

Standards and Specifications

Essential Oil Association of the U.S.A., Inc.

For many years, the Essential Oil Association of the U.S.A. (EOA), through its Scientific Committee, has advised those responsible for the publication of **The United States Pharmacopeia** and **The National Formulary** regarding the suitability of specifications included in their monographs for essential oils and related materials. However, only a limited number of these materials are used in pharmaceutical practice to a sufficient extent to justify inclusion in these official compendia. Therefore, in 1946 the Scientific Committee began the compilation of a set of monographs embodying the EOA standards for essential oils, aromatic chemicals and isolates, and related flavor and perfume materials. Approximately 300 of these have now been completed. They have been prepared by the scientific representative of the member companies, based on the analytical data and experience of their laboratories. They are intended to define realistically standard good quality material currently available commercially, and should provide fair standards for the evaluation of these materials in commercial transactions. The Scientific Committee recognizes that there may well be grades of these materials which do not conform to these standards, which may meet the special requirements of a given user. Under these circumstances, the specifications can be established by agreement between buyer and seller.

With the advent of the newer instrumental methods of analysis, an Instrumental Analysis Subcommittee was formed, composed of representatives of the member companies who had become expert in these techniques. This Subcommittee has prepared detailed procedures for infrared and ultraviolet spectroscopic analysis, and 19 procedures for gas chromatographic determinations of the components of essential oils and aromatic chemicals. 133 infrared spectra have been prepared for aromatic chemicals and a limited number of essential oils. These are intended for identification purposes, and should not be taken as standards of purity. Specifications for certain components based on gas chromatographic analysis have

been included in a limited number of monographs. It is anticipated that the number of such specifications will increase as the laboratories in the industries accumulate sufficient data.

The index that follows includes those essential oils, natural perfume materials, aromatic chemicals, isolates, general tests, spectra, and suggested apparatus that have been adopted by the Scientific Section of the Essential Oil Association (EOA) up to and including their annual deliberations held on January 10, 1975.

The index is divided into several sections. In each the materials are listed alphabetically by name, with the corresponding monograph number. Spectra and chromatograms for any particular material bear the same number as the corresponding monograph. In the sections for Essential Oils and for Aromatic Chemicals, synonymous names are included immediately below the title name for the monograph, and are also listed alphabetically, with the corresponding monograph number. The Scientific Committee of the Essential Oil Association of the U.S.A., Inc. deplores the use of certain scientifically incorrect names, which are used both as monograph titles and as synonyms. However, because these materials are frequently identified by these names, they are included for the users' convenience.

Infrared and ultraviolet standards have been established for some items, and gas chromatographic procedures with standard charts, for others. An appropriate abbreviated designation follows the title name and synonym for the monograph of each of the materials for which these standards and procedures are available.

In addition, separate sections of the index list infrared standards and gas chromatographic procedures, with the items arranged alphabetically by the title name, with corresponding monograph number. Also listed alphabetically by title are animal products, balsams and gums, and oleoresins.

General tests are separately indexed alphabetically by name of test.

<i>Product</i>	<i>Number Specifications</i>	<i>Product</i>	<i>Number Specifications</i>
I. GENERAL APPARATUS AND TESTS			
Cassia Flask	A-1	Cardamom, Oil	289
Vacuum Distillation Apparatus	A-2	Carrot Seed, Oil	136
Acetals	1-Q	Cascarilla, Oil	175
Acid Value	1-E	(Oil Sweet-Wood Bark)	
Alcohols		Cedar Leaf, Oil	86
a.—Aceto-Formylation Method	1-R	(Oil Thuja)	
b.—Free Alcohols—Near-Infrared	1-ID-2	Cedarwood American, Oil (GC)	36B
c.—Purification of Ethanol	1-I	Cedarwood Atlas, Oil	229
d.—Total Alcohol	1-B	(Oil Cedarwood Moroccan)	
Aldehydes-Hydroxylamine Hydrochloride Method	1-I	Cedarwood Mexican, Oil (GC)	36A
Aldehydes and Ketones		Cedarwood Texas, Oil (GC)	36A
a.—Hydroxylamine Method	1-D	Cedarwood Virginia, Oil (GC)	36B
b.—Hydroxylamine/Tertiary Butyl Alcohol Method	1-U	Celery Seed, Oil	85
c.—Neutral Sulfite Method	1-J	Chamomile English, Oil	177
Chlorinated Compounds	1-G	(Oil Chamomile Roman)	
Citrus Oils—U.V. Absorbance	1-ID-4	Chamomile, German, Oil	156
Congealing Point	1-H	(Oil Chamomile Hungarian)	
Esters		Chenopodium, Oil	196
a.—General	1-A	(Oil Wormseed American)	
b.—High Boiling Solvent	1-N	Cinnamon Bark Ceylon, Oil	87
Evaporation Residue	1-F	Cinnamon Leaf, Oil	56
Flash Points	1-V	Citronella Ceylon, Oil (IR)	12
General Tests	1-I	Citronella, Java Type, Oil (IR)	14
Gums	1-W	Clary Sage, Oil	77
Heavy Metals	1-L	Clove Leaf, Oil	55
Instrumental		Clove Stem, Oil	178
a.—Gas Chromatography	1-ID-3	Cognac Green, Oil	157
b.—Infrared	1-ID-1	(Oil Wine Yeast)	
c.—Near Infrared	1-ID-2	Copaiba, Oil	10
d.—Ultraviolet	1-ID-4	Cornmint (Dementholized), Oil	199
Linalool	1-C	(Oil Mentha Arvensis (Dementholized))	
Melting Point	1-M	Costus Root, Oil	179
Peroxide Value	1-T	Cubeb, Oil	89
Phenols		Cumin, Oil	115
a.—Free Phenols	1-O	Dill Seed European, Oil	158
b.—General	1-K	Dill Seed Indian, Oil	159
c.—Total Phenols	1-S	Dillweed American, Oil	58
Reagents	1-I	Estragon, Oil	121
Residual Solvents in Oleoresins	1-ID-3-1	Eucalyptus Citriodora, Oil	130
Resins	1-W	Fir, European Silver, Oil	126
Vacuum Distillation Residue	1-P	(Oil Abies Alba)	
II. ESSENTIAL OILS			
Abies Alba, Oil	126	Fir Needle Canadian, Oil	112
(Oil European Silver Fir)		Fir Needle Siberian, Oil	50
Abies Sibirica, Oil	50	Frankincense, Oil	68
(Oil Siberian Fir Needles)		(Oil Olibanum)	
Absinthe, Oil	114	Galbanum, Oil	137
(Oil Wormwood)		Garlic, Oil	180
Allspice, Oil	255	Geranium Algerian, Oil	53
(Oil Pimenta Berries)		Geranium Moroccan, Oil	160
Almond, Bitter, FFPA, Oil	215	Geranium Reunion, Oil	49
Ambrette Seed Liquid, Oil	147	(Oil Geranium Bourbon)	
Amyris, Oil	64	Ginger, Oil	13
(Oil Sandalwood West Indian)		Grapefruit Expressed, Oil (UV)	30
Angelica Root, Oil	96	Guaiac Wood, Oil	63
Angelica Seed, Oil	97	(Oil Champaca Wood)	
Artemisia, Oil	114	(Oil Pokeweed)	
(Oil Wormwood)		Hemlock, Oil	32
Balsam Peru, Oil	65	(Oil Spruce)	
Balsam Tolu, Oil	66	Hops, Oil	161
(Oil Tolu)		(Oil Humulus)	
Basil Reunion, Oil	120	Juniper Berries, Oil	113
Bay, Oil	251	Labdanum, Oil	181
(Oil Bay Leaves West Indian)		Laurel Leaf, Oil	119
Bergamot Expressed, Oil	256	Lavandin, Oil	41
Birch Tar Rectified, Oil	105	(Wild Lavender)	
Bois de Rose Brazilian, Oil (IR)	2	Lavandin Abrial, Oil	163
(Oil Rosewood)		Lemon Arizona, Oil	272
Bois de Rose Peruvian, Oil (IR) (GC)	135	Lemon Distilled, Oil	291
(Oil Rosewood)		Lemongrass, Oil (GC)	7
Cajeput, Oil	22	(East Indian & West Indian Types)	
Calamus, Oil	101	Limes Distilled, Oil	78
Camphor 1070, Oil	69	Limes Expressed, Oil (UV)	88
(Chinese, Formosan, or Japanese)		Linaloe Wood, Oil	70
Camphor White 860-880, Oil	98	(Oil Linaloe Mexican)	
(Formosan, Japanese)		Lovage, Oil	140
Camphor Yellow 960-980, Oil	99	Mace, Oil	182
(Oil Camphor Sassafrassy)		(East Indian & West Indian)	
Cananga, Oil	75	Mandarin Expressed, Oil (UV)	95
(Oil Cananga Java)		Marjoram, Sweet, Oil	76
(Oil Cananga Native)		Marjoram Spanish, Oil	143
		Mentha Arvensis (Dementholized), Oil	199
		(Oil Cornmint, (Dementholized))	
		Mentha Piperita, Oil	1
		(Oil Peppermint Natural)	

<i>Product</i>	<i>Number Specifications</i>	<i>Product</i>	<i>Number Specifications</i>
Myrrh, Oil	141	Vetiver, Oil	24
(Oil Heerabol-Myrrh)		(Oil Vetiver Java; Reunion (Bourbon); Haiti)	
Ocotea Cymbarium, Oil	62	Wormseed American, Oil	196
(Oil Sassafras Brazilian)		(Oil Chenopodium)	
Olibanum, Oil	68	Wormwood, Oil	114
(Oil Frankincense)		(Oil Absinthe)	
Onion, Oil	183	Ylang Ylang, Oil	200
Opopanax, Oil	67	Ylang Ylang Complete, Oil	216
(Oil Myrrh)		Ylang Ylang Extra, Oil	
(Oil Bisabol-Myrrh)			
Orange, Bitter, Oil (UV)	155		
(Oil Orange Peel, Bitter)			
Orange Distilled, Oil	292		
Origanum Spanish, Oil	142		
(Oil Origanum)			
Orris Root, Oil	116		
(Oil Orris, Concrete, Liquid)			
Palmarosa, Oil	29		
Parsley Herb, Oil	293		
Parsley Seed, Oil	139		
Patchouly, Oil	23		
Pennyroyal, Oil	72		
Pepper, Black, Oil	102		
Peppermint Natural, Oil	1		
(Oil Mentha Piperita)			
Petitgrain Paraguay, Oil	3		
Pimenta Berries, Oil	255		
(Oil Allspice)			
(Oil Pimento)			
Pimento Leaf, Oil	73		
(Oil Pimenta Leaf)			
Pinus Sylvestris, Oil	133		
(Oil Scotch Pine)			
(Oil Turpentine Russian)			
Rosemary, Oil	287		
Rosewood Brazilian, Oil (IR)	2		
(Oil Bois de Rose Brazilian)			
Rosewood Peruvian, Oil (IR) (GC)	135		
(Oil Bois de Rose Peruvian)			
Rue, Oil	90		
Sage Dalmatian, Oil	44		
Sage Spanish, Oil	71		
Sandalwood Australian, Oil	174		
(Oil Santal Australian)			
Sandalwood East Indian, Oil	103		
(Oil Santal)			
Sandalwood West Indian, Oil	64		
(Oil Amyris)			
Sassafras Artificial, Oil	69		
(Oil Camphor 1070)			
Sassafras Brazilian, Oil	62		
(Oil Ocotea Cymbarum)			
Savory (Summer Variety), Oil	197		
Scotch Pine, Oil	133		
(Pinus Sylvestris)			
Snakeroot Canadian, Oil	164		
(Oil Wild Ginger)			
Spearmint Rectified, Oil	57		
Spike, Oil	4		
(Oil Spike Lavender)			
(Oil Lavender Spanish)			
(Oil Spanish Spike)			
(Oil Aspic)			
Spruce, Oil	32		
(Oil Hemlock)			
Styrax, Oil	153		
(Oil Storax)			
Sweet-Wood Bark, Oil	175		
(Oil Cascarilla)			
Tangerine Expressed, Oil (UV)	94		
Tansy, Oil	117		
Tarragon, Oil	121		
(Oil Estragon)			
Tea Tree, Oil	198		
(Oil Malaleuca Alternifolia)			
Thuja, Oil	86		
(Oil Cedar Leaf)			
Thyme, Oil	286		
Tolu, Oil	66		
(Oil Balsam Tolu)			
Turpentine Rectified, Oil	252		
Turpentine Russian, Oil	133		
(Pinus Sylvestris)			
Valerian, Oil	165		
(Oil Valerian Root)			

III. ANIMAL PRODUCTS

Beaver Castors	194
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Castor Pods	194
Civet Natural	195

IV. BALSAMS AND GUMS

Canada Turpentine	214
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Fir Canada	214
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V. OLEORESINS

Capsicum	244
Celery	242
Cloves	238
Ginger	243
Mace	241
Paprika	239
Pepper, Black	240
Pepper, Red	245
Tumeric	271

VI. AROMATIC CHEMICALS & ISOLATES

Acetanisole (IR)	151
(para Methoxy acetophenone)	
Acetisoeugenol (IR)	276
(Isoeugenyl Acetate)	
Acetophenone (IR)	37
(Acetylbenzene)	
Alcohol C-8 (IR)	166
(1-Octanol) (Caprylic Alcohol)	
Alcohol C-10 (IR)	167
(1-Decanol) (Capric Alcohol)	
Alcohol C-12 (IR)	184
(Lauryl alcohol) (1-Dodecanol)	
Aldehyde C-7 (IR)	281
(Heptanal)	
Aldehyde C-8 (IR)	106
(Octanal) (Capryl Aldehyde)	
Aldehyde C-9 (IR)	91
(Nonanal)	
Aldehyde C-10 (IR) (GC)	26
(Decanal) (Capraldehyde)	
Aldehyde C-11 (Undecylenic) (IR)	84
(9-Undecenal)	
Aldehyde C-11 (Undecylic) (IR)	123
(Undecanal)	
Aldehyde C-12 (Lauric) (IR)	51
(Lauric aldehyde)	
Aldehyde C-12 MNA (IR)	52
(2-Methyl undecanal)	
Aldehyde C-14 (so-called) (IR)	79
(gamma Undecalactone)	
Aldehyde C-16 (so-called)	109
(Ethyl methyl phenyl glycidate)	
Aldehyde C-18 (so-called) (IR)	92
(gamma Nonalactone)	
Allyl Caproate (IR)	122
(Allyl n-hexanoate)	
Allyl Cyclohexyl Propionate (IR)	254
Amyl Acetate (IR)	110
(Isoamyl acetate)	
Amyl Butyrate (IR)	111
(Isoamyl butyrate)	
Amyl Caproate (IR)	248
(Isoamyl hexanoate)	
Amyl Cinnamate	264
(Isoamyl cinnamate)	
Amyl Cinnamic Aldehyde (IR)	45
(alpha Amyl Cinnamaldehyde)	

<i>Product</i>	<i>Number Specifications</i>	<i>Product</i>	<i>Number Specifications</i>
Amyl Formate (IR)	185	Dihydro Anethole (IR)	219
(Isoamyl formate)		(para-n-Propyl-anisole)	
Amyl Octanoate	265	Dihydrocoumarin (IR)	169
(Isoamyl octanoate)		(1, 2 Benzodihydropyrone)	
(Isoamyl caprylate)		1, 2-Dimethoxy-4-allylbenzene (IR)	128
Amyl Propionate (IR)	249	(Methyl Eugenol)	
(Isoamyl propionate)		1, 1-Dimethoxy-3, 7-dimethyl-octan-7-ol (IR)	148
Amyl Salicylate (IR)	27	(Hydroxycitronellal Dimethyl Acetal)	
(Isoamyl salicylate)		1, 2-Dimethoxy-4-propenyl benzene (IR)	207
Anisic Aldehyde (IR)	42	(Methyl Isoeugenol)	
(para Methoxy benzaldehyde)		Dimethyl Anthranilate	35
(Aubepine)		(Methyl-N-methyl anthranilate)	
Anisyl Acetate (IR)	211	Dimethyl Benzyl Carbinol (IR)	220
(para Methoxy benzyl acetate)		(2-Methyl-1-phenyl propanol-2)	
Anisyl Alcohol (IR)	217	Dimethyl Benzyl Carbinyl Acetate (IR)	186
(para Methoxy benzyl alcohol)		(2-Methyl-1-phenyl-propanyl-2 acetate)	
Aubepine (IR)	42	2,6-Dimethyl Heptenal	268
(Anisic Aldehyde)		(2,6-Dimethyl-5-hepten-1-al)	
Benzodihydropyrone (IR)	169	3,7-Dimethyl-2,6-octadien-1-al (IR)	15
(Dihydrocoumarin)		(Citral)	
Benzophenone (IR)	83	3,7-Dimethyl-2,6-octadien-1-ol (IR) (GC)	16
1, 2-Benzopyrone (IR)	201	(Geraniol)	
(Coumarin)		3,7-Dimethyl-1,6-octadien-3-ol (IR)	226
2, 3-Benzopyrrole (IR)	21	(Linalool)	
(Indole)		Dimethyl Octanol (IR)	176
Benzyl Acetate (IR)	33	3,7-Dimethyl-6-octen-1-ol (IR) (GC)	17
Benzyl Butyrate (IR)	168	(Citronellol)	
Benzyl Cinnamate (IR)	124	alpha, alpha Dimethyl phenethyl acetate (IR)	186
Benzyl Isobutyrate	267	(Dimethyl benzyl carbinyl acetate)	
Benzyl Isoeugenol (IR)	237	alpha, alpha Dimethyl phenethyl alcohol (IR)	220
Benzyl Isovalerate	266	(Dimethyl benzyl carbinol)	
Benzyl Propionate (IR)	209	Dimethyl Phenyl Ethyl Carbinol (IR)	277
Benzyl Salicylate (IR)	93	(1,1-Dimethyl-3-phenyl propanol)	
(Benzyl o-hydroxybenzoate)		3,5-Dinitro-2,6-dimethyl-4-tert. butyl	
Bornyl acetate, laevo (IR)	170	(acetophenone (IR))	25
Bromstyrol (IR)	150	(Nitro Musks)	
(alpha Bromo beta phenyl ethylene)		2,6-Dinitro-3-methoxy-4-tert. butyl	
Butyl Isobutyrate	258	toluene (IR)	25
para-tertiary-Butyl Cyclohexyl Acetate	263	(Nitro Musks)	
Capraldehyde (IR)	26	Diphenyl Methane (IR)	129
(Aldehyde C-10)		Diphenyl Oxide (IR)	43
Capric Alcohol (IR)	167	Dodecanal (IR)	51
(Alcohol C-10)		(Aldehyde C-12 (Lauric))	
Caprylaldehyde (IR)	106	1-Dodecanol (IR)	184
(Aldehyde C-8)		(Alcohol C-12)	
Caprylic Alcohol (IR)	166	Ethyl Benzoate (IR)	210
(Alcohol C-8)		Ethyl Butyrate (IR)	108
Carvone, Dextro	132	Ethyl Caprate	261
(dextro-6, 8 (9)-p-Menthadien-2-one)		(Ethyl Decanoate)	
Carvone, Laevo (IR)	131	Ethyl Caproate (IR)	172
(laevo-6, 8 (9)-p-Menthadien-2-one)		Ethyl Caprylate (IR)	173
Cedrenyl Acetate (IR)	127	Ethyl Decanoate	261
(Cedryl Acetate)		Ethylene Brassylate (IR)	188
Cedrol Recrystallized	171	(Ethylene undecane dicarboxylate)	
Cedryl Acetate (IR)	127	Ethyl Formate (IR)	187
1, 8-Cineol (IR)	288	Ethyl Heptoate	230
(Eucalyptol)		Ethyl Isovalerate	260
Cinnamic Alcohol (IR)	28	Ethyl Methyl Phenylglycidate	109
Cinnamic Aldehyde (IR)	204	(Aldehyde C-16 (so-called))	
Cinnamic Aldehyde Dimethyl Acetal (IR)	278	Ethyl Octanoate (IR)	173
Citral Pure (IR)	15	(Ethyl Caprylate)	
Citral Dimethyl Acetal (IR) (GC)	273	Ethyl Phenyl Acetate (IR)	40
Citronellal (IR)	227	Ethyl Phenyl Glycidate	246
Citronellol (IR) (GC)	17	Ethyl Salicylate	236
Citronellyl Acetate (IR) (GC)	125	(Ethyl-hydroxybenzoate)	
Citronellyl Formate (IR) (GC)	206	Eucalyptol (IR)	288
Citronellyl Propionate (IR)	283	(1,8-Cineol)	
Coconut Aldehyde (IR)	92	Eugenyl Methyl Ether (IR)	128
(Aldehyde C-18 (so-called))		(Methyl Eugenol)	
Coumarin (IR)	201	Geraniol (IR) (GC)	16
para Cresyl acetate (IR)	223	Geranyl Acetate (IR) (GC)	11
para Cresyl isobutyrate	232	Geranyl Butyrate (IR)	154
para Cresyl Methyl Ether (IR)	224	Geranyl Formate (IR) (GC)	162
(Methyl para Cresol)		Geranyl Phenylacetate (IR)	280
para Cresyl phenylacetate	231	Geranyl Propionate (IR)	144
Cyclamen Aldehyde (IR)	149	Guaiacwood Acetate	221
(2-Methyl-3-(p-iso-propyl phenyl)-propionaldehyde)		Heliotropine (IR)	6
Decahydro Beta Naphthol	235	(Piperonal)	
Decanal (IR) (GC)	26	(3,4-Methylenedioxy benzaldehyde)	
(Aldehyde C-10)		Heptanal (IR)	281
1-Decanol (IR)	167	(Aldehyde C-7)	
(Alcohol C-10)		cis-3-Hexenol (GC)	270
Diethyl Phthalate (IR)	218	cis-3-Hexenyl Acetate (GC)	269
Diethyl Succinate	247	Hexyl Cinnamic Aldehyde (IR)	189
		Hydratropic Aldehyde	100

Product	Number Specifications	Product	Number Specifications
Hydrocinnamaldehyde (IR)	290	1-Methyl-4-isopropyl-1-cyclohexen-8-ol (IR)	8
(Phenyl Propyl Aldehyde)		(Terpineol)	
Hydroxycitronellal (IR)	5	2-Methyl-3-(p-isopropylphenyl)-propionaldehyde (IR)	149
(7-Hydroxy-3,7-dimethyl octan-1-ol)		(Cyclamen aldehyde)	
Hydroxycitronellal Dimethyl Acetal (IR)	148	Methyl N-methyl anthranilate	35
Indole (IR)	21	(Dimethyl Anthranilate)	
Ionones (IR) (GC)	61	Methyl-2-Octynoate (IR)	145
(Ionone Alpha-4(2,6,6,-Trimethyl-2-cyclohexene)-3-butene-2-one)		(Methyl Heptene Carbonate)	
(Ionone Beta-4(2,6,6,-Trimethyl-1-cyclohexene)-3-butene-2-one)		Methyl Naphthyl Ketone, Beta (IR)	82
(Ionone Gamma-4(2,2-Dimethyl-6-methylene cyclohexyl)-3-buten-2-one)		Methyl Nonyl Acetaldehyde	52
Isoborneol	250	(Aldehyde C-12 (MNA))	
Isobornyl Acetate (IR)	74	Methyl Phenyl Acetate (IR)	39
Isobutyl Butyrate	259	Methyl Phenyl Carbinol (IR)	47
Isobutyl Phenyl Acetate (IR)	104	Methyl Phenyl Carbinyl Acetate (IR)	46
Isobutyl Salicylate (IR)	208	Methyl Phenyl Ketone (IR)	37
Isoeugenol (IR) (GC)	202	(Acetophenone)	
Isoeugenol Acetate (IR)	276	Musk Ambrette (IR)	25
Isoeugenyl Benzyl Ether (IR)	237	(Nitro Musks)	
(Benzyl Isoeugenol)		Musk Ketone	25
Isoeugenyl Methyl Ether (IR)	128	(Nitro Musks)	
(Methyl Isoeugenol)		Musk Xylol (IR)	25
alpha Isomethyl Ionone (IR)	257	(Nitro Musks)	
para Isopropyl-alpha-Methyl Hydrocinnamaldehyde (IR)	149	beta Naphthyl Ethyl Ether (IR)	80
(Cyclamen Aldehyde)		(Nerolin)	
Isopulegol (IR)	282	beta Naphthyl Methyl Ether (IR)	118
Lauric Aldehyde (IR)	51	(Yara Yara)	
(Aldehyde C-12 (Lauric))		Nerolidol (IR)	190
Lauryl Alcohol (IR)	184	Nerolin (IR)	80
(Alcohol C-12)		Nitro Musks	25
Leaf Alcohol (GC)	270	(Systematic chemical names individually listed above)	
(cis-3-Hexenol)		Nonalactone (IR)	92
d-Limonene	253	Nonanal (IR)	91
Linalool from Bois de Rose Brazilian (IR)	48	(Aldehyde C-9)	
Linalool Synthetic	226	Octanal (IR)	106
Linalyl Acetate (IR)	31	(Aldehyde C-8)	
Linalyl Acetate Synthetic	225	1-Octanol (IR)	166
Linalyl Formate (IR)	275	(Alcohol C-8)	
Linalyl Isobutyrate (IR)	274	Octyl Formate (IR)	191
Linalyl Propionate (IR)	138	Peach Aldehyde (IR)	79
para Methoxy acetophenone (IR)	151	(Aldehyde C-14 (so-called))	
para Methoxy benzaldehyde (IR)	42	Phenylacetaldehyde (IR)	192
(Anisic Aldehyde)		Phenylacetaldehyde Dimethyl Acetal (IR)	134
para Methoxy Benzyl Acetate (IR)	211	Phenyl Acetic Acid	19
(Anisyl Acetate)		Phenyl Ether (IR)	20
para Methoxy Benzyl Alcohol (IR)	217	(Diphenyl Oxide)	
(Anisyl Alcohol)		Phenyl Ethyl Acetate (IR)	60
2-Methoxy-biphenyl (IR)	285	Phenyl Ethyl Alcohol (IR)	20
(Methyl Diphenyl Ether)		Phenyl Ethyl Phenylacetate (IR)	279
2-Methoxy-4-propenyl phenol (IR) (GC)	202	3-Phenyl-2-propenal (IR)	204
(Isoeugenol)		(Cinnamic Aldehyde)	
2-Methoxy-4-propenyl phenyl Acetate (IR)	276	3-Phenyl-2-propenol (IR)	28
(Isoeugenyl Acetate)		(Cinnamic Alcohol)	
Methyl Acetophenone (IR)	38	2-Phenylpropionaldehyde	100
Methyl Anthranilate (IR)	34	(Hydratropic Aldehyde)	
(Methyl o-amino benzoate)		3-Phenylpropionaldehyde (IR)	290
para Methyl Anisole (IR)	224	(Phenyl Propyl Aldehyde)	
(Methyl para Cresol)		Phenyl Propyl Alcohol (IR)	54
Methyl Benzoate (IR)	193	Phenyl Propyl Aldehyde (IR)	290
Methyl Benzyl Acetate	228	Piperonal (IR)	6
alpha Methyl Benzyl Acetate (IR)	46	(Heliotropine)	
(Methyl Phenyl Carbinyl Acetate)		para n-Propyl anisole (IR)	219
alpha Methyl Benzyl Alcohol (IR)	47	(Dihydroanethole)	
(Methyl Phenyl Carbinol)		Rhodinol	146
Methyl Cinnamate (IR)	59	Rhodinyl Acetate	205
Methyl Cinnamic Alcohol	203	Rose Crystals	107
Methyl Cinnamic Aldehyde	222	(Trichlor Methyl Phenyl Carbinyl Acetate)	
Methyl para Cresol (IR)	224	Safrole (IR)	18
Methyl Diphenyl Ether (IR)	285	Santalol	234
1,2-Methylenedioxy-4-allyl benzene (IR)	18	Strawberry aldehyde	109
(Safrole)		(Aldehyde C-16 (so-called))	
3,4-Methylenedioxy Benaldehyde (IR)	6	Styralyl acetate (IR)	46
(Heliotropine)		(Methyl phenyl carbinyl acetate)	
Methyl Eugenol (IR)	128	Styralyl alcohol	47
Methyl Heptenone	262	(Methyl phenyl carbinol)	
Methyl Heptene Carbonate (IR)	145	Terpineol (IR)	8
(Methyl 2-octynoate)		Terpinyl Acetate (IR)	9
Methyl Hexyl Ketone (IR)	284	Terpinyl Propionate (IR)	233
Methyl Ionone (GC)	257	Tolyl Acetate (so-called)	228
Methyl Isoeugenol (IR)	207	(Methyl Benzyl Acetate)	
1-Methyl-4-isopropenyl-cyclohexan-3-ol (IR)	282	para Tolyl Acetate (IR)	223
(Isopulegol)		(para Cresyl acetate)	
		para Tolyl Isobutyrate	232
		(para Cresyl Isobutyrate)	

<i>Product</i>	<i>Number Specifications</i>
para Toly Phenylacetate	231
(para Cresyl Phenylacetate)	
Trichlor Methyl Phenyl Carbinyl Acetate	107
(alpha Trichloromethyl benzyl acetate)	
4-(2,6,6-Trimethyl-2-cyclohexenyl)-3-buten-2-one (IR) (GC)	61
(Ionone)	
4-(2,6,6-Trimethyl-2-cyclohexenyl)-3-methyl-3-buten-2-one (GC)	257
(Methyl Ionone)	
3,7,11-Trimethyl-1,6,10-dodecatricen-3-ol (IR)	190
(Nerolidol)	
2,4,6-Trinitro-1,3-dimethyl-5-tert-butyl benzene (IR)	25
(Nitro Musks)	
Gamma Undeclactone (IR)	79
(Aldehyde C-14 (so-called))	
Undecanal (IR)	123
(Aldehyde C-11 (Undecylic))	
9-Undecenal (IR)	84
(Aldehyde C-11 (Undecylenic))	
Vetiver Acetate	152
Yara Yara (IR)	118

VII. INFRARED SPECTRA

Acetophenone	37
Alcohol C-8	166
Alcohol C-10	167
Alcohol C-12	184
Aldehyde C-7	281
Aldehyde C-8	106
Aldehyde C-9	91
Aldehyde C-10	26
Aldehyde C-11 (Undecylenic)	84
Aldehyde C-11 (Undecylic)	123
Aldehyde C-12-Lauric	51
Aldehyde C-12 MNA	52
Aldehyde C-14 (so-called)	79
Aldehyde C-18 (so-called)	92
Allyl Caproate	122
Allyl Cyclohexyl Propionate	254
Amyl Acetate	110
Amyl Butyrate	111
Amyl Caproate	248
Amyl Cinnamic Aldehyde	45
Amyl Formate	185
Amyl Propionate	249
Amyl Salicylate	27
Anisic Aldehyde	42
Anisyl Acetate	211
Anisyl Alcohol	217
Benzodihydrophyronc	169
Benzophenone	83
Benzyl Acetate	33
Benzyl Butyrate	168
Benzyl Cinnamate	124
Benzyl Isocugenol	237
Benzyl Propionate	209
Benzyl Salicylate	93
Bois de Rose, Brazilian, Oil	2
Bois de Rose, Peruvian, Oil	135
Bornyl Acetate, Laevo	170
Bromstyrol	150
Carvone, Laevo	131
Cedryl Acetate	127
Cinnamic Alcohol	28
Cinnamic Aldehyde	204
Cinnamic Aldehyde Dimethyl Acetal	278
Citral	15
Citral Dimethyl Acetal	273
Citronellal	227
Citronella Ceylon, Oil	12
Citronella Java-Type, Oil	14
Citronellol	17
Citronellyl Acetate	125
Citronellyl Formate	206
Citronellyl Propionate	283
Coumarin	201
para Cresyl Acetate	223
para Cresyl Methyl Ether	224
Cyclamen Aldehyde	149
Diethyl Phthalate	218
Dihydro Anethole	219
Dimethyl Benzyl Carbinol	220
Dimethyl Benzyl Carbinyl Acetate	186
Dimethyl Octanol	176

<i>Product</i>	<i>Number Specifications</i>
Dimethyl Phenyl Ethyl Carbinol	277
Diphenyl Methane	129
Diphenyl Oxide	43
Ethyl Benzoate	210
Ethyl Butyrate	108
Ethyl Caproate	172
Ethyl Caprylate	173
Ethylene Brassylate	188
Ethyl Formate	187
Ethyl Phenyl Acetate	40
Eucalyptol	288
Geraniol	16
Geranyl Acetate	11
Geranyl Butyrate	154
Geranyl Formate	162
Geranyl Phenylacetate	280
Geranyl Propionate	144
Heliotropine	6
Hexyl Cinnamic Aldehyde	189
Hydroxycitronellal	5
Hydroxycitronellal Dimethyl Acetal	148
Indole	21
Ionones, Alpha Pure, Alpha Commercial, Beta	61
Isobornyl Acetate	74
Isobutyl Phenyl Acetate	104
Isobutyl Salicylate	208
Isocugenol	202
Isocugenyl Acetate	276
Ispulegol	282
Linalool	48
Linalyl Acetate	31
Linalyl Formate	275
Linalyl Isobutyrate	274
Linalyl Propionate	138
para Methoxy Acetophenone	151
Methyl Acetophenone	38
Methyl Anthranilate	34
Methyl Benzoate	193
Methyl Cinnamate	59
Methyl Diphenyl Ether	285
Methyl Eugenol	128
Methyl Heptine Carbonate	145
Methyl Hexyl Ketone	284
Methyl Isocugenol	207
Methyl Naphthyl Ketone	82
Methyl Para Cresol	224
Methyl Phenyl Acetate	39
Methyl Phenyl Carbinol	47
Methyl Phenyl Carbinyl Acetate	46
Musk Ambrette	25
Musk Xylol	25
Nerolidol	190
Nerolin	80
Nonalactone	92
Octyl Formate	191
Phenyl Acetaldehyde	192
Phenylacetaldehyde Dimethyl Acetal	134
Phenyl Ethyl Acetate	60
Phenyl Ethyl Alcohol	20
Phenyl Ethyl Phenylacetate	279
Phenyl Propyl Alcohol	54
Phenyl Propyl Aldehyde	290
Safrole	18
Terpineol	8
Terpinyl Acetate	9
Terpinyl Propionate	233
Yara Yara	118

VIII. G. C. METHODS

Aldehyde C-10	26
Cedarwood Oil Texas	36-A
Cedarwood Oil Virginia	36-B
Citral in Lemongrass Oil	7
Citral Dimethyl Acetal	273
Citronellol	17
Citronellyl Acetate	125
Citronellyl Formate	206
Geraniol	16
Geranyl Acetate	11
Geranyl Formate	162
cis-3-Hexenol	270
cis-3-Hexenyl Acetate	269
Ionone, Alpha	61
Ionone, Beta	61
Isocugenol	202
Linalool in Bois de Rose (Peru)	135
Methyl Ionone (All Types)	257
Residual Solvents in Oleoresins	1-ID-3-1