eyes or on the skin. *[2] -Other studies classify it as not expected to be potentially toxic or harmful. *[2] - CIR Expert Panel found it to be safe at restricted concentrations used in cosmetics and personal care products range from less than 0.1% to 50.0%. *[3] -If it is made from plants, Isopropyl Isostearate may be used in cosmetics and personal care products marketed in Europe according to the general provisions of the Cosmetics Regulation of the EU. Ingredients of animal origin must comply with the EU animal by-products regulations. *[3] -In studies involving healthy human subjects, these esters undiluted or at use concentrations produced at most, slight skin irritation. *[3]
Tetradecyl Bromide *[1]	No Data Available		
Cetyl Alcohol	Emollient Emulsifying Emulsion stabilising Foam boosting Masking Opacifying Surfactant Viscosity controlling	1	-Expected to be toxic or harmful with medium human health priority. *[2] -The CIR Expert Panel concluded that these fatty alcohols were safe for use as cosmetic ingredients. *[3]
Ethyl Linalool	Masking Perfuming	1	No Data Available

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Behenic Alcohol	Binding Emollient Emulsion stabilising Viscosity controlling	1	-The CIR Expert Panel concluded that these fatty alcohols were safe for use as cosmetic ingredients. *[3] -If they are derived from plants, it may be used in cosmetics and personal care products marketed in Europe according to the provisions of Cosmetics Regulation of the EU. Ingredients of animal origin must comply with EU animal by-products regulations.*[3]
Methylionone	No Data Available	2	-Classified as not expected to be potentially toxic or harmful. *[2]
1-(4-tert-Butylphenyl) propan-2-one *[2]	No Data Available		
α Isomethyl Ionone	Perfuming Skin conditioning	5	-Classified as not expected to be potentially toxic or harmful. *[2] -Other studies show possible human immune system toxicant or allergen. *[2] -In Europe, α-Isomethyl Ionone is included on the list of "allergenic" substances, its presence must be indicated when its concentration exceeds 0.001% in leave-on the skin products 0.01% in rinsed off products. *[3]
1,2-Dipropylene Glycol *[1]	Viscosity controlling Solvent. *[3]	1	- Strong evidence of being a human irritant in products use around the eyes or on the skin. ***[2]** -Other studies expected it to be potentially toxic or harmful. *[2] -CIR Expert Panel consider it safe for use in cosmetics and personal care products. *[3] -Results of parenteral injection, inhalation, acute and subchronic cutaneous toxicity studies supported a low degree of toxicity. *[3]
Tricyclo[3.1.0.0(2,4)]hexane,3,3,6,6-tetraethyl *[1]	No Data Available		
Hexamethylindanopyran	Masking Perfuming	1	-Associated with endocrine disruption. *[2] -Classified as not expected to be potentially toxic or harmful. *[2]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
MDM Hydantoin	Antimicrobial	7	- Strong evidence of being human skin toxicant or allergen. *[2] - Other studies show limited evidence of immune system toxicity or allergies. *[2] - Limited evidence of cancer formation. *[2] - Strong evidence of being a human irritant in products use around the eyes or on the skin. *[2] -Some studies classify it as not expected to be potentially toxic or harmful. *[2] -CIR Safety Review that it is poorly absorbed from the skin. They noted that it is a formaldehyde donor in aqueous media. They attributed positive results in some *In vitro* mutagenicity studies to formaldehyde release. In these studies, the concentrations tested were higher than those used in cosmetic and personal care products. *[3] -Clinical studies revealed some observations of skin irritation which could also be related to the release of formaldehyde. *[3] -The CIR Expert Panel has reviewed the safety of formaldehyde in cosmetics and personal care products and concluded that it was safe to a great majority of consumers but the maximum concentration should not exceed 0.2% free formaldehyde. *[3] -EU permits its use in cosmetics and personal care products at a maximum concentration of 0.6%. If the concentration of released formaldehyde exceeds 0.05% in the product it must be labelled "contains formaldehyde". *[3]
Isohexadecane *[1]	Solvent *[3]	1	-Classified as expected to be toxic or harmful. *[2] -The CIR Expert Panel also reviewed information indicated that at concentrations used in cosmetics and personal care products, Isohexadecane was not sensitizer, and dermal effects were not increased when it was applied to the skin and exposed to sunlight. *[3]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Triethanolamine	Buffering Emulsifying Masking Surfactant	5	- Strong evidence of being human immune and respiratory toxicant or allergen*[2] - Strong evidence of human skin toxicity or allergy. *[2] -Classified as expected to be toxic or harmful with medium human health priority. *[2] -One or more animal studies show effects at moderate doses. *[2] -The CIR Expert Panel concluded that Triethanolamine were safe for use in products of discontinuous, brief use followed by rinsing off from the surface of skin. *[3] -In products designed for prolonged contact with the skin, its concentration should not exceed 5%. *[3] - The CIR Expert Panel recognized that Triethanolamine was mild skin and eye irritants and that irritation increased with increasing concentration. *[3]
Myristyl Palmitate *[1]	No Data Available		
Bis(2-Ethylhexyl) Ether *[1]	No Data Available		
Octisalate	UV Absorber UV Filter	4	-One or more human case studies show possible immune or allergenic effects. *[2] -Some studies expected it not to be potentially toxic or harmful. *[2] -Other studies consider it as a penetration enhancer and absorbs into the skin. *[2] -It is permitted by FDA for use as active ingredients in OTC sunscreen drug products at concentrations up to 5%. *[3] -The CIR Expert Panel noted that repeated use may effectively increase exposure of the dermis and epidermis to UV radiation. *[3] - The EU permit its use as UV filter at a concentration up to 5%. *[3] -Health Canada permits its use in cosmetics and personal care products with a concentration equal to or less than to 6%. *[3]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Diisooctyl Maleate *[1]	Control pH *[3]	3	-Classified as not expected to be potentially toxic or harmful. *[2] -Not likely to be carcinogenic in humans. *[2] -CIR expert panel review that it failed to induce any significant increases in genotoxicity in bacteria. Application to the volar forearm of 21 women produced an inflammatory response at 24 hours and 48 hours which varied from minimal erythema to marked erythema with vesiculation. *[3] -It is applied to one forearm daily for a period of 6 weeks to 50 human subjects, produced acute vesicular dermatitis in 17 subjects. Only 5 of the remaining subjects accommodated to the treatment, the remainder had varying degrees of inflammation or hyperirritable skin. *[3] -The safety of it as a pH adjustor should not be based on the concentration of use, but on the amount of free acid that remains after neutralizing the formula.*[3]
Etocrylene	UV Absorber	1	-Not expected to be potentially toxic or harmful. *[2]
Benzenepropanoic Acid, a-(1-hydroxyethyl)-b-phenyl- *[2]	No Data Available		
Tocopherol Acetate	Antioxidant Skin Conditioning	3	- Strong evidence of human skin toxicity or allergy. *[2] -One or more animal studies show tumor formation at high doses. *[2] -Some studies expected it not to be toxic or harmful. *[2] -Lack of dermal effects observed in clinical practice by the CIR Expert Panel from using this ingredient also supported its safety. *[3] -Generally recognized as safe by FDA. *[3]
3,3-Diphenylacrylonitrile *[1]	No Data Available		

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
3-(4-Methoxy-phenyl)-propionic acid ethyl ester *[1]	No Data Available		
Ethylhexanol	Perfuming	No Data Available	
4-tert-Butylacetophenone	Perfuming	No Data Available	
4-Methoxybutyrophenone *[1]		No Data Available	
4-t-Butylbenzoic acid	Antimicrobial Masking	1	-Not expected to be potentially toxic or harmful. *[2]
Benzophenone	Masking UV Absorber	3	-Possible human carcinogen. *[2] -Other studies show limited evidence of carcinogenicity. *[2] -Classified as expected to be toxic or harmful. *[2] -Limited evidence of sense organ toxicity. *[2] -Limited evidence of endocrine disruption. *[2] -CIR safety review that when BPs were undiluted, some of them were slightly irritating to the skin and eyes. At concentrations used in cosmetics and personal care products, BPs were not irritating. *[3] -There are studies suggest that BP-3, may have hormone -like activity that could potentially affect human health.*[3]*[7] -European Commission's Scientific Committee for SCCNFP was asked to consider if this UV filters used in sunscreen products have estrogenic effects. The SCCNFP concluded that UV filters used in sunscreen products allowed in the European market have no estrogenic effects. *[3] -FDA has approved the use of BP-3 and BP-4 as safe and effective sunscreen ingredients. *[3]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
p-Methoxybenzoic acid, tetradecyl ester *[1]	No Data Available		
Dipropylene Glycol	Masking Perfuming Solvent Viscosity Controlling	1	- Strong evidence of being a human irritant in products use around the eyes or on the skin. *[2] -Other studies consider it as not expected to be potentially toxic or harmful. *[2]
Benzene,1-tert-butyl-4-cyclopropylmethyl- *[1]	No Data Available		
Pentylene Glycol	Skin Conditioning Solvent	1	-The CIR Expert Panel reviewed the scientific data and concluded that this ingredient was safe as used in cosmetics and personal care products. *[7]
Cyclotetrasiloxane, Octamethyl-	Emollient Skin Conditioning Solvent	5	- Strong evidence classifies it as a human endocrine disruptor. *[2] -Limited evidence of developmental toxicity. *[2] - Expected to be toxic or harmful with a high human health priority. *[2]
1-Octanol	Masking Perfuming Viscosity Controlling	1	-Not expected to be toxic or harmful. *[2]
Didecyl Ether	Skin Conditioning		
1-Heptacosanol *[1]	No Data Available		
Bis (4-methoxybenzoyl) Methane *[1]	No Data Available		
1-Methylsilatrane *[1]	No Data Available		
Phenethyl Alcohol	Masking	1	-Not expected to be potentially toxic or harmful. *[2] -According to the CIR safety review, Phenethyl Alcohol was slightly to moderately irritating to the skin and was not a sensitizer. In concentration of 1% or greater, it was irritating to the eyes. *[3]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Benzoic acid	Bulking Masking Preservative	3	-Limited evidence of sense organ toxicity. *[2] -Other studies consider it as not expected to be toxic or harmful. *[2] - At doses used in cosmetics and personal care products, the CIR Expert Panel was not concerned about potential reproductive and developmental effects; they evaluated the scientific data and concluded that these ingredients were safe. *[3] -Benzoic Acid and its salts and esters are also permitted for use as preservatives in cosmetics and personal care products at a maximum concentration of 2.5% in rinse-off products and 0.5% in leave on products. *[3]
α-Terpineol	Perfuming	1	-Classified as not expected to be potentially toxic or harmful. *[6]
Triacetin	Antimicrobial Film forming Masking Plasticiser Solvent	1	-Expected to be toxic or harmful. *[2] -FDA has reviewed the safety of Triacetin and determined that it was generally recognized as safe. *[3] -The CIR Expert Panel reviewed the scientific data and concluded that Triacetin was safe as used in cosmetic formulations. *[3]
Diisopropyl Adipate	Emollient Masking Plasticiser Skin Conditioning Solvent	1	-Classified as not expected to be potentially toxic or harmful. *[2] -Its safety has been assessed by the CIR Expert Panel. *[3] -Undiluted Diisopropyl Adipate produced no irritation in 24 hours patch tests, but was moderately irritating in a 21-days cumulative irritancy test. Products with a concentration up to 20% of Diisopropyl Adipate, caused minimal to mild irritation with neither sensitization nor photosensitization. *[3]
α-Ionone	Perfuming	1	-Not expected to be potentially toxic or harmful. *[2]
Cyclamen Aldehyde	Masking	1	-Not expected to be potentially toxic or harmful. *[2]
Isoamyl Salicylate	Perfuming	1	-Not expected to be potentially toxic or harmful. *[2]

Table S4: Continue

INCI*[1]	Uses	Hazard Score	Effects*[2]*[3]
Tricaprylin	Masking Perfuming Skin Conditioning	1	-Not expected to be potentially toxic or harmful. *[2] -Some studies consider it as a penetration enhancer and absorbs into the skin. *[2] -Dermal application was not associated with significant irritation with no evidence of sensitization or photosensitization were seen.*[3] -If they are derived from plants, they may be used in cosmetics and personal care products marketed in Europe according to the general provisions of the Cosmetics Regulation of the EU, ingredient of animal origin must comply with EU animal by-products regulations. *[3]
δ-Tocopherol	Antioxidant Masking Skin Conditioning	1	-Classified as not expected to be potentially toxic or harmful. *[2] -One or more animal studies show tumor formation at high doses. *[2] -The CIR Expert Panel evaluated its safety as used in cosmetics and personal care products. *[3] -Lack of dermal effects observed in clinical practice by members of the CIR Expert Panel supported the safety of this ingredient. *[3] -May used in cosmetics and personal care products marketed in Europe according to the general provisions of the Cosmetics Regulation of the EU, ingredient of animal origin must comply with EU animal by-products regulations. *[3]
Caprylic Anhydride *[1]	No Data Available		
2-Methylhexacosane *[1]	No Data Available		
1-Tridecene *[1]	No Data Available		
Diethylhexyl Fumarate	Emollient Skin Conditioning		-CIR Expert Panel evaluated the scientific data and concluded that this ingredient was safe for use in cosmetics and personal care products. *[3]

***[1]** *Not their INCI name.*

***[2]** Effects data were adopted from the Environmental Working Group Cosmetic Database (Ewg.org, 2016).

*[3] Effects data were adopted from the Cosmetic Info Database (Cosmeticsinfo.org, 2016).