

I. O. F. I.
INTERNATIONAL ORGANIZATION OF THE FLAVOR INDUSTRY

To: Member Associations
Members of the Committee of Experts
Members of the Science Board

Brussels, February 27, 2007

Information Letter 1343

Update on the IOFI list of artificial flavouring substances

This is to present an updated list of artificial flavouring substances within the IOFI Code of Practice. The list is attached to the current Information Letter (IL) and should replace the list that was disseminated with the IL 1313.

Modifications versus the list as of IL 1313:

1. Removals from the list of artificial flavouring substances

Further to the identifications reported in IL 1313 and IL 1333, more substances were identified in nature during the 77th through the 80th Working Group on Methods of Analysis (WGMA) meetings on the basis of identifications published in the scientific literature. The substances reported in the Table 1 were removed from the list.

NAME	FEMA	JECFA	FLAVIS	CoE	CAS	WGMA Meeting
L-Menthyl lactate	3748	433	09.551		59259-38-0	75, 80
Methyl cis-5-octenoate	4165	1630			41654-15-3	75, 78
Bornyl acetate	4080	1387	9.848		5655-61-8	79
4-Methylthio-2-butanone	3375	497	12.057	11688	34047-39-7	80
Ethyl 2-methylpentanoate	3488	214	09.526	10616	39255-32-8	80
2-(2-Hydroxy-4-methyl-3-cyclohexenyl)propionic acid gamma-lactone	4140	224	10.057		57743-63-2	80
(S1)-Methoxy-3-heptanethiol	4162	1671			400052-49-5	80
2-Nonenoic acid gamma-lactone	4188		10.054		21963-26-8	80

Table 1: Removals from the list of artificial flavouring substances.

2. Identifications that were NOT accepted by the WGMA.

During the meetings 75-80 the WGMA has not accepted the identifications of the substances listed in Table 2. The decisions were made upon the WGMA criteria on the identification in nature of flavouring substances (Ref. IL 1333). The substances in Table 2 will be kept in the list of artificial flavouring substances.

NAME	FEMA	JECFA	FLAVIS	CoE	CAS	WGMA Meeting
5-sec-Butyl-2,3-dimethyl pyrazine					32263-00-6	75
2,4-Octadienol	3956	1180			18409-20-6	78
Phenethyl anthranilate	2859	1543	09.723	258	133-18-6	77; 79
Allyl phenoxyacetate	2038	18	09.701	228	7493-74-5	77; 79
Dimethylphenethyl butyrate	2394	1656	09.232	2084	10094-34-5	79
beta-iso-Methylionone	4151		07.041	650	79-89-0	80
(E, E)-2,4-hexadienyl acetate	4132	1780	09.573		1516-17-2	80
2-Methoxyacetophenone	4163				579-74-8	80
N-Cyclopropyl-trans-2-cis-6-nonadienamide	4087				608514-55-2	80
Hexadienyl butyrate	4133	1783			16930-93-1	80
Hexadienyl isobutyrate	4134	1782			16491-24-0	80
Dimercaptomethane	4097	1661	12.243		6725-64-0	80
Prenyl hexanoate	4204				76649-22-4	80
Allyl valerate	4074		09.866		6321-45-5	80
Eugenyl isovalerate	4118		09.878		61114-24-7	80

Table 2: Identifications of substances that were not accepted by the WGMA

3. Substances with pending status of final evaluation by the WGMA

The WGMA has been working on the identification of the substances listed in Table 3. The status of these substances is still under discussion.

NAME	FEMA	JECFA	FLAVIS	CoE	CAS
5- and 6-Decenoic acid	3742	327	08.068		72881-27-7
Carvacryl ethylether	2246	1247	04.038	11840	4732-13-2
Butyl butyryllactate	2190		09.491	2107	7492-70-8
Isobutyl-N-methylantranilate	4149		09.769	649	65505-24-0
N-Benzoylanthranilic acid (Dianthramid B)	4078				579-93-1
4-(Methylthio)-2-pentanone	4182	1689			143764-28-7
2-Thiopropane-1-thiol	4185	1675	12.242		29414-47-9
2,4,6-Trithiaheptane	4214	1684	12.240		6540-86-9

Table 3: Substances with pending status of final evaluation by the WGMA

4. GRAS 22 substances that are proposed for evaluation by the WGMA

IOFI Secretariat has compiled a list of substances that were requested for evaluation by the WGMA. Those substances originate from GRAS 22. They will be subject of evaluation during the forthcoming meetings of the WGMA.

SUBSTANCE NAMES	FEMA No.	JECFA No.	FLAVIS	CoE	CAS No.
(+/-)-1-Acetoxy-1-ethoxyethane	4069	1726			1608-72-6
3,5- and 3,6-Dimethyl-2-isobutylpyrazine	4100				38888-81-2
(+/-)-trans - and cis-4,8-Dimethyl-3,7-nonadien-2-ol	4102				67845-50-5

Divanillin	4107				2092-49-1
Ethane-1,1-dithiol	4111	1660			69382-62-3
Ethyl cis-3-hexenoate	4112	1626			64187-83-3
cis- and trans-2-Heptylcyclopropanecarboxylic acid	4130				697290-77-0 (trans) 697290-76-9 (cis)
Hexyl 3-mercaptopropanoate	4136	1704	12.235		796857-79-9
4-Hydroxy-2-butenic acid gamma-lactone	4138		10.066		497-23-4
5-Hydroxy-4-methylhexanoic acid delta-lactone	4141				10413-18-0
N-Isobutyldeca-trans-2-trans-4-dienamide	4148	1598			18836-52-7
4-Mercapto-2-pentanone	4157	1670	12.264		92585-08-5
(+/-)-4-Mercapto-4-methyl-2-pentanol	4158	1669	12.252		31539-84-1
Methyl isopentyl disulfide	4168	1696			72437-56-0
(+/-)-3-(Methylthio) heptanal	4183	1692			51755-70-5

Table 4: GRAS 22 substances that are proposed for evaluation by the WGMA

IMPORTANT: The new list of artificial flavouring substances for inclusion in the Code of Practice is available in attachment to the present IL. All compounds listed in Table 3 and Table 4 will be kept in the list until final evaluation by the WGMA.

IOFI Secretariat

Attachment:

1. LIST OF ARTIFICIAL FLAVOURING SUBSTANCES
2. LIST OF SUBSTANCES CHEMICALLY IDENTICAL TO THOSE OCCURRING IN NATURAL PRODUCTS NOT NORMALLY CONSIDERED AS FOODS

Attachment: LIST OF ARTIFICIAL FLAVOURING SUBSTANCES

	Substance	FEMA	JECFA	CoE	CAS	FLAVIS
	Acetaldehyde phenethyl propyl acetal	2004	1000	511	7493-57-4	06.016
	Allyl anthranilate	2020	20	254	7493-63-2	09.719
	Allyl butyrate	2021	2	280	2051-78-7	09.054
	Allyl cinnamate	2022	19	334	1866-31-5	09.741
	Allyl cyclohexylacetate	2023	12	2070	4728-82-9	09.482
	Allyl cyclohexylbutyrate	2024	14	283	7493-65-4	09.411
	Allyl cyclohexylhexanoate	2025	16	2180	7493-66-5	09.492
	Allyl cyclohexylpropionate	2026	13	2223	2705-87-5	09.498
	Allyl cyclohexylvalerate	2027	15	474	7493-68-7	09.469
	Allyl 2-ethylbutyrate	2029	11	281	7493-69-8	09.410
	Allyl heptanoate	2031	4	369	142-19-8	09.097
	Allyl-alpha-ionone	2033	401	2040	79-78-7	07.061
	Allyl nonanoate	2036	6	390	7493-72-3	09.109
	Allyl octanoate	2037	5	400	4230-97-1	09.119
	Allyl phenoxyacetate	2038	18	228	7493-74-5	09.701
	Allyl phenylacetate	2039	17	2162	1797-74-6	09.790
	Allyl propionate	2040	1	2094	2408-20-0	09.233
	Allyl sorbate	2041	8	2182	30895-79-5	09.312
	Allyl tiglate	2043	10	2183	7493-71-2	09.493
	Allyl undecen-10-oate	2044	9	441	7493-76-7	09.146
	Allyl isovalerate	2045	7	2098	2835-39-4	09.489
alpha-	Amylcinnamaldehyde dimethyl acetal	2062	681	47	91-87-2	06.013
alpha-	Amylcinnamyl acetate	2064	677	216	7493-78-9	09.026
alpha-	Amylcinnamyl alcohol	2065	674	79	101-85-9	02.030
alpha-	Amylcinnamyl formate	2066	676	357	7493-79-0	09.090
alpha-	Amylcinnamyl isovalerate	2067	678	463	7493-80-3	09.468
	Isoamyl furylbutyrate	2070		2080	7779-66-0	13.021
	Isoamyl furylpropionate	2071		2092	7779-67-1	13.023
	Pentyl 2-furoate	2072	748	2109	1334-82-3	13.025
2-	Amyl-5 or keto-1,4-dioxane	2076		2205	65504-96-3	13.027
	Isoamyl pyruvate	2083	939	431	7779-72-8	09.443
	Benzaldehyde glyceryl acetal	2129	838	36	1319-88-6	06.002
	Benzaldehyde propyleneglycol acetal	2130	839	2226	2568-25-4	06.032
	Benzoin	2132	836	162	119-53-9	07.028
	Benzyl butyl ether	2139	1253	520	588-67-0	03.010
	Benzyl 2,3-dimethyl-crotonate	2143	847	11868	7492-69-5	09.508
3-	Benzyl-4-heptanone	2146	830	2140	7492-37-7	07.070
	Acetaldehyde benzyl methoxyethyl acetal	2148	840	523	7492-39-9	06.019
	Butyl acetoacetate	2176	596	241	591-60-6	09.403
	Isobutyl acetoacetate	2177	597	242	7779-75-1	09.404
	Isobutyl anthranilate	2182		253	7779-77-3	09.718
	Butyl butyryllactate	2190		2107	7492-70-8	09.491
alpha-	Butylcinnamaldehyde	2191	684	127	7492-44-6	05.039
	Butyl 2-decenoate	2194		2100	7492-45-7	09.235
	Butyl ethyl malonate	2195	935	384	17373-84-1	09.441
	Isobutyl furylpropionate	2198		2093	105-01-1	13.024
2-	Butyl-5 or 6-keto-1,4-dioxane	2204		2206	65504-45-2	13.028
	Butyl levulinate	2207	608	374	2052-15-5	09.436

	Benzyl isobutyl carbinol	2208	827	2031	7779-78-4	02.065
	Butyl 10-undecenoate	2216	344	2103	109-42-2	09.238
	Tributylin	2223	922	747	60-01-5	09.211
	Carvacryl ethylether	2246	1247	11840	4732-13-2	04.038
	Carvyl propionate	2251	383	424	97-45-0	09.143
	Cinnamaldehyde ethyleneglycol acetal	2287		48	5660-60-6	06.014
	Citral diethyl acetal	2304		38	7492-66-2	06.004
	Citral dimethyl acetal	2305		39	7549-37-3	06.005
	Citronellyl oxyacetaldehyde	2310	592	2012	7492-67-3	05.079
	Citronellyl phenylacetate	2315	1021	2157	139-70-8	09.785
	Cyclohexylacetic acid	2347	965	34	5292-21-7	08.034
	Cyclohexyl anthranilate	2350		257	7779-16-0	09.722
	Cyclohexyl cinnamate	2352	667	337	7779-17-1	09.744
	Cyclohexyl formate	2353	1095	498	4351-54-6	09.160
	Cyclohexyl propionate	2354	1097	421	6222-35-1	09.140
	Cyclohexyl isovalerate	2355	1096	459	7774-44-9	09.464
	Decanal dimethyl acetal	2363	945	43	7779-41-1	06.009
	Dibenzyl ether	2371	1256	11856	103-50-4	03.004
4,4-	Dibutyl-gamma-butyrolactone	2372	227	2231	7774-47-2	10.018
	Dibutyl sebacate	2373	625	622	109-43-3	09.474
	Diethyl sebacate	2376	624	623	110-40-7	09.475
	Dimethyl phenyl carbonyl isobutyrate	2388	1657	11828	7774-60-9	09.509
2,6-	Dimethyloctanal	2390	273	112	1321-89-7	05.023
alpha, alpha-	Dimethylphenethyl acetate	2392	1655	2077	151-05-3	09.227
alpha, alpha-	Dimethylphenethyl butyrate	2394	1656	2084	10094-34-5	09.232
alpha, alpha-	Dimethylphenethyl formate	2395	1654	353	10058-43-2	09.086
	Dibenzyl ketone (1,3-diphenyl-2-propanone)	2397	832	11839	102-04-5	07.086
	Ethyl 2-acetyl-3-phenylpropionate	2416	835	2241	620-79-1	09.501
	Ethyl aconitate	2417	628	11845	1321-30-8	09.510
	Ethyl benzoylacetate	2423	834	627	94-02-0	09.476
alpha-	Ethylbenzyl butyrate	2424		628	10031-86-4	09.189
	Ethyl cyclohexylpropionate	2431	966	2095	10094-36-7	09.488
2-	Ethyl-2-heptenal	2438	1216	120	10031-88-6	05.033
	Ethyl methylphenylglycidate	2444		6002	77-83-8	16.015
	Ethyl nitrite	2446		11869	109-95-5	16.017
	Ethyl octine carbonate	2448		480	10031-92-2	09.157
	Ethyl 4-phenylbutyrate	2453		307	10031-93-3	09.728
	Ethyl phenylglycidate	2454		11844	121-39-1	16.018
	Ethyl 10-undecenoate	2461	343	10634	692-86-4	09.237
	Ethylvanillin	2464	893	108	121-32-4	05.019
	Isoeugenyl acetate	2470	1262	220	93-29-8	09.030
	Ethyl isoeugenyl ether	2472	1267	190	7784-67-0	04.017
	Eugenyl formate	2473		355	10031-96-6	09.088
	Isoeugenyl formate	2474	1261	356	7774-96-1	09.089
	Isoeugenyl phenylacetate	2477	1263	237		09.710
2-	Furfurylidene butanal	2492		11885	770-27-4	13.043
	Geranyl acetoacetate	2510	599	243	10032-00-5	09.405
	Geranyl phenylacetate	2516	1020	231	102-22-7	09.704
	Glucose pentaacetate	2524		-	3891-59-6	09.258
	Guaiacyl phenylacetate	2535	719	238	4112-89-4	09.711
	Heptanal dimethyl acetal	2541	947	2015	10032-05-0	06.028
	Heptanal glyceryl acetal	2542	912	2016	72854-42-3	06.029

	Heptyl cinnamate	2551	666	2104	10032-08-3	09.782
2-	Hexylidene cyclopentanone	2573	1106	167	17373-89-6	07.034
	Hydroxycitronellal	2583	611	100	107-75-5	05.012
	Hydroxycitronellal diethyl acetal	2584	613	44	7779-94-4	06.010
	Hydroxycitronellal dimethyl acetal	2585	612	45	141-92-4	06.011
	Linalyl anthranilate	2637		256	7149-26-0	09.721
	Linalyl cinnamate	2641	668	329	78-37-5	09.736
1-(p-	Methoxyphenol)-1-penten-3-one	2673	826	164	104-27-8	07.030
2-	Methylallyl butyrate	2678	1207	572	7149-29-3	09.177
alpha-	Methylbenzyl butyrate	2686	803	2083	3460-44-4	09.231
alpha-	Methylbenzyl formate	2688	800	574	7775-38-4	09.179
alpha-	Methylbenzyl propionate	2689	802	425	120-45-6	09.144
	Methyl p-tert-butylphenylacetate	2690	1025	577	3549-23-3	09.758
6-	Methylcoumarin	2699	1172	579	92-48-8	13.012
alpha-	Methyl ionone	2711	398	143	127-42-4	07.009
beta-	Methyl ionone	2712	399	144	127-43-5	07.010
delta-	Methyl ionone	2713	400	11852	7784-98-7	07.088
alpha-	Isomethylionone	2714	404	169	127-51-5	07.036
	Methyl beta-naphthyl ketone	2723	811	147	93-08-3	07.013
	Methyl octine carbonate (methyl 2-nonynoate)	2726		479	111-80-8	09.156
2-	Methyloctanal	2727	270	113	7786-29-0	05.024
	Methyl heptine carbonate (methyl 2-octynoate)	2729		481	111-12-6	09.158
2-	Phenyl-1-propanol	2732		2257	1123-85-9	02.073
	Benzylidene methyl acetone	2734	821	161	1901-26-4	07.027
	Dimethyl phenylethyl carbonyl acetate	2735		219	103-07-1	09.029
	Dimethyl phenylethyl carbonyl isobutyrate	2736		2086	10031-71-7	09.484
2-	Methyl-4-phenylbutanal	2737		134	40654-82-8	05.046
3-	Methyl-2-phenylbutanal	2738		135	2439-44-3	05.097
	Methyl 4-phenylbutyrate	2739		308	2046-17-5	09.729
	Benzyl isobutyl ketone	2740	828	159	5349-62-2	07.025
	Cyclamen aldehyde	2743		133	103-95-7	05.045
2-	Methyl-3-tolyl-propanal	2748		587	41496-43-9	05.052
	Methyl 9-undecenoate	2750	342	2101	5760-50-9	09.236
	Methyl decine carbonate (methyl 2-undecynoate)	2751		2111	10522-18-6	09.239
beta-	Naphthyl anthranilate	2767		11862	63449-68-3	09.801
beta-	Naphthyl ethyl ether	2768	1258	2058	93-18-5	04.033
	Nonanediol acetate	2783	605	2075	1322-17-4	09.225
	Octanal dimethyl acetal	2798	942	42	10022-28-3	06.008
3-	Octanon-1-ol	2804	604	592	7786-52-9	07.039
	Octyl formate	2809	122	342	112-32-3	09.075
	Octyl heptanoate	2810	171	366	5132-75-2	09.094
	Octyl phenylacetate	2812	1017	230	122-45-2	09.703
	Allyl acetic acid (pentenoic acid)	2843	314	2004	591-80-0	08.048
	Phenethyl anthranilate	2859	1543	258	133-18-6	09.723
	Phenethyl 2-furoate	2865		362	7149-32-8	13.006
	Phenoxyethyl isobutyrate	2873	1028	2089	103-60-6	09.487
	Phenylacetaldehyde 2,3-butylene-glycol acetal	2875	1005	669	5468-06-4	06.027
	Phenylacetaldehyde glycerol acetal	2877	1004	41	29895-73-6	06.007
	Phenylethyl methyl ethyl carbinol	2883	1649	86	10415-87-9	02.037
2-	Phenylpropanal dimethyl acetal	2888		2017	90-87-9	06.030

2-	Phenylpropyl butyrate	2891		285	80866-83-7	09.057
2-	Phenylpropyl isobutyrate	2892		2087	65813-53-8	09.485
3-	Phenylpropyl formate	2895	637	351	104-64-3	09.084
3-	Phenylpropyl propionate	2897	639	419	122-74-7	09.138
2-(3-	Phenylpropyl)tetrahydrofuran	2898		489	3208-40-0	13.007
3-	Phenylpropyl isovalerate	2899	641	462	5452-07-3	09.467
	Piperonyl isobutyrate	2913	895	305	5461-08-5	09.430
	Propenylguaethol	2922	1264	170	94-86-0	04.002
	Isopropyl cinnamate	2939	661	325	7780-06-5	09.732
	Propyl furylacrylate	2945		11842	623-22-3	13.047
	Propyl 2-furoate	2946	747	359	615-10-1	13.003
	Benzyl propyl carbinol	2953	825	83	705-73-7	02.034
p-	Isopropyl phenylacetaldehyde	2954	1024	132	4395-92-0	05.044
	Isopropyl phenylacetate	2956	1011	2158	4861-85-2	09.786
3-(p-	Isopropyl)-phenyl propanal	2957	680	2261	7775-00-0	05.094
	Rhodinyl acetate	2981	60	223	141-11-7	09.033
	Rhodinyl phenylacetate	2985	1018	2163	10482-14-3	09.791
	Santalyl acetate	3007	985	224	1323-00-8	09.034
	Santalyl phenylacetate	3008	1022	239	1323-75-7	09.712
alpha-	Terpinyl anthranilate	3048		259	14481-52-8	09.724
	Terpinyl cinnamate	3051	669	330	10024-56-3	09.737
	Terpinyl isovalerate	3054	372	456	1142-85-4	09.461
	Tetrahydrofurfuryl acetate	3055		2069	637-64-9	13.166
	Tetrahydrofurfuryl butyrate	3057		11841	637-65-0	13.048
	Tetrahydrofurfuryl propionate	3058		11843	2217-33-6	13.049
	Tetrahydro-pseudo-ionone	3059	1121	2053	4433-36-7	07.069
	Tetrahydrolinalool	3060	357	77	78-69-3	02.028
	Tetramethyl ethylcyclohexenone	3061	1111	168	17369-60-7	07.035
2-	Thienylmercaptan	3062	1052	478	7774-74-5	15.001
	Tolualdehyde glyceryl acetal	3067	867	46	1333-09-1	06.012
o-	Tolyl acetate	3072	698	2078	533-18-6	09.228
p-	Methylbenzyl acetone	3074	817	160	7774-79-0	07.026
p-	Tolyl isobutyrate	3075	701	304	103-93-5	09.429
p-	Tolyl laurate	3076	704	378	10024-57-4	09.102
p-	Tolyl phenylacetate	3077	705	236	101-94-0	09.709
	Tributyl acetylacrylate	3080	630	-	77-90-7	09.511
	Acetyl nonanoyl (2,3-undecadione)	3090	417	155	7493-59-6	07.021
10-	Undecen-1-yl acetate	3096	136	2062	112-19-6	09.214
	Acetaldehyde butyl phenetyl acetal	3125	1001	10007	64577-91-9	06.036
2-	Benzofurancarboxaldehyde	3128	751	2247	4265-16-1	13.031
2,4-	Dimethyl-2-pentenoic acid	3143	1211	744	21016-46-6	08.044
	Ethyl cresoxyacetate	3157	1027	2243	67028-40-4	09.797
	Furanmethanethiol formate	3158	1073	11770	59020-90-5	13.051
	Furfuryl isopropyl sulfide	3161	1077	2248	1883-78-9	13.032
2-	Mercaptopropionic acid	3180	551	11790	79-42-5	12.039
alpha-	Methyl-p-methoxy-cinnamaldehyde	3182	689	584	65405-67-6	05.051
5 or 6-	Methoxy-3-methyl-pyrazine	3183	788	2266	68378-13-2	14.025
4-	Methylbiphenyl	3186		2292	644-08-6	01.011
2-	Methyl-3,5 or 6-furfurylthio-pyrazine	3189	1082	2287	65530-53-2	13.151
2-	Methyl-5-methoxythiazole	3192	1057	736	38205-64-0	15.002
1-	Phenyl-2-propyl butyrate	3197	814	2276	68922-11-2	09.249
4-	Methyl-5-thiazoleethanolacetate	3205	1054	11620	656-53-1	15.015

2-	Methyl-3,5 or 6-methylthio-pyrazine	3208	797	2290	67952-65-2	14.035
	Diphenyl disulfide	3225	578	11757	882-33-7	12.043
	Pyrazine ethanethiol	3230	795	2285	35250-53-4	14.031
	Pyrazinyl methyl sulfide	3231	796	2288	21948-70-9	14.034
2-	Pyridine methanethiole	3232		2279	2044-73-7	14.030
	Bis-(2-methyl-3-furyl)tetrasulfide	3260	1068	724	28588-76-3	13.017
2-sec-	Butylcyclohexanone	3261	1109	11044	14765-30-1	07.095
	Cyclopentanethiol	3262	516	2321	1679-07-8	12.029
2,4-	Dimethyl-5-acetylthiazole	3267	1055	2336	38205-60-6	15.011
spiro(2,4-	Dithia-1-methyl-8-oxabicyclo-(3.3.0)octane-3,3'-(1'-oxa-2'-methyl)-cyclopentane)	3270	1296	2325	38325-25-6	15.007
	Ethyl 2,4-dioxohexanoate	3278	603	11903	13246-52-1	09.514
5 or 6-	Methoxy-3-ethyl-pyrazine	3280	789	11329	68739-00-4	14.051
	Glycerol tripropanoate	3286	921	10657	139-45-7	09.263
3-(	Hydroxymethyl)-2-octanone	3292		11113	59191-78-5	07.097
	Pyrazine methanethiol	3299	794	11502	59021-02-2	14.053
3-(5-	Methyl-2-furyl)butanal	3307		10355	31704-80-0	13.058
3-	Phenyl-4-pentenal	3318	679	10378	939-21-9	05.103
	Tetrahydrofurfuryl cinnamate	3320		11821	65505-25-1	13.060
2,2-	Dithiodithiophene	3323	1053	2333	6911-51-9	15.008
	Allyl thiopropionate	3329	490	11436	41280-22-8	12.101
	Di-(butan-3-one-1-yl)sulfide	3335	502	11441	40790-04-3	12.052
5,7-	Dihydro-2-methylthieno (3,4-d)pyrimidine	3338		720	36267-71-7	14.014
3,7-	Dimethyl-2,6-octadienyl 2-ethylbutyrate	3339	78	11667	73019-14-4	09.515
2-	Ethoxythiazole	3340	1056	11611	15679-19-3	15.021
	Ethyl 2-ethyl-3-phenylpropanoate	3341		10587	2983-36-0	09.802
2-	Ethylthiophenol	3345	529	11666	4500-58-7	12.054
	Furfuryl thiopropionate	3347	1075	11484	59020-85-8	13.063
4-	Heptenal diethyl acetal	3349	949	10011	18492-65-4	06.037
3-	Heptyl-5-methyl-2(3H)-furanone	3350	244	10953	40923-64-6	10.026
4-	Mercapto-2-butanone (2-keto-4-butanethiol)	3357	559	11498	34619-12-0	12.055
5-	Methyl-5-hexen-2-one	3365	1119	11150	3240-09-3	07.100
3-(2-	Methylpropyl)pyridine	3371		11396	14159-61-6	14.059
4-(	Methylthio)-4-methyl-2-pentanone	3376	500	11551	23550-40-5	12.058
2,6-	Nonadienal diethyl acetal	3378	946	660	67674-36-6	06.025
3-	Oxobutanal dimethyl acetal	3381	593	10029	5436-21-5	06.038
	Phenylacetaldehyde diisobutyl acetal	3384	1006	595	68345-22-2	06.024
p-	Tolyl 3-methylbutyrate	3387	702	10545	55066-56-3	09.518
3-	Acetyl-2,5-dimethylfuran	3391		10921	10599-70-9	13.066
2-	Butyl-2-butenal	3392	1214	10324	25409-08-9	05.105
	Furfuryl octanoate	3396	742	10645	39252-03-4	13.067
	Methyl 4-(methylthio)butyrate	3412	474	11526	53053-51-3	12.060
4-(	Methylthio)butanal	3414	468	11542	42919-64-2	12.061
	Pentyl 2-furyl ketone	3418		11180	14360-50-0	13.070
	Propyleneglycol dibenzoate	3419	862	10890	19224-26-1	09.803
	Dehydrodihydroionol	3446	397	10195	57069-86-0	02.092
	Dehydrodihydroionone	3447	396	11057	20483-36-7	07.115
	Dicyclohexyl disulfide	3448	575	2320	2550-40-5	12.028
2,5-	Dimethyl-2,5-dihydroxy-1,4-dithiane	3450	562	2322	55704-78-4	15.006
2,5-	Dimethyl-3-furanthiol	3451	1063	11457	55764-23-3	13.071
N-	Ethyl-2-isopropyl-5-methyl-cyclohexane carboxamide	3455		2298	39711-79-0	16.013
	Ethyl 2-methyl-3-pentenoate	3456	350	10612	1617-23-8	09.524

	Maltol isobutyrate	3462		10739	65416-14-0	09.525
2-	Phenyl-3-carbethoxy furan	3468	752	2309	50626-02-3	13.038
	Thiogeranoliol	3472	524	11583	39067-80-6	12.064
	Bis-(2,5-dimethyl-3-furyl)disulfide	3476	1067	722	28588-73-0	13.015
2,3-	Butanedithiol	3477	539	725	4532-64-3	12.022
2,5-	Dimethyl-3-thiofuroylfuran	3481	1071	2323	65505-16-0	13.040
2,5-	Dimethyl-3-thioisovaleryl-furan	3482	1070	2324	55764-28-8	13.041
o-(	Ethoxymethyl)phenol	3485	714	11905	20920-83-6	04.045
	Ethylmaltol	3487		692	4940-11-8	07.047
	Ethyl 2-methyl-4-pentenoate	3489	351	10613	53399-81-8	09.527
2-	Ethyl-1,3,3-trimethyl-2-norbornanol	3491	440	10208	18368-91-7	02.095
trans-3-	Heptenyl acetate	3493	135	10662	1576-77-8	09.275
trans-3-	Heptenyl isobutyrate	3494	191	10663	99999-26-7	09.528
	Linalyl phenylacetate	3501	1019	655	7143-69-3	09.772
3-	Mercapto-2-butanol	3502	546	760	37887-04-0	12.024
2,3 or 10-	Mercaptopinane	3503	520	2332	23832-18-0	12.035
3-(2-	Mercapto-1-methylpropyl)thio)-2-butanol	3509	547	2353	54957-02-7	12.036
2-	Methyl-4-pentenoic acid	3511	355	10148	1575-74-2	08.059
1,9-	Nonanedithiol	3513	542	11558	3489-28-9	12.069
1,8-	Octanedithiol	3514	541	2331	1191-62-4	12.034
	Octyl 2-furoate	3518	750	10864	39251-88-2	13.073
2-	Phenyl-4-pentenal	3519		10377	24401-36-3	05.115
1,2-	Propanedithiol	3520	536	11564	814-67-5	12.070
o-	Propylphenol	3522	695	11908	644-35-9	04.046
3,5,5-	Trimethylhexanal	3524	269	10384	5435-64-3	05.116
1,2-	Butanedithiol	3528	537	11909	16128-68-0	12.072
1,3-	Butanedithiol	3529	538	11910	24330-52-7	12.073
	Cyclohexanecarboxylic acid	3531	961	11911	98-89-5	08.060
1,2-	Di((1'-ethoxy)-ethoxy)propane	3534	927	-	67715-79-1	06.039
2,6-	Dimethyl-3-((2-methyl-3-furyl)thio)-4-heptanone	3538	1086	11915	61295-51-0	13.075
	Ethyleneglycol tridecanedioic acid cyclic diester	3543	626	10571	105-95-3	09.533
	Isoamyl acetoacetate	3551	598	227	2308-18-1	09.401
	Isojasnone	3552	1115	167	11050-62-7	07.033
p-	Menthanol-2	3562	376	2228	499-69-4	02.071
2-	Methyl-3,5 or 6-ethoxy-pyrazine	3569	793	11921	32737-14-7	14.067
3-(2-	Methyl-3-furyl)-thio)-4-heptanone	3570	1085	11922	61295-41-8	13.077
4-(2-	Methyl-3-furyl)-thio)-5-nonanone	3571	1087	11923	61295-50-9	13.078
3-	Methyl-5-propyl-2-cyclohexene-1-one	3577	1113	-	3720-16-9	07.129
1,4-	Nonanediol diacetate	3579	609	11927	67715-81-5	09.280
2-	Phenyl-3-(2-furyl)-prop-2-enal	3586		11928	57568-60-2	13.137
1,2,3-	Tris((1'-ethoxy)-ethoxy)-propane	3593	913	11930	67715-82-6	06.040
3-	Octen-2-ol	3602	1140	-	76649-14-4	02.102
	Propyl 2-methyl-3-furyl disulfide	3607	1065	-	61197-09-9	13.082
epsilon-	Dodecalactone	3610	242	-	16429-21-3	10.028
epsilon-	Decalactone	3613	241	-	5579-78-2	10.029
5-	Phenyl-pentanol	3618	675	674	10521-91-2	02.051
2-(2-	Butyl)-4,5-dimethyl-3-thiazoline	3619	1059	-	65894-82-8	15.029
4,5-	Dimethyl-2-ethyl-3-thiazoline	3620	1058	-	76788-46-0	15.030
delta-	Damascone	3622	386	-	41436-42-4	07.130
2-	Methyl-4-phenyl-2-butanol	3629		10281	103-05-9	02.108
4-	Methyl-2-pentyl-1,3-dioxolan	3630	928	-	1599-49-1	06.094

	Cyclohexylmethyl pyrazine	3631	783	-	28217-92-7	14.069
2-	Methyl-3-thioacetoxy-4,5-dihydrofuran	3636	1089	-	26486-14-6	13.086
p-	Methylcinnamaldehyde	3640	682	10352	1504-75-2	05.122
4-(p-	Acetoxyphenyl)-2-butanone	3652	731	-	3572-06-3	09.288
4-	Acetyl-6-t-butyl-1,1-dimethylindane	3653	812	-	13171-00-1	07.133
2,6-	Dimethyl-6-hepten-1-ol	3663	348	-	36806-46-9	02.110
	Ethyl 3-(furfurylthio)propionate	3674	1088	-	94278-27-0	13.093
1-	Ethylhexyl tiglate	3676	448	-	94133-92-3	09.539
	Ethyl 2-methyl-3,4-pentadienoate	3678		-	60523-21-9	09.540
	Ethyl 4-(methylthio)-butyrate	3681	477	-	22014-48-8	12.084
	Ethyl 3-oxohexanoate	3683	602	-	3249-68-1	09.542
	Glyceryl 5-hydroxydecanoate	3685	923	10648	26446-31-1	09.543
	Glyceryl 5-hydroxydodecanoate	3686	924	10649	26446-32-2	09.544
	Hexyl 2-methyl-3(4)-pentenoate	3693	352	-	58625-95-9	09.546
	Hydroquinone monoethyl ether	3695	720	2258	622-62-8	04.037
	Benzyl isoeugenyl ether	3698	1268	522	120-11-6	04.018
	Methyl 1-acetoxycyclohexyl ketone	3701		-	52789-73-8	09.293
	Methyl 2-oxo-3-methylpentanoate	3713	591	-	3682-42-6	09.550
7-	Methyl-4,4a,5,6-tetrahydro-2(3H)-naphthalenone	3715		-	34545-88-5	07.136
	Benzylidene methional	3717	505	-	65887-08-3	12.087
beta-	Naphthyl isobutyl ether	3719	259	11886	2173-57-1	04.054
2-	Pentyl-1-buten-3-one	3725	1149	-	63759-55-7	07.138
1-	Phenyl-3 or 5-propylpyrazole	3727		2277	65504-93-0	14.029
1,2,5,6-	Tetrahydrocuminic acid	3731	976	-	71298-42-5	08.067
p-	Tolyl octanoate	3733	703	-	59558-23-5	09.301
o-	Tolyl salicylate	3734	907	-	617-01-6	09.807
	Anisyl phenylacetate	3740	876	233	102-17-0	09.706
5-and 6-	Decenoic acid	3742	327	-	72881-27-7	08.068
2-(3-	Phenylpropyl)pyridine	3751		-	2110-18-1	14.072
	Potassium 2-(1'-ethoxy)ethoxypropanoate	3752	933	-	99999-00-3	16.039
o-	Tolyl isobutyrate	3753	700	681	36438-54-7	09.480
	Ethyl methyl-p-tolylglycidate	3757		11707	74367-97-8	16.040
5-	Hydroxy-8-undecenoic acid delta lactone	3758	248	11198	68959-28-4	10.035
1-(4-	Methoxyphenyl)-4-methyl-1-penten-3-one	3760	829	719	103-13-9	07.049
3-	Oxodecanoic acid glyceride	3767	914	10650	91052-69-6	09.552
3-	Oxododecanoic acid glyceride	3768	915	10651	91052-70-9	09.553
3-	Oxoheptadecanoic acid glyceride	3769	917	10652	91052-71-0	09.554
3-	Oxoheptanoic acid glyceride	3770	910	10653	91052-72-1	09.555
3-	Oxooctanoic acid glyceride	3771	911	10654	91052-68-5	09.556
3-	Oxotetradecanoic acid glyceride	3772	916	10655	91052-73-2	09.557
3-(1-	Menthoxy)propane-1,2-diol	3784		-	87061-04-9	02.224
	Methylthio 2-(acetyloxy)propionate	3788	492	-	74586-09-7	12.203
	Methylthio 2-(propionyloxy)propionate	3790	493	-	999999-90-9	12.227
	Octahydrocoumarin	3791	1166	-	4430-31-3	13.161
	Vanillyl butyl ether	3796	888	-	82654-98-6	04.093
	Ethyl vanillin beta-D-glucopyranoside	3801	892	-	122397-96-0	16.075
2-iso-	Propyl-N,2,3-trimethylbutylamide	3804		10459	51115-67-4	16.053
	Menthol ethylene glycol carbonate	3805	443	-	156679-39-9	09.842
	Menthol 1-and 2-propylene glycol carbonate	3806	444	-	30304-82-6	09.843
	Menthone 1,2-glycerol ketal	3808	445	-	63187-91-7	06.120
2	Hexenyl pentanoate	3935		-	56922-74-8	

4	Methyl-7-decen-1,4- lactone	3937	1159	-	93257-19-3	10.061
2-	Methyl-4-oxopyran-3yl propionate	3941		-	68555-63-5	
2,6-	Nonadienyl acetate	3952	1188			
2,4-	Octadienol	3956	1180	-	18409-20-6	
	Phenyl-2-hydroxybenzoate	3960	736	11814	118-55-8	09.689
2,5-	Dimethyl-3-tetrahydrofuranthiol	3971	1091	-	26486-21-5	13.193
2,5-	Dimethyl-3-tetrahydrofuryl ethanethioate	3972	1092	-	252736-39-3	13.194
	Ethyl 4-(acetylthio)butyrate	3974	1295	-	104228-51-5	12.257
	Ethyl 5-(methylthio)pentanoate	3978	1298	-	233665-98-0	12.212
2-	Hydroxy-5-methyl-3-hexanoate	3989			163038-04-8	
D,L-	Menthol 1,2-propanediol carbonate	3992		-	156324-82-2	09.920
3-	Mercapto-2-methylbutanol-1	3993	1289	-	227456-33-9	
2-	Mercapto-2-methylpentanol-1	3995	1290	-	258823-39-1	12.241
	Nonan-3-yl acetate	4007	1145		60826-15-5	09.925
	Pentenyl acetate	4011	1270		1576-85-8	09.917
	Sodium(4-methoxybenzoxyloxy)acetate	4016		-	10414-68-3 (free acid) 17114-82-8 (Na salt)	
6-	Undecanone	4022	1155		927-49-1	07.249
	Dihydroxyacetone	4033	1716	-	96-26-4 (monomer)	
o-	Ethyl S-(2-furylmethyl)thiocarbonate	4043		-	376595-42-5	13.191
2-	Hexyl-4,5-dimethyl-1,3-dioxolane	4048	1712	-	6454-22-4	06.089
1-	Menthyl methylether	4054		-	1565-76-0	
(+/-)-1-	Acetoxy-1-ethoxyethane	4069	1726	-	1608-72-6	
	Allyl valerate	4074		-	6321-45-5	09.866
N-	Benzoylanthranilic acid	4078			579-93-1	
	Allyl thiohexanoate	4076	1681	-	156420-69-8	
	Citronellyl anthranilate	4086		-	68555-57-7	
N-	Cyclopropyl-trans-2-cis-6-nonadienamide	4087		-	608514-55-2	
	Diisopentyl thiomalate	4096	1672	11454	68084-03-7	12.108
	Dimercaptomethane	4097	1661	-	6725-64-0	12.243
3,5- and 3,6-	Dimethyl-2-isobutylpyrazine	4100		-	38888-81-2	
(+/-)-trans- and cis-4,8-	Dimethyl-3,7-nonadien-2-ol	4102		-	67845-50-5	
(+/-)-trans- and cis-4,8-	Dimethyl-3,7-nonadien-2-yl acetate	4103		-	91418-25-6	
(+/-)-trans- and cis-5-(2,2-	dimethylcyclopropyl)-3-methyl-2-pentenal	4105		-	877-60-1	
	Divanillin	4107		-	2092-49-1	
	Ethane-1,1-dithiol	4111	1660		69382-62-3	
	Ethyl cis-3-hexenoate	4112	1626		64187-83-3	
N-	Ethyl trans-2-cis-6-nonadienamide	4113		-	608514-56-3	
	Ethyl N-ethylantranilate	4115		629	38446-21-8	09.764
(+/-)-4-	Ethyl octanal	4117		-	58475-04-0	
	Eugenyl isovalerate	4118		-	61114-24-7	09.878
	Hept-2-en-1-yl isovalerate	4126		-	253596-70-2	09.303
cis- and trans-2-	Heptylcyclopropanecarboxylic acid	4130		-	697290-77-0 (trans) 697290-76-9 (cis)	
2,4-	Hexadienyl propionate	4131	1781	-	16491-25-1	

2,4-	Hexadienyl acetate	4132	1780	10675	1516-17-2	09.573
2,4-	Hexadienyl butyrate	4133	1783	-	16930-93-1	
2,4-	Hexadienyl isobutyrate	4134	1782	-	16491-24-0	
	Hexyl 3-mercaptoputanoate	4136	1704	-	796857-79-9	12.235
4-	Hydroxy-2-butenic acid gamma-lactone	4138			497-23-4	
5-	Hydroxy-4-methylhexanoic acid delta-lactone	4141			10413-18-0	
1-(3-	Hydroxy-5-methyl-2-thienyl)ethanone	4142	1750	-	133860-42-1	
	Isoambrettolide	4145		-	28645-51-4	10.063
N-	Isobutyldeca-trans-2-trans-4-dienamide	4148	1598		18836-52-7	
	Isobutyl N-methyl-anthranilate	4149		649	65505-24-0	09.769
(+/-)-	Isobutyl 3-methylthiobutyrate	4150	1677	-	127931-21-9	12.214
beta-	Isomethylionone	4151		650	79-89-0	07.041
2-(l-	Menthoxy)ethanol	4154		-	38618-23-4	
	Menthyl pyrrolidone carboxylate	4155		-	68127-22-0	
4-	Mercapto-2-pentanone	4157	1670	-	92585-08-5	12.264
(+/-)-4-	Mercapto-4-methyl-2-pentanol	4158	1669	-	31539-84-1	12.252
2-	Mercaptoanisol	4159	1666	11880	7217-59-6	12.139
trans- and cis-1-	Methoxy-1-decene	4161		-	79930-37-3	
2-	Methoxyacetophenone	4163		-	579-74-8	
	Methyl 3-(methylthio)butanoate	4166	1690	-	207983-28-6	
	Methyl 3-mercaptoputanoate	4167	1674	-	54051-19-3	
	Methyl isopentyl disulfide	4168	1696		72437-56-0	
2-	Methyl-1-methylthio-2-butene	4173	1683	-	89534-74-7	
6-	Methyl-5-hepten-2-yl acetate	4177		-	19162-00-6	
3-	(Methylthio)-2-butanone	4181	1688	-	53475-15-3	
4-	(Methylthio)-2-pentanone	4182	1689		143764-28-7	
(+/-)-3-	(Methylthio) heptanal	4183	1692		51755-70-5	
3-	(Methylthio)methylthiophene	4184	1765	-	61675-72-7	
	Methylthiomethylmercaptan	4185	1675	-	29414-47-9	12.242
cis-3-	Octenyl propionate	4189	1628	-	94134-03-9	
(+/-)-2-	Phenyl-4-methyl-2-hexenal	4194		-	26643-92-5	
	Prenyl caproate	4204		-	76649-22-4	
	Propyl 2-mercaptopropionate	4207	1667	-	19788-50-2	
	Thioacetic acid	4210	1676	-	507-09-5	12.199
trans- and cis-2,4,8-	Trimethyl-3,7-nonadien-2-ol	4211	1645	-	479547-57-4	
(+/-)-2,4,8-	Trimethyl-7-nonen-2-ol	4212	1644	-	437770-28-0	
2,4,6-	Trithiaheptane	4214	1684		6540-86-9	12.240
	Vetiverol	4217		10321	89-88-3	02.214
	Vetiveryl acetate	4218		11887	117-98-6	09.821
(+/-)-N,N-	Dimethyl menthyl succinamide	4230	1778	-	544714-08-1	
N1-(2-	methoxy-4-methylbenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide	4231	1770	-	745047-97-6	
N-	(Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide	4232	1767	-	745047-51-2	
N1-(2,4-	Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide	4233	1768	-	745047-53-4	
N1-(2-	Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide	4234	1769	14.025	745047-94-3	
	Methyl 10-undecenoate	4253	1639	-	111-81-9	
	Cedryl acetate	-		527	77-54-3	09.171
2,2-	Dimethyl-3-phenylpropionaldehyde	-		598	1009-62-7	05.054
	Isobornyl phenylacetate	-		566	94022-06-7	09.756

	Acetaldehyde diisopropyl acetal	Reg		4285-59-0	
	Butyl butyrylglucolate	Reg.	2188	94022-04-5	
	Caryophyllene alcohol acetate	Reg.	-	32214-91-8	
	Citral propyleneglycol acetal	Reg.	2343	10444-50-5	06.035
	Cyclohexyl hexanoate	Reg.	528	6243-10-3	
	Cyclohexyl mercaptan	Reg.	529	1569-69-3	
	Dodeca-3,6-dienal	Reg.	2121	13553-09-8	05.082
7-	Ethoxy-4-methyl-coumarin	Reg.	11870	87-05-8	13.121
	Isoeugenyl butylether	Reg.	11857	115422-59-8	04.071
	Methyl furfuracrylate	Reg.	2267	623-18-7	13.036
2-	Methyl-1, 3-cyclohexadiene	Reg.	11797	30640-46-1	01.025
	Methyl-isobutylcarbinyl acetate	Reg.	2073	108-84-9	
6-	Octenal	Reg.	664	63826-25-5	05.061
	Pseudo-cyclocitral	Reg.	11849	1726-47-2	05.177
	Benzyl lactate			2051-96-9	09.317
	Diethylene glycol mono ethyl ether			111-90-0	
	Diethylene glycol mono methyl ether			111-77-3	
2,3-	Dimethyl-5-Isobutyl pyrazine			32263-00-6	
5-sec-	Butyl-2,3-dimethyl pyrazine			32263-00-6	

**LIST OF SUBSTANCES CHEMICALLY IDENTICAL TO THOSE OCCURRING IN
NATURAL PRODUCTS NOT NORMALLY CONSIDERED AS
FOODS**

	Substance	FEMA	JECFA	CoE	CAS	FLAVIS
	Benzyl phenylacetate	2149	849	232	102-16-9	09.705
	Isobornyl formate	2162		565	1200-67-5	09.176
	Isobornyl isovalerate	2166		452	7779-73-9	09.457
	Butyl cinnamate	2192	663	326	538-65-8	09.733
	Cinnamyl phenylacetate	2300	655	235	7492-65-1	09.708
	Anisylacetone (4-p-methoxyphenyl-butanone)	2672	818	163	104-20-1	07.029
	Phenethyl senecioate	2869	998	246	42078-65-9	09.407
	Phenylethyl methyl carbinol	2879	815	85	2344-70-9	02.036
	Methyl styryl carbinol (4-phenyl-3-buten-2-ol)	2880	819	2032	17488-65-2	02.066
4-	Phenyl-2-butyl acetate	2882	816	671	10415-88-0	09.200
3-	Phenylpropyl hexanoate	2896	642	321	6281-40-9	09.071
	Propyl cinnamate	2938	660	324	7778-83-8	09.731
	Propyl phenylacetate	2955	1010	229	4606-15-9	09.702
	Rhodinyl isovalerate	2987	77	460	7778-96-3	09.465
	Sucrose octaacetate	3038		11819	126-14-7	16.081
9	Undecenal	3094	329	123	143-14-6	05.036
10-	Undecenal	3095	330	122	112-45-8	05.035
2-	Hydroxy-2-cyclohexen-1-one	3458	424	11046	10316-66-2	07.119
	Vanillylidene acetone	3738	732	691	1080-12-2	07.046
	Isobornyl butyrate	Reg.		564	58479-55-3	